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(This book contains parts 60 to 139)

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SUBCHAPTER D—AIRMEN

PART 60—FLIGHT SIMULATION TRAINING DEVICE INITIAL AND CONTINUING QUALIFICATION AND USE

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APPENDIX F TO PART 60—DEFINITIONS AND ABBREVIATIONS FOR FLIGHT SIMULATION TRAINING DEVICES

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§60.1 Applicability.

(a) This part prescribes the rules governing the initial and continuing qualification and use of all aircraft flight simulation training devices (FSTD) used for meeting training, evaluation, or flight experience requirements of this chapter for flight crewmember certification or qualification.

(b) The rules of this part apply to each person using or applying to use an FSTD to meet any requirement of this chapter.

(c) The requirements of §60.33 regarding falsification of applications, records, or reports also apply to each person who uses an FSTD for training, evaluation, or obtaining flight experience required for flight crewmember certification or qualification under this chapter.

§60.2 Applicability of sponsor rules to persons who are not sponsors and who are engaged in certain unauthorized activities.

(a) The rules of this part that are directed to a sponsor of an FSTD also apply to any person who uses or causes the use of an FSTD when—

(1) That person knows that the FSTD does not have an FAA-approved sponsor; and

(2) The use of the FSTD by that person is nonetheless claimed for purposes of meeting any requirement of this chapter or that person knows or should have known that the person's acts or omissions would cause another person

to mistakenly credit use of the FSTD for purposes of meeting any requirement of this chapter.

(b) A situation in which paragraph (a) of this section would not apply to a person would be when each of the following conditions are met:

(1) The person sold or leased the FSTD and merely represented to the purchaser or lessee that the FSTD is in a condition in which it should be able to obtain FAA approval and qualification under this part;

(2) The person does not falsely claim to be the FAA-approved sponsor for the FSTD;

(3) The person does not falsely make representations that someone else is the FAA-approved sponsor of the FSTD at a time when that other person is not the FAA-approved sponsor of the FSTD; and

(4) The person's acts or omissions do not cause another person to detrimentally rely on such acts or omissions for the mistaken conclusion that the FSTD is FAA-approved and qualified under this part at the time the FSTD is sold or leased.

§ 60.3 Definitions.

In addition to the definitions in part 1 of this chapter, other terms and definitions applicable to this part are found in appendix F of this part.

§ 60.4 Qualification Performance Standards.

The Qualification Performance Standards (QPS) are published in appendices to this part as follows:

(a) Appendix A contains the QPS for Airplane Flight Simulators.

(b) Appendix B contains the QPS for Airplane Flight Training Devices.

(c) Appendix C contains the QPS for Helicopter Flight Simulators.

(d) Appendix D contains the QPS for Helicopter Flight Training Devices.

(e) Appendix E contains the QPS for Quality Management Systems for FSTDs.

(f) Appendix F contains the QPS for Definitions and Abbreviations for FSTDs.

§ 60.5 Quality management system.

(a) After October 30, 2009, no sponsor may use or allow the use of or offer the use of an FSTD for flight crewmember training or evaluation or for obtaining flight experience to meet any requirement of this chapter unless the sponsor has established and follows a quality management system (QMS), currently approved by the National Simulator Program Manager (NSPM), for the continuing surveillance and analysis of the sponsor's performance and effectiveness in providing a satisfactory FSTD for use on a regular basis as described in QPS appendix E of this part.

(b) The QMS program must provide a process for identifying deficiencies in the program and for documenting how the program will be changed to address these deficiencies.

(c) Whenever the NSPM finds that the QMS program does not adequately address the procedures necessary to meet the requirements of this part, the sponsor must, after notification by the NSPM, change the program so the procedures meet the requirements of this part. Each such change must be approved by the NSPM prior to implementation.

(d) Within 30 days after the sponsor receives a notice described in paragraph (c) of this section, the sponsor may file a petition with the Director of Flight Standards Service (the Director) for reconsideration of the NSPM finding. The sponsor must address its petition to the Director, Flight Standards Service, AFS–1, Federal Aviation Administration, 800 Independence Ave., SW., Washington, DC 20591. The filing of such a petition to reconsider stays the notice pending a decision by the Director. However, if the Director finds that there is a situation that requires immediate action in the interest of safety in air commerce, he may, upon a statement of the reasons, require a change effective without stay.

[71 FR 63426, Oct. 30, 2006, as amended at 72 FR 59599, Oct. 22, 2007]

§ 60.7 Sponsor qualification requirements.

(a) A person is eligible to apply to be a sponsor of an FSTD if the following conditions are met:

(1) The person holds, or is an applicant for, a certificate under part 119, 141, or 142 of this chapter; or holds, or is an applicant for, an approved flight

engineer course in accordance with part 63 of this chapter.

(2) The FSTD will be used, or will be offered for use, in the sponsor's FAA-approved flight training program for the aircraft being simulated as evidenced in a request for evaluation submitted to the NSPM.

(b) A person is a sponsor if the following conditions are met:

(1) The person is a certificate holder under part 119, 141, or 142 of this chapter or has an approved flight engineer course in accordance with part 63 of this chapter.

(2) The person has—

(i) Operations specifications authorizing the use of the specific aircraft or set of aircraft and has an FAA-approved training program under which at least one FSTD, simulating the aircraft or set of aircraft and for which the person is the sponsor, is used by the sponsor as described in paragraphs (b)(5) or (b)(6) of this section; or

(ii) Training specifications or an FAA-approved course of training under which at least one FSTD, simulating that aircraft or set of aircraft and for which the person is the sponsor, is used by the sponsor as described in paragraphs (b)(5) or (b)(6) of this section.

(3) The person has a quality management system currently approved by the NSPM in accordance with § 60.5.

(4) The NSPM has accepted the person as the sponsor of the FSTD and that acceptance has not been withdrawn by the FAA.

(5) At least one FSTD (as referenced in paragraph (b)(2)(i) or (b)(2)(ii) of this section) that is initially qualified on or after October 30, 2007, is used within the sponsor's FAA-approved flight training program for the aircraft or set of aircraft at least once within the 12-month period following the initial/upgrade evaluation, and at least once within each subsequent 12-month period thereafter.

(6) At least one FSTD (as referenced in paragraph (b)(2)(i) or (b)(2)(ii) of this section) that was qualified before October 30, 2007, is used within the sponsor's FAA-approved flight training program for the aircraft or set of aircraft at least once within the 12-month period following the first continuing qualification evaluation conducted by the NSPM after October 30, 2007 and at least once within each subsequent 12-month period thereafter.

(c) If the use requirements of paragraphs (b)(2) and either (b)(5) or (b)(6) of this section are not met, the person will forfeit the right to sponsor that FSTD and that person will not be eligible to apply to sponsor that FSTD for at least 12 calendar months following the expiration of the qualification status.

(d) In addition to the FSTD described in paragraph (b) of this section, an FSTD sponsor may sponsor any number of other FSTDs regardless of specific aircraft or set of aircraft provided either—

(1) During the preceding 12-month period, all of the other FSTDs are used within the sponsor's or another certificate holder's FAA-approved flight training program for the aircraft or set of aircraft simulated; or

(2) The sponsor obtains a written statement at least annually from a qualified pilot who has flown the aircraft or set of aircraft (as appropriate) during the preceding 12-month period stating that the subject FSTD's performance and handling qualities, within the normal operating envelope, represent the aircraft or set of aircraft described in the FAA Type Certificate and the type data sheet, if appropriate. The sponsor must retain the two most current written statements for review by the NSPM.

[71 FR 63426, Oct. 30, 2006, as amended at 72 FR 59599, Oct. 22, 2007]

§ 60.9 Additional responsibilities of the sponsor.

(a) The sponsor must allow the NSPM upon request to inspect the FSTD as soon as practicable. This inspection may include all records and documents relating to the FSTD, to determine its compliance with this part.

(b) The sponsor must do the following for each FSTD:

(1) Establish a mechanism to receive written comments regarding the FSTD and its operation in accordance with the QPS appendix E of this part.

(2) Post in or adjacent to the FSTD the Statement of Qualification issued by the NSPM. An electronic copy of the Statement of Qualification that

may be accessed by an appropriate terminal or display in or adjacent to the FSTD is satisfactory.

(c) Each sponsor of an FSTD must identify to the NSPM by name, one individual to be the management representative (MR).

(1) One person may serve as an MR for more than one FSTD, but one FSTD must not have more than one person serving in this capacity.

(2) Each MR must be an employee of the sponsor with the responsibility and authority to—

(i) Monitor the on-going qualification of assigned FSTDs to ensure that all matters regarding FSTD qualification are being carried out as provided for in this part;

(ii) Ensure that the QMS is properly established, implemented, and maintained by overseeing the structure (and modifying where necessary) of the QMS policies, practices, and procedures; and

(iii) Regularly brief sponsor's management on the status of the on-going FSTD qualification program and the effectiveness and efficiency of the QMS.

(3) The MR serves as the primary contact point for all matters between the sponsor and the NSPM regarding the qualification of that FSTD as provided for in this part.

(4) The MR may delegate the duties described in paragraph (c)(2) and (c)(3) of this section to an individual at each of the sponsor's locations.

§ 60.11 FSTD use.

No person may use or allow the use of or offer the use of an FSTD for flight crewmember training or evaluation or for obtaining flight experience to meet any of the requirements under this chapter unless, in accordance with the QPS for the specific device, the FSTD meets all of the following:

(a) Has a single sponsor who is qualified under § 60.7. The sponsor may arrange with another person for services of document preparation and presentation, as well as FSTD inspection, maintenance, repair, and servicing; however, the sponsor remains responsible for ensuring that these functions are conducted in a manner and with a result of continually meeting the requirements of this part.

(b) Is qualified as described in the Statement of Qualification.

(c) Remains qualified, through satisfactory inspection, continuing qualification evaluations, appropriate maintenance, and use requirements in accordance with this part and the applicable QPS.

(d) Functions during day-to-day training, evaluation, or flight experience activities with the software and hardware that was evaluated as satisfactory by the NSPM and, if modified, modified only in accordance with the provisions of this part. However, this section does not apply to routine software or hardware changes that do not fall under the requirements of § 60.23.

(e) Is operated in accordance with the provisions and limitations of § 60.25.

§ 60.13 FSTD objective data requirements.

(a) Except as provided in paragraph (b) and (c) of this section, for the purposes of validating FSTD performance and handling qualities during evaluation for qualification, the data made available to the NSPM (the validation data package) must include the aircraft manufacturer's flight test data and all relevant data developed after the type certificate was issued (*e.g.*, data developed in response to an airworthiness directive) if such data results from a change in performance, handling qualities, functions, or other characteristics of the aircraft that must be considered for flight crewmember training, evaluation, or for meeting experience requirements of this chapter.

(b) The validation data package may contain flight test data from a source in addition to or independent of the aircraft manufacturer's data in support of an FSTD qualification, but only if this data is gathered and developed by that source in accordance with flight test methods, including a flight test plan, as described in the applicable QPS.

(c) The validation data package may also contain predicted data, engineering simulation data, data from pilot owner or pilot operating manuals, or data from public domain sources, provided this data is acceptable to the NSPM. If found acceptable the data

may then be used in particular applications for FSTD qualification.

(d) Data or other material or elements must be submitted in a form and manner acceptable to the NSPM.

(e) The NSPM may require additional objective data, which may include flight testing if necessary, if the validation data package does not support FSTD qualification requirements as described in this part and the applicable QPS appendix.

(f) When an FSTD sponsor learns, or is advised by an aircraft manufacturer or other data provider, that an addition to, an amendment to, or a revision of data that may relate to FSTD performance or handling characteristics is available, the sponsor must notify the NSPM as described in the applicable QPS.

§ 60.14 Special equipment and personnel requirements for qualification of the FSTD.

When notified by the NSPM, the sponsor must make available all special equipment and qualified personnel needed to accomplish or assist in the accomplishment of tests during initial qualification, continuing qualification, or special evaluations.

§ 60.15 Initial qualification requirements.

(a) For each FSTD, the sponsor must submit a request to the NSPM to evaluate the FSTD for initial qualification at a specific level and simultaneously request the Training Program Approval Authority (TPAA) forward a concurring letter to the NSPM. The request must be submitted in the form and manner described in the applicable QPS.

(b) The management representative described in §60.9(c) must sign a statement (electronic signature is acceptable for electronic transmissions) after confirming the following:

(1) The performance and handling qualities of the FSTD represent those of the aircraft or set of aircraft within the normal operating envelope. This determination must be made by a pilot(s) meeting the requirements of paragraph (d) of this section after having flown all of the Operations Tasks listed in the applicable QPS appendix relevant to the qualification level of the FSTD. Exceptions, if any, must be noted. The name of the person(s) making this determination must be available to the NSPM upon request.

(2) The FSTD systems and sub-systems (including the simulated aircraft systems) functionally represent those in the aircraft or set of aircraft. This determination must be made by the pilot(s) described in paragraph (b)(1) of this section, or by a person(s) trained on simulator systems/sub-systems and trained on the operation of the simulated aircraft systems, after having exercised the operation of the FSTD and the pertinent functions available through the Instructor Operating Station(s). Exceptions, if any, must be noted. The name of the person(s) making this determination must be available to the NSPM upon request.

(3) The cockpit represents the configuration of the specific type; or aircraft make, model, and series aircraft being simulated, as appropriate. This determination must be made by the pilot(s) described in paragraph (b)(1) of this section, or by a person(s) trained on the configuration and operation of the aircraft simulated. Exceptions, if any, must be noted. The name of the person(s) making this determination must be available to the NSPM upon request.

(c) Except for those FSTDs previously qualified and described in §60.17, each FSTD evaluated for initial qualification must meet the standard that is in effect at the time of the evaluation. However—

(1) If the FAA publishes a change to the existing standard or publishes a new standard for the evaluation for initial qualification, a sponsor may request that the NSPM apply the standard that was in effect when an FSTD was ordered for delivery if the sponsor—

(i) Within 30 days of the publication of the change to the existing standard or publication of the new standard, notifies the NSPM that an FSTD has been ordered;

(ii) Within 90 days of the NSPM notification described in paragraph (c)(1)(i) of this section, requests that the standard in effect at the time the order was

placed be used for the evaluation for initial qualification; and

(iii) The evaluation is conducted within 24 months following the publication of the change to the existing standard or publication of the new standard.

(2) This notification must include a description of the FSTD; the anticipated qualification level of the FSTD; the make, model, and series of aircraft simulated; and any other pertinent information.

(3) Any tests, tolerances, or other requirements that are current at the time of the evaluation may be used during the initial evaluation, at the request of the sponsor, if the sponsor provides acceptable updates to the required qualification test guide.

(4) The standards used for the evaluation for initial qualification will be used for all subsequent evaluations of the FSTD.

(d) The pilot(s) who contributes to the confirmation statement required by paragraph (b) of this section must—

(1) Be designated by the sponsor; and

(2) Be qualified in—

(i) The aircraft or set of aircraft being simulated; or

(ii) For aircraft not yet issued a type certificate, or aircraft not previously operated by the sponsor or not having previous FAA-approved training programs conducted by the sponsor, an aircraft similar in size and configuration.

(e) The subjective tests that form the basis for the statements described in paragraph (b) of this section and the objective tests referenced in paragraph (f) of this section must be accomplished at the sponsor's training facility, except as provided for in the applicable QPS.

(f) The person seeking to qualify the FSTD must provide the NSPM access to the FSTD for the length of time necessary for the NSPM to complete the required evaluation of the FSTD for initial qualification, which includes the conduct and evaluation of objective and subjective tests, including general FSTD requirements, as described in the applicable QPS, to determine that the FSTD meets the standards in that QPS.

(g) When the FSTD passes an evaluation for initial qualification, the NSPM issues a Statement of Qualification that includes all of the following:

(1) Identification of the sponsor.

(2) Identification of the make, model, and series of the aircraft or set of aircraft being simulated.

(3) Identification of the configuration of the aircraft or set of aircraft being simulated (*e.g.*, engine model or models, flight instruments, or navigation or other systems).

(4) A statement that the FSTD is qualified as either a full flight simulator or a flight training device.

(5) Identification of the qualification level of the FSTD.

(6) A statement that (with the exception of the noted exclusions for which the FSTD has not been subjectively tested by the sponsor or the NSPM and for which qualification is not sought) the qualification of the FSTD includes the tasks set out in the applicable QPS appendix relevant to the qualification level of the FSTD.

(h) After the NSPM completes the evaluation for initial qualification, the sponsor must update the Qualification Test Guide (QTG), with the results of the FAA-witnessed tests together with the results of all the objective tests described in the applicable QPS.

(i) Upon issuance of the Statement of Qualification the updated QTG becomes the Master Qualification Test Guide (MQTG). The MQTG must be made available to the NSPM upon request.

§ 60.16 Additional qualifications for a currently qualified FSTD.

(a) A currently qualified FSTD is required to undergo an additional qualification process if a user intends to use the FSTD for meeting training, evaluation, or flight experience requirements of this chapter beyond the qualification issued for that FSTD. This process consists of the following:

(1) The sponsor:

(i) Must submit to the NSPM all modifications to the MQTG that are required to support the additional qualification.

(ii) Must describe to the NSPM all modifications to the FSTD that are required to support the additional qualification.

(iii) Must submit to the NSPM a confirmation statement as described in § 60.15(c) that a pilot, designated by the sponsor in accordance with § 60.15(d), has subjectively evaluated the FSTD in those areas not previously evaluated.

(2) The FSTD must successfully pass an evaluation—

(i) Consisting of all the elements of an initial evaluation for qualification in those circumstances where the NSPM has determined that all the elements of an initial evaluation for qualification is necessary; or

(ii) Consisting of those elements of an initial evaluation for qualification designated as necessary by the NSPM.

(b) In making the determinations described in paragraph (a)(2) of this section, the NSPM considers factors including the existing qualification of the FSTD, any modifications to the FSTD hardware or software that are involved, and any additions or modifications to the MQTG.

(c) The FSTD is qualified for the additional uses when the NSPM issues an amended Statement of Qualification in accordance with § 60.15(h).

(d) The sponsor may not modify the FSTD except as described in § 60.23.

§ 60.17 Previously qualified FSTDs.

(a) Unless otherwise specified by an FSTD Directive, further referenced in the applicable QPS, or as specified in paragraph (e) of this section, an FSTD qualified before October 30, 2007 will retain its qualification basis as long as it continues to meet the standards, including the objective test results recorded in the MQTG and subjective tests, under which it was originally evaluated, regardless of sponsor. The sponsor of such an FSTD must comply with the other applicable provisions of this part.

(b) For each FSTD qualified before October 30, 2007, no sponsor may use or allow the use of or offer the use of such an FSTD after October 30, 2013 for flight crewmember training, evaluation or flight experience to meet any of the requirements of this chapter, unless that FSTD has been issued a Statement of Qualification, including the Configuration List and the List of Qualified Tasks in accordance with the procedures set out in the applicable QPS.

(c) If the FSTD qualification is lost under § 60.27 and—

(i) Restored under § 60.27 in less than (2) years, then the qualification basis (in terms of objective tests and subjective tests) for the re-qualification will be those against which the FSTD was originally evaluated and qualified.

(ii) Not restored under § 60.27 for two (2) years or more, then the qualification basis (in terms of objective tests and subjective tests) for the re-qualification will be those standards in effect and current at the time of re-qualification application.

(d) Except as provided in paragraph (e) of this section, any change in FSTD qualification level initiated on or after October 30, 2007 requires an evaluation for initial qualification in accordance with this part.

(e) A sponsor may request that an FSTD be permanently downgraded. In such a case, the NSPM may downgrade a qualified FSTD without requiring and without conducting an initial evaluation for the new qualification level. Subsequent continuing qualification evaluations will use the existing MQTG, modified as necessary to reflect the new qualification level.

(f) When the sponsor has appropriate validation data available and receives approval from the NSPM, the sponsor may adopt tests and associated tolerances described in the current qualification standards as the tests and tolerances applicable for the continuing qualification of a previously qualified FSTD. The updated test(s) and tolerance(s) must be made a permanent part of the MQTG.

[71 FR 63426, Oct. 30, 2006, as amended at 72 FR 59599, Oct. 22, 2007]

§ 60.19 Inspection, continuing qualification evaluation, and maintenance requirements.

(a) *Inspection.* No sponsor may use or allow the use of or offer the use of an FSTD for flight crewmember training, evaluation, or flight experience to meet any of the requirements of this

chapter unless the sponsor does the following:

(1) Accomplishes all appropriate objective tests each year as specified in the applicable QPS.

(2) Completes a functional preflight check within the preceding 24 hours.

(b) *Continuing qualification evaluation.*

(1) This evaluation consists of objective tests, and subjective tests, including general FSTD requirements, as described in the applicable QPS or as may be amended by an FSTD Directive.

(2) The sponsor must contact the NSPM to schedule the FSTD for continuing qualification evaluations not later than 60 days before the evaluation is due.

(3) The sponsor must provide the NSPM access to the objective test results in the MQTG and access to the FSTD for the length of time necessary for the NSPM to complete the required continuing qualification evaluations.

(4) The frequency of NSPM-conducted continuing qualification evaluations for each FSTD will be established by the NSPM and specified in the MQTG.

(5) Continuing qualification evaluations conducted in the calendar month before or after the calendar month in which these continuing qualification evaluations are required will be considered to have been conducted in the calendar month in which they were required.

(6) No sponsor may use or allow the use of or offer the use of an FSTD for flight crewmember training or evaluation or for obtaining flight experience for the flight crewmember to meet any requirement of this chapter unless the FSTD has passed an NSPM-conducted continuing qualification evaluation within the time frame specified in the MQTG or within the grace period as described in paragraph (b)(5) of this section.

(c) *Maintenance.* The sponsor is responsible for continuing corrective and preventive maintenance on the FSTD to ensure that it continues to meet the requirements of this part and the applicable QPS appendix. No sponsor may use or allow the use of or offer the use of an FSTD for flight crewmember training, evaluation, or flight experience to meet any of the requirements of this chapter unless the sponsor does the following:

(1) Maintains a discrepancy log.

(2) Ensures that, when a discrepancy is discovered, the following requirements are met:

(i) A description of each discrepancy is entered in the log and remains in the log until the discrepancy is corrected as specified in § 60.25(b).

(ii) A description of the corrective action taken for each discrepancy, the identity of the individual taking the action, and the date that action is taken is entered in the log.

(iii) The discrepancy log is kept in a form and manner acceptable to the Administrator and is kept in or adjacent to the FSTD. An electronic log that may be accessed by an appropriate terminal or display in or adjacent to the FSTD is satisfactory.

§ 60.20 Logging FSTD discrepancies.

Each instructor, check airman, or representative of the Administrator conducting training, evaluation, or flight experience, and each person conducting the preflight inspection who discovers a discrepancy, including any missing, malfunctioning, or inoperative components in the FSTD, must write or cause to be written a description of that discrepancy into the discrepancy log at the end of the FSTD preflight or FSTD use session.

§ 60.21 Interim qualification of FSTDs for new aircraft types or models.

(a) A sponsor may apply for and the NSPM may issue an interim qualification level for an FSTD for a new type or model of aircraft, even though the aircraft manufacturer's aircraft data package is preliminary, if the sponsor provides the following to the satisfaction of the NSPM—

(1) The aircraft manufacturer's data, which consists of at least predicted data, validated by a limited set of flight test data;

(2) The aircraft manufacturer's description of the prediction methodology used to develop the predicted data; and

(3) The QTG test results.

(b) An FSTD that has been issued interim qualification is deemed to have been issued initial qualification unless

the NSPM rescinds the qualification. Interim qualification terminates two years after its issuance, unless the NSPM determines that specific conditions warrant otherwise.

(c) Within twelve months of the release of the final aircraft data package by the aircraft manufacturer, but no later than two years after the issuance of the interim qualification status, the sponsor must apply for initial qualification in accordance with § 60.15 based on the final aircraft data package approved by the aircraft manufacturer, unless the NSPM determines that specific conditions warrant otherwise.

(d) An FSTD with interim qualification may be modified only in accordance with § 60.23.

§ 60.23 Modifications to FSTDs.

(a) *Description of a modification.* For the purposes of this part, an FSTD is said to have been modified when:

(1) Equipment or devices intended to simulate aircraft appliances are added to or removed from FSTD, which change the Statement of Qualification or the MQTG; or

(2) Changes are made to either software or hardware that are intended to impact flight or ground dynamics; changes are made that impact performance or handling characteristics of the FSTD (including motion, visual, control loading, or sound systems for those FSTD levels requiring sound tests and measurements); or changes are made to the MQTG.

(b) *FSTD Directive.* When the FAA determines that FSTD modification is necessary for safety of flight reasons, the sponsor of each affected FSTD must ensure that the FSTD is modified according to the FSTD Directive regardless of the original qualification standards applicable to any specific FSTD.

(c) *Using the modified FSTD.* The sponsor may not use, or allow the use of, or offer the use of, the FSTD with the proposed modification for flight crewmember training or evaluation or for obtaining flight experience for the flight crewmember to meet any requirement of this chapter unless:

(1) The sponsor has notified the NSPM and the TPAA of their intent to incorporate the proposed modification, and one of the following has occurred;

(i) Twenty-one days have passed since the sponsor notified the NSPM and the TPAA of the proposed modification and the sponsor has not received any response from either the NSPM or the TPAA;

(ii) Twenty-one days have passed since the sponsor notified the NSPM and the TPAA of the proposed modification and one has approved the proposed modification and the other has not responded;

(iii) Fewer than twenty-one days have passed since the sponsor notified the NSPM and the TPAA of the proposed modification and the NSPM and TPAA both approve the proposed modification;

(iv) The sponsor has successfully completed any evaluation the NSPM may require in accordance with the standards for an evaluation for initial qualification or any part thereof before the modified FSTD is placed in service.

(2) The notification is submitted with the content as, and in a form and manner as, specified in the applicable QPS.

(d) *User notification.* When a modification is made to an FSTD that affects the Statement of Qualification, the sponsor must post an addendum to the Statement of Qualification until such time as a permanent, updated statement is posted.

(e) *MQTG update.* The MQTG must be updated with current objective test results in accordance with § 60.15(h) and (i) and appropriate objective data in accordance with § 60.13, each time an FSTD is modified and an objective test or other MQTG section is affected by the modification. If an FSTD Directive is the cause of this update, the direction to make the modification and the record of the modification completion must be filed in the MQTG.

§ 60.25 Operation with missing, malfunctioning, or inoperative components.

(a) No person may knowingly use or allow the use of or misrepresent the capability of an FSTD for any maneuver, procedure, or task that is to be accomplished to meet training, evaluation, or flight experience requirements of this

chapter for flight crewmember certification or qualification when there is a missing, malfunctioning, or inoperative (MMI) component that is required to be present and correctly operate for the satisfactory completion of that maneuver, procedure, or task.

(b) Each MMI component as described in paragraph (a) of this section, or any MMI component installed and required to operate correctly to meet the current Statement of Qualification, must be repaired or replaced within 30 calendar days, unless otherwise required or authorized by the NSPM.

(c) A list of the current MMI components must be readily available in or adjacent to the FSTD for review by users of the device. Electronic access to this list via an appropriate terminal or display in or adjacent to the FSTD is satisfactory. The discrepancy log may be used to satisfy this requirement provided each currently MMI component is listed in the discrepancy log.

§ 60.27 Automatic loss of qualification and procedures for restoration of qualification.

(a) An FSTD qualification is automatically lost when any of the following occurs:

(1) The FSTD is not used in the sponsor's FAA-approved flight training program in accordance with § 60.7(b)(5) or (b)(6) and the sponsor does not obtain and maintain the written statement as described in § 60.7(d)(2).

(2) The FSTD is not inspected in accordance with § 60.19.

(3) The FSTD is physically moved from one location and installed in a different location, regardless of distance.

(4) The MQTG is missing or otherwise not available and a replacement is not made within 30 days.

(b) If FSTD qualification is lost under paragraph (a) of this section, qualification is restored when either of the following provisions is met:

(1) The FSTD successfully passes an evaluation:

(i) For initial qualification, in accordance with §§ 60.15 and 60.17(c) in those circumstances where the NSPM has determined that a full evaluation for initial qualification is necessary; or

(ii) For those elements of an evaluation for initial qualification, in accordance with §§ 60.15 and 60.17(c), as determined to be necessary by the NSPM.

(2) The NSPM advises the sponsor that an evaluation is not necessary.

(c) In making the determinations described in paragraph (b) of this section, the NSPM considers factors including the number of continuing qualification evaluations missed, the number of sponsor-conducted quarterly inspections missed, and the care that had been taken of the device since the last evaluation.

§ 60.29 Other losses of qualification and procedures for restoration of qualification.

(a) Except as provided in paragraph (c) of this section, when the NSPM determines that the FSTD no longer meets qualification standards, the following procedure applies:

(1) The NSPM notifies the sponsor in writing that the FSTD no longer meets some or all of its qualification standards.

(2) The NSPM sets a reasonable period (but not less than 7 days) within which the sponsor may submit written information, views, and arguments on the FSTD qualification.

(3) After considering all material presented, the NSPM notifies the sponsor about the determination with regard to the qualification of the FSTD.

(4) When the NSPM notifies the sponsor that some or all of the FSTD is no longer qualified, the action described in the notification becomes effective not less than 30 days after the sponsor receives that notice unless—

(i) The NSPM finds under paragraph (c) of this section that there is an emergency requiring immediate action with respect to safety in air commerce; or

(ii) The sponsor petitions the Director of Flight Standards Service for reconsideration of the NSPM finding under paragraph (b) of this section.

(b) When a sponsor seeks reconsideration of a decision from the NSPM concerning the FSTD qualification, the following procedure applies:

(1) The sponsor must petition for reconsideration of that decision within 30

days of the date that the sponsor receives a notice that some or all of the FSTD is no longer qualified.

(2) The sponsor must address its petition to the Director, Flight Standards Service, AFS–1, Federal Aviation Administration, 800 Independence Ave., SW., Washington, DC 20591.

(3) A petition for reconsideration, if filed within the 30-day period, suspends the effectiveness of the determination by the NSPM that the FSTD is no longer qualified unless the NSPM has found, under paragraph (c) of this section, that an emergency exists requiring immediate action with respect to safety in air commerce.

(c) If the NSPM find that an emergency exists requiring immediate action with respect to safety in air commerce that makes the procedures set out in this section impracticable or contrary to the public interest:

(1) The NSPM withdraws qualification of some or all of the FSTD and makes the withdrawal of qualification effective on the day the sponsor receives notice of it.

(2) In the notice to the sponsor, the NSPM articulates the reasons for its finding that an emergency exists requiring immediate action with respect to safety in air transportation or air commerce or that makes it impracticable or contrary to the public interest to stay the effectiveness of the finding.

(d) FSTD qualification lost under paragraph (a) or (c) of this section may be restored when either of the following provisions are met:

(1) The FSTD successfully passes an evaluation for initial qualification, in accordance with §§ 60.15 and 60.17(c) in those circumstances where the NSPM has determined that a full evaluation for initial qualification is necessary; or

(2) The FSTD successfully passes an evaluation for those elements of an initial qualification evaluation, in accordance with §§ 60.15 and 60.17(c), as determined to be necessary by the NSPM.

(e) In making the determinations described in paragraph (d) of this section, the NSPM considers factors including the reason for the loss of qualification, any repairs or replacements that may have to have been completed, the number of continuing qualification evaluations missed, the number of sponsor-conducted quarterly inspections missed, and the care that had been taken of the device since the loss of qualification.

§ 60.31 Recordkeeping and reporting.

(a) The FSTD sponsor must maintain the following records for each FSTD it sponsors:

(1) The MQTG and each amendment thereto.

(2) A record of all FSTD modifications affected under § 60.23 since the issuance of the original Statement of Qualification.

(3) A copy of all of the following:

(i) Results of the qualification evaluations (initial and each upgrade) since the issuance of the original Statement of Qualification.

(ii) Results of the objective tests conducted in accordance with § 60.19(a) for a period of 2 years.

(iii) Results of the previous three continuing qualification evaluations, or the continuing qualification evaluations from the previous 2 years, whichever covers a longer period.

(iv) Comments obtained in accordance with § 60.9(b) for a period of at least 90 days.

(4) A record of all discrepancies entered in the discrepancy log over the previous 2 years, including the following:

(i) A list of the components or equipment that were or are missing, malfunctioning, or inoperative.

(ii) The action taken to correct the discrepancy.

(iii) The date the corrective action was taken.

(iv) The identity of the person determining that the discrepancy has been corrected.

(b) The records specified in this section must be maintained in plain language form or in coded form if the coded form provides for the preservation and retrieval of information in a manner acceptable to the NSPM.

§ 60.33 Applications, logbooks, reports, and records: Fraud, falsification, or incorrect statements.

(a) No person may make, or cause to be made, any of the following:

(1) A fraudulent or intentionally false statement in any application or any

amendment thereto, or any other report or test result required by this part.

(2) A fraudulent or intentionally false statement in or a known omission from any record or report that is kept, made, or used to show compliance with this part, or to exercise any privileges under this chapter.

(3) Any reproduction or alteration, for fraudulent purpose, of any report, record, or test result required under this part.

(b) The commission by any person of any act prohibited under paragraph (a) of this section is a basis for any one or any combination of the following:

(1) A civil penalty.

(2) Suspension or revocation of any certificate held by that person that was issued under this chapter.

(3) The removal of FSTD qualification and approval for use in a training program.

(c) The following may serve as a basis for removal of qualification of an FSTD including the withdrawal of approval for use of an FSTD; or denying an application for a qualification:

(1) An incorrect statement, upon which the FAA relied or could have relied, made in support of an application for a qualification or a request for approval for use.

(2) An incorrect entry, upon which the FAA relied or could have relied, made in any logbook, record, or report that is kept, made, or used to show compliance with any requirement for an FSTD qualification or an approval for use.

§ 60.35 Specific full flight simulator compliance requirements.

(a) No device will be eligible for initial or upgrade qualification to a FFS at Level C or Level D under this part unless it includes the equipment and appliances installed and operating to the extent necessary for the issuance of an airman certificate or rating.

(b) No device will be eligible for initial or upgrade qualification to a FFS at Level A or Level B under this part unless it includes the equipment and appliances installed and operating to the extent necessary for the training, testing, and/or checking that comprise the simulation portion of the requirements for issuance of an airman certificate or rating.

§ 60.37 FSTD qualification on the basis of a Bilateral Aviation Safety Agreement (BASA).

(a) The evaluation and qualification of an FSTD by a contracting State to the Convention on International Civil Aviation for the sponsor of an FSTD located in that contracting State may be used as the basis for issuing a U.S. statement of qualification (see applicable QPS, attachment 4, figure 4) by the NSPM to the sponsor of that FSTD in accordance with—

(1) A BASA between the United States and the Contracting State that issued the original qualification; and

(2) A Simulator Implementation Procedure (SIP) established under the BASA.

(b) The SIP must contain any conditions and limitations on validation and issuance of such qualification by the U.S.

APPENDIX A TO PART 60—QUALIFICATION PERFORMANCE STANDARDS FOR AIRPLANE FULL FLIGHT SIMULATORS

BEGIN INFORMATION

This appendix establishes the standards for Airplane Full Flight Simulator (FFS) evaluation and qualification. The Flight Standards Service, National Simulator Program Manager (NSPM), is responsible for the development, application, and implementation of the standards contained within this appendix. The procedures and criteria specified in this appendix will be used by the NSPM, or a person assigned by the NSPM, when conducting airplane FFS evaluations.

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19. Automatic Loss of Qualification and Procedures for Restoration of Qualification (§60.27).
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22. Applications, Logbooks, Reports, and Records: Fraud, Falsification, or Incorrect Statements (§60.33).
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24. [Reserved]
25. FSTD Qualification on the Basis of a Bilateral Aviation Safety Agreement (BASA) (§60.37).

Attachment 1 to Appendix A to Part 60—General Simulator Requirements.

Attachment 2 to Appendix A to Part 60—Full Flight Simulator (FFS) Objective Test.

Attachment 3 to Appendix A to Part 60—Simulator Subjective Evaluation.

Attachment 4 to Appendix A to Part 60—Sample Documents.

Attachment 5 to Appendix A to Part 60—Simulator Qualification Requirements for Windshear Training Program Use.

END INFORMATION

1. INTRODUCTION

BEGIN INFORMATION

a. This appendix contains background information as well as regulatory and informative material as described later in this section. To assist the reader in determining what areas are required and what areas are permissive, the text in this appendix is divided into two sections: ''QPS Requirements'' and ''Information.'' The QPS Requirements sections contain details regarding compliance with the part 60 rule language. These details are regulatory, but are found only in this appendix. The Information sections contain material that is advisory in nature, and designed to give the user general information about the regulation.

b. Related Reading References.
(1) 14 CFR part 60.
(2) 14 CFR part 61.
(3) 14 CFR part 63.
(4) 14 CFR part 119.
(5) 14 CFR part 121.
(6) 14 CFR part 125.
(7) 14 CFR part 135.
(8) 14 CFR part 141.
(9) 14 CFR part 142.
(10) Advisory Circular (AC) 120–28C, Criteria for Approval of Category III Landing Weather Minima.
(11) AC 120–29, Criteria for Approving Category I and Category II Landing Minima for part 121 operators.
(12) AC 120–35B, Line Operational Simulations: Line-Oriented Flight Training, Special Purpose Operational Training, Line Operational Evaluation.
(13) AC 120–41, Criteria for Operational Approval of Airborne Wind Shear Alerting and Flight Guidance Systems.
(14) AC 120–57A, Surface Movement Guidance and Control System (SMGS).
(15) AC 150/5300–13, Airport Design.
(16) AC 150/5340–1G, Standards for Airport Markings.
(17) AC 150/5340–4C, Installation Details for Runway Centerline Touchdown Zone Lighting Systems.
(18) AC 150/5340–19, Taxiway Centerline Lighting System.
(19) AC 150/5340–24, Runway and Taxiway Edge Lighting System.
(20) AC 150/5345–28D, Precision Approach Path Indicator (PAPI) Systems
(21) International Air Transport Association document, ''Flight Simulator Design and Performance Data Requirements,'' as amended.
(22) AC 25–7, as amended, Flight Test Guide for Certification of Transport Category Airplanes.
(23) AC 23–8A, as amended, Flight Test Guide for Certification of Part 23 Airplanes.
(24) International Civil Aviation Organization (ICAO) Manual of Criteria for the Qualification of Flight Simulators, as amended.
(25) Airplane Flight Simulator Evaluation Handbook, Volume I, as amended and Volume II, as amended, The Royal Aeronautical Society, London, UK.
(26) FAA Publication FAA–S–8081 series (Practical Test Standards for Airline Transport Pilot Certificate, Type Ratings, Commercial Pilot, and Instrument Ratings).
(27) The FAA Aeronautical Information Manual (AIM). An electronic version of the AIM is on the internet at *http://www.faa.gov/atpubs*.

END INFORMATION

2. APPLICABILITY (§§60.1 & 60.2)

BEGIN INFORMATION

There is no additional regulatory or informational material that applies to §60.1, Applicability, or to §60.2, Applicability of sponsor rules to persons who are not sponsors and who are engaged in certain unauthorized activities.

END INFORMATION

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3. DEFINITIONS (§60.3)

BEGIN INFORMATION

See appendix F for a list of definitions and abbreviations from part 1 and part 60, including the appropriate appendices of part 60.

END INFORMATION

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4. QUALIFICATION PERFORMANCE STANDARDS (§60.4)

BEGIN INFORMATION

There is no additional regulatory or informational material that applies to §60.4, Qualification Performance Standards.

END INFORMATION

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5. QUALITY MANAGEMENT SYSTEM (§60.5)

BEGIN INFORMATION

See appendix E for additional regulatory and informational material regarding Quality Management Systems.

END INFORMATION

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6. SPONSOR QUALIFICATION REQUIREMENTS (§60.7)

BEGIN INFORMATION

a. The intent of the language in §60.7(b) is to have a specific FFS, identified by the sponsor, used at least once in an FAA-approved flight training program for the airplane simulated during the 12-month period described. The identification of the specific FFS may change from one 12-month period to the next 12-month period as long as that sponsor sponsors and uses at least one FFS at least once during the prescribed period. There is no minimum number of hours or minimum FFS periods required.

b. The following examples describe acceptable operational practices:

(1) Example One.

(a) A sponsor is sponsoring a single, specific FFS for its own use, in its own facility or elsewhere—this single FFS forms the basis for the sponsorship. The sponsor uses that FFS at least once in each 12-month period in that sponsor's FAA-approved flight training program for the airplane simulated. This 12-month period is established according to the following schedule:

(i) If the FFS was qualified prior to October 30, 2007 the 12-month period begins on the date of the first continuing qualification evaluation conducted in accordance with §60.19 after October 30, 2007 and continues for each subsequent 12-month period;

(ii) A device qualified on or after October 30, 2007 will be required to undergo an initial or upgrade evaluation in accordance with §60.15. Once the initial or upgrade evaluation is complete, the first continuing qualification evaluation will be conducted within 6 months. The 12 month continuing qualification evaluation cycle begins on that date and continues for each subsequent 12-month period.

(b) There is no minimum number of hours of FFS use required.

(c) The identification of the specific FFS may change from one 12-month period to the next 12-month period as long as that sponsor sponsors and uses at least one FFS at least once during the prescribed period.

(2) Example Two.

(a) A sponsor sponsors an additional number of FFSs, in its facility or elsewhere. Each additionally sponsored FFS must be—

(i) Used by the sponsor in the sponsor's FAA-approved flight training program for the airplane simulated (as described in §60.7(d)(1));

OR

(ii) Used by another FAA certificate holder in that other certificate holder's FAA-approved flight training program for the airplane simulated (as described in §60.7(d)(1)). This 12-month period is established in the same manner as in example one.

OR

(iii) Provided a statement each year from a qualified pilot, (after having flown the airplane, not the subject FFS or another FFS, during the preceding 12-month period) stating that the subject FFSs performance and handling qualities represent the airplane (as described in §60.7(d)(2)). This statement is provided at least once in each 12-month period established in the same manner as in example one.

(b) There is no minimum number of hours of FFS use required.

(3) Example Three.

(a) A sponsor in New York (in this example, a Part 142 certificate holder) establishes

''satellite'' training centers in Chicago and Moscow.

(b) The satellite function means that the Chicago and Moscow centers must operate under the New York center's certificate (in accordance with all of the New York center's practices, procedures, and policies; *e.g.*, instructor and/or technician training/checking requirements, record keeping, QMS program).

(c) All of the FFSs in the Chicago and Moscow centers could be dry-leased (i.e., the certificate holder does not have and use FAA-approved flight training programs for the FFSs in the Chicago and Moscow centers) because—

(i) Each FFS in the Chicago center and each FFS in the Moscow center is used at least once each 12-month period by another FAA certificate holder in that other certificate holder's FAA-approved flight training program for the airplane (as described in §60.7(d)(1));

OR

(ii) A statement is obtained from a qualified pilot (having flown the airplane, not the subject FFS or another FFS during the preceding 12-month period) stating that the performance and handling qualities of each FFS in the Chicago and Moscow centers represents the airplane (as described in §60.7(d)(2)).

END INFORMATION

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7. ADDITIONAL RESPONSIBILITIES OF THE SPONSOR (§60.9)

BEGIN INFORMATION

The phrase ''as soon as practicable'' in §60.9(a) means without unnecessarily disrupting or delaying beyond a reasonable time the training, evaluation, or experience being conducted in the FSTD.

END INFORMATION

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8. SIMULATOR USE (§60.11)

BEGIN INFORMATION

There is no additional regulatory or informational material that applies to §60.11, Simulator Use.

END INFORMATION

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9. SIMULATOR OBJECTIVE DATA REQUIREMENTS (§60.13)

BEGIN QPS REQUIREMENTS

a. Flight test data used to validate FFS performance and handling qualities must have been gathered in accordance with a flight test program containing the following:

(1) A flight test plan consisting of:

(a) The maneuvers and procedures required for aircraft certification and simulation programming and validation

(b) For each maneuver or procedure—

(i) The procedures and control input the flight test pilot and/or engineer used.

(ii) The atmospheric and environmental conditions.

(iii) The initial flight conditions.

(iv) The airplane configuration, including weight and center of gravity.

(v) The data to be gathered.

(vi) All other information necessary to recreate the flight test conditions in the FFS.

(2) Appropriately qualified flight test personnel.

(3) An understanding of the accuracy of the data to be gathered using appropriate alternative data sources, procedures, and instrumentation that is traceable to a recognized standard as described in Attachment 2, Table A2D.

(4) Appropriate and sufficient data acquisition equipment or system(s), including appropriate data reduction and analysis methods and techniques, as would be acceptable to the FAA's Aircraft Certification Service.

b. The data, regardless of source, must be presented:

(1) In a format that supports the FFS validation process;

(2) In a manner that is clearly readable and annotated correctly and completely;

(3) With resolution sufficient to determine compliance with the tolerances set forth in Attachment 2, Table A2A of this appendix.

(4) With any necessary instructions or other details provided, such as yaw damper or throttle position; and

(5) Without alteration, adjustments, or bias; however the data may be re-scaled, digitized, or otherwise manipulated to fit the desired presentation.

c. After completion of any additional flight test, a flight test report must be submitted in support of the validation data. The report must contain sufficient data and rationale to support qualification of the FFS at the level requested.

d. As required by §60.13(f), the sponsor must notify the NSPM when it becomes aware that an addition to, an amendment to, or a revision of data that may relate to FFS performance or handling characteristics is available. The data referred to in this paragraph are those data that are used to validate the performance, handling qualities, or

other characteristics of the aircraft, including data related to any relevant changes occurring after the type certificate was issued. This notification must be made within 10 working days.

END QPS REQUIREMENTS

BEGIN INFORMATION

e. The FFS sponsor is encouraged to maintain a liaison with the manufacturer of the aircraft being simulated (or with the holder of the aircraft type certificate for the aircraft being simulated if the manufacturer is no longer in business), and, if appropriate, with the person having supplied the aircraft data package for the FFS in order to facilitate the notification required by §60.13(f).

f. It is the intent of the NSPM that for new aircraft entering service, at a point well in advance of preparation of the Qualification Test Guide (QTG), the sponsor should submit to the NSPM for approval, a descriptive document (a validation data roadmap) containing the plan for acquiring the validation data, including data sources. This document should clearly identify sources of data for all required tests, a description of the validity of these data for a specific engine type and thrust rating configuration, and the revision levels of all avionics affecting the performance or flying qualities of the aircraft. Additionally, this document should provide other information, such as the rationale or explanation for cases where data or data parameters are missing, instances where engineering simulation data are used or where flight test methods require further explanations. It should also provide a brief narrative describing the cause and effect of any deviation from data requirements. The aircraft manufacturer may provide this document.

g. There is no requirement for any flight test data supplier to submit a flight test plan or program prior to gathering flight test data. However, the NSPM notes that inexperienced data gatherers often provide data that is irrelevant, improperly marked, or lacking adequate justification for selection. Other problems include inadequate information regarding initial conditions or test maneuvers. The NSPM has been forced to refuse these data submissions as validation data for an FFS evaluation. It is for this reason that the NSPM recommends that any data supplier not previously experienced in this area review the data necessary for programming and for validating the performance of the FFS, and discuss the flight test plan anticipated for acquiring such data with the NSPM well in advance of commencing the flight tests.

h. In those cases where the objective test results authorize a ''snapshot test'' or a ''series of snapshot test'' results in lieu of a time-history result, Attachment 2 requires the sponsor or other data provider to ensure that a steady state condition exists at the instant of time captured by the ''snapshot.'' This is often verified by showing that a steady state condition existed from some period of time during which the snap shot is taken. The time period most frequently used is 5 seconds prior through 2 seconds following the instant of time captured by the snap shot. This paragraph is primarily addressing the source data and the method by which the data provider ensures that the steady state condition for the snap shot is representative.

i. The NSPM will consider, on a case-by-case basis, whether or not to approve supplemental validation data derived from flight data recording systems such as a Quick Access Recorder or Flight Data Recorder.

END INFORMATION

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10. SPECIAL EQUIPMENT AND PERSONNEL REQUIREMENTS FOR QUALIFICATION OF THE SIMULATOR (§60.14)

BEGIN INFORMATION

a. In the event that the NSPM determines that special equipment or specifically qualified persons will be required to conduct an evaluation, the NSPM will make every attempt to notify the sponsor at least one (1) week, but in no case less than 72 hours, in advance of the evaluation. Examples of special equipment include spot photometers, flight control measurement devices, and sound analyzers. Examples of specially qualified personnel include individuals specifically qualified to install or use any special equipment when its use is required.

b. Examples of a special evaluation include an evaluation conducted after an FFS is moved, at the request of the TPAA, or as a result of comments received from FFS that raise questions regarding the continued qualification or use of the FFS.

END INFORMATION

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11. INITIAL (AND UPGRADE) QUALIFICATION REQUIREMENTS (§60.15)

BEGIN QPS REQUIREMENTS

a. In order to be qualified at a particular qualification level, the FFS must:

(1) Meet the general requirements listed in Attachment 1;

(2) Meet the objective testing requirements listed in Attachment 2; and

(3) Satisfactorily accomplish the subjective tests listed in Attachment 3.

b. The request described in §60.15(a) must include all of the following:

(1) A statement that the FFS meets all of the applicable provisions of this part and all applicable provisions of the QPS.

(2) A confirmation that the sponsor will forward to the NSPM the statement described in §60.15(b) in such time as to be received no later than 5 business days prior to the scheduled evaluation and may be forwarded to the NSPM via traditional or electronic means.

(3) A qualification test guide (QTG), acceptable to the NSPM, that includes all of the following:

(i) Objective data obtained from aircraft testing or another approved source.

(ii) Correlating objective test results obtained from the performance of the FFS as prescribed in the applicable QPS.

(iii) The result of FFS subjective tests prescribed in the applicable QPS.

(iv) A description of the equipment necessary to perform the evaluation for initial qualification and the continuing qualification evaluations.

c. The QTG described in paragraph (a)(3) of this section, must provide the documented proof of compliance with the simulator objective tests in Attachment 2, Table A2A of this appendix.

d. The QTG is prepared and submitted by the sponsor, or the sponsor's agent on behalf of the sponsor, to the NSPM for review and approval, and must include, for each objective test:

(1) Parameters, tolerances, and flight conditions;

(2) Pertinent and complete instructions for the conduct of automatic and manual tests;

(3) A means of comparing the FFS test results to the objective data;

(4) Any other information as necessary, to assist in the evaluation of the test results;

(5) Other information appropriate to the qualification level of the FFS.

e. The QTG described in paragraphs (a)(3) and (b) of this section, must include the following:

(1) A QTG cover page with sponsor and FAA approval signature blocks (see Attachment 4, Figure A4C, for a sample QTG cover page).

(2) A continuing qualification evaluation requirements page. This page will be used by the NSPM to establish and record the frequency with which continuing qualification evaluations must be conducted and any subsequent changes that may be determined by the NSPM in accordance with §60.19. See Attachment 4, Figure A4G, for a sample Continuing Qualification Evaluation Requirements page.

(3) A FFS information page that provides the information listed in this paragraph (see Attachment 4, Figure A4B, for a sample FFS information page). For convertible FFSs, the sponsor must submit a separate page for each configuration of the FFS.

(a) The sponsor's FFS identification number or code.

(b) The airplane model and series being simulated.

(c) The aerodynamic data revision number or reference.

(d) The engine model(s) and its data revision number or reference.

(e) The flight control data revision number or reference.

(f) The flight management system identification and revision level.

(g) The FFS model and manufacturer.

(h) The date of FFS manufacture.

(i) The FFS computer identification.

(j) The visual system model and manufacturer, including display type.

(k) The motion system type and manufacturer, including degrees of freedom.

(4) A Table of Contents.

(5) A log of revisions and a list of effective pages.

(6) List of all relevant data references.

(7) A glossary of terms and symbols used (including sign conventions and units).

(8) Statements of compliance and capability (SOCs) with certain requirements. SOCs must provide references to the sources of information that show the capability of the FFS to comply with the requirements. SOCs must also provide a rationale explaining how the referenced material is used, the mathematical equations and parameter values used, and the conclusions reached. Refer to the ''Additional Details'' column in Attachment 1, Table A1A, ''Simulator Standards,'' or in the ''Test Details'' column in Attachment 2, Table A2A, ''Simulator Objective Tests,'' to see when SOCs are required.

(9) Recording procedures or equipment required to accomplish the objective tests.

(10) The following information for each objective test designated in Attachment 2, Table A2A, as applicable to the qualification level sought:

(a) Name of the test.

(b) Objective of the test.

(c) Initial conditions.

(d) Manual test procedures.

(e) Automatic test procedures (if applicable).

(f) Method for evaluating FFS objective test results.

(g) List of all relevant parameters driven or constrained during the automatically conducted test(s).

(h) List of all relevant parameters driven or constrained during the manually conducted test(s).

(i) Tolerances for relevant parameters.

(j) Source of Validation Data (document and page number).

(k) Copy of the Validation Data (if located in a separate binder, a cross reference for the identification and page number for pertinent data location must be provided).

(l) Simulator Objective Test Results as obtained by the sponsor. Each test result must reflect the date completed and must be clearly labeled as a product of the device being tested.

f. A convertible FFS is addressed as a separate FFS for each model and series airplane to which it will be converted and for the FAA qualification level sought. If a sponsor seeks qualification for two or more models of an airplane type using a convertible FFS, the sponsor must submit a QTG for each airplane model, or a supplemented QTG for each airplane model. The NSPM will conduct evaluations for each airplane model.

g. Form and manner of presentation of objective test results in the QTG:

(1) The sponsor's FFS test results must be recorded in a manner acceptable to the NSPM, that allows easy comparison of the FFS test results to the validation data (*e.g.*, use of a multi-channel recorder, line printer, cross plotting, overlays, transparencies).

(2) FFS results must be labeled using terminology common to airplane parameters as opposed to computer software identifications.

(3) Validation data documents included in a QTG may be photographically reduced only if such reduction will not alter the graphic scaling or cause difficulties in scale interpretation or resolution.

(4) Scaling on graphical presentations must provide the resolution necessary to evaluate the parameters shown in Attachment 2, Table A2A of this appendix.

(5) Tests involving time histories, data sheets (or transparencies thereof) and FFS test results must be clearly marked with appropriate reference points to ensure an accurate comparison between the FFS and the airplane with respect to time. Time histories recorded via a line printer are to be clearly identified for cross plotting on the airplane data. Over-plots must not obscure the reference data.

h. The sponsor may elect to complete the QTG objective and subjective tests at the manufacturer's facility or at the sponsor's training facility. If the tests are conducted at the manufacturer's facility, the sponsor must repeat at least one-third of the tests at the sponsor's training facility in order to substantiate FFS performance. The QTG must be clearly annotated to indicate when and where each test was accomplished. Tests conducted at the manufacturer's facility and at the sponsor's training facility must be conducted after the FFS is assembled with systems and sub-systems functional and operating in an interactive manner. The test results must be submitted to the NSPM.

i. The sponsor must maintain a copy of the MQTG at the FFS location.

j. All FFSs for which the initial qualification is conducted after October 30, 2013 must have an electronic MQTG (eMQTG) including all objective data obtained from airplane testing, or another approved source (reformatted or digitized), together with correlating objective test results obtained from the performance of the FFS (reformatted or digitized) as prescribed in this appendix. The eMQTG must also contain the general FFS performance or demonstration results (reformatted or digitized) prescribed in this appendix, and a description of the equipment necessary to perform the initial qualification evaluation and the continuing qualification evaluations. The eMQTG must include the original validation data used to validate FFS performance and handling qualities in either the original digitized format from the data supplier or an electronic scan of the original time-history plots that were provided by the data supplier. A copy of the eMQTG must be provided to the NSPM.

k. All other FFSs not covered in subparagraph ''j'' must have an electronic copy of the MQTG by October 30, 2013. A copy of the eMQTG must be provided to the NSPM. This may be provided by an electronic scan presented in a Portable Document File (PDF), or similar format acceptable to the NSPM.

END QPS REQUIREMENTS

BEGIN INFORMATION

l. Only those FFSs that are sponsored by a certificate holder as defined in appendix F will be evaluated by the NSPM. However, other FFS evaluations may be conducted on a case-by-case basis as the Administrator deems appropriate, but only in accordance with applicable agreements.

m. The NSPM will conduct an evaluation for each configuration, and each FFS must be evaluated as completely as possible. To ensure a thorough and uniform evaluation, each FFS is subjected to the general simulator requirements in Attachment 1, the objective tests listed in Attachment 2, and the subjective tests listed in Attachment 3 of this appendix. The evaluations described herein will include, but not necessarily be limited to the following:

(1) Airplane responses, including longitudinal and lateral-directional control responses (see Attachment 2 of this appendix);

(2) Performance in authorized portions of the simulated airplane's operating envelope, to include tasks evaluated by the NSPM in the areas of surface operations, takeoff, climb, cruise, descent, approach, and landing as well as abnormal and emergency operations (see Attachment 2 of this appendix);

(3) Control checks (see Attachment 1 and Attachment 2 of this appendix);

(4) Cockpit configuration (see Attachment 1 of this appendix);

(5) Pilot, flight engineer, and instructor station functions checks (see Attachment 1 and Attachment 3 of this appendix);

(6) Airplane systems and sub-systems (as appropriate) as compared to the airplane simulated (see Attachment 1 and Attachment 3 of this appendix);

(7) FFS systems and sub-systems, including force cueing (motion), visual, and aural (sound) systems, as appropriate (see Attachment 1 and Attachment 2 of this appendix); and

(8) Certain additional requirements, depending upon the qualification level sought, including equipment or circumstances that may become hazardous to the occupants. The sponsor may be subject to Occupational Safety and Health Administration requirements.

n. The NSPM administers the objective and subjective tests, which includes an examination of functions. The tests include a qualitative assessment of the FFS by an NSP pilot. The NSP evaluation team leader may assign other qualified personnel to assist in accomplishing the functions examination and/or the objective and subjective tests performed during an evaluation when required.

(1) Objective tests provide a basis for measuring and evaluating FFS performance and determining compliance with the requirements of this part.

(2) Subjective tests provide a basis for:

(a) Evaluating the capability of the FFS to perform over a typical utilization period;

(b) Determining that the FFS satisfactorily simulates each required task;

(c) Verifying correct operation of the FFS controls, instruments, and systems; and

(d) Demonstrating compliance with the requirements of this part.

o. The tolerances for the test parameters listed in Attachment 2 of this appendix reflect the range of tolerances acceptable to the NSPM for FFS validation and are not to be confused with design tolerances specified for FFS manufacture. In making decisions regarding tests and test results, the NSPM relies on the use of operational and engineering judgment in the application of data (including consideration of the way in which the flight test was flown and way the data was gathered and applied) data presentations, and the applicable tolerances for each test.

p. In addition to the scheduled continuing qualification evaluation, each FFS is subject to evaluations conducted by the NSPM at any time without prior notification to the sponsor. Such evaluations would be accomplished in a normal manner (i.e., requiring exclusive use of the FFS for the conduct of objective and subjective tests and an examination of functions) if the FFS is not being used for flight crewmember training, testing, or checking. However, if the FFS were being used, the evaluation would be conducted in a non-exclusive manner. This non-exclusive evaluation will be conducted by the FFS evaluator accompanying the check airman, instructor, Aircrew Program Designee (APD), or FAA inspector aboard the FFS along with the student(s) and observing the operation of the FFS during the training, testing, or checking activities.

q. Problems with objective test results are handled as follows:

(1) If a problem with an objective test result is detected by the NSP evaluation team during an evaluation, the test may be repeated or the QTG may be amended.

(2) If it is determined that the results of an objective test do not support the level requested but do support a lower level, the NSPM may qualify the FFS at that lower level. For example, if a Level D evaluation is requested and the FFS fails to meet sound test tolerances, it could be qualified at Level C.

r. After an FFS is successfully evaluated, the NSPM issues a statement of qualification (SOQ) to the sponsor. The NSPM recommends the FFS to the TPAA, who will approve the FFS for use in a flight training program. The SOQ will be issued at the satisfactory conclusion of the initial or continuing qualification. However, it is the sponsor's responsibility to obtain TPAA approval prior to using the FSTD in an FAA-approved flight training program.

s. Under normal circumstances, the NSPM establishes a date for the initial or upgrade evaluation within ten (10) working days after determining that a complete QTG is acceptable. Unusual circumstances may warrant establishing an evaluation date before this determination is made. A sponsor may schedule an evaluation date as early as 6 months in advance. However, there may be a delay of 45 days or more in rescheduling and completing the evaluation if the sponsor is unable to meet the scheduled date. See Attachment 4, Figure A4A, Sample Request for Initial, Upgrade, or Reinstatement Evaluation.

t. The numbering system used for objective test results in the QTG should closely follow the numbering system set out in Attachment 2, FFS Objective Tests, Table A2A.

u. Contact the NSPM or visit the NSPM Web site for additional information regarding the preferred qualifications of pilots used to meet the requirements of §60.15(d).

v. Examples of the exclusions for which the FFS might not have been subjectively tested by the sponsor or the NSPM and for which qualification might not be sought or granted, as described in §60.15(g)(6), include windshear training and circling approaches.

END INFORMATION

12. ADDITIONAL QUALIFICATIONS FOR A CURRENTLY QUALIFIED SIMULATOR (§ 60.16)

There is no additional regulatory or informational material that applies to § 60.16, Additional Qualifications for a Currently Qualified FFS.

13. PREVIOUSLY QUALIFIED SIMULATORS (§ 60.17)

BEGIN QPS REQUIREMENTS

a. In instances where a sponsor plans to remove a FFS from active status for a period of less than two years, the following procedures apply:

(1) The NSPM must be notified in writing and the notification must include an estimate of the period that the FFS will be inactive;

(2) Continuing Qualification evaluations will not be scheduled during the inactive period;

(3) The NSPM will remove the FFS from the list of qualified FSTDs on a mutually established date not later than the date on which the first missed continuing qualification evaluation would have been scheduled;

(4) Before the FFS is restored to qualified status, it must be evaluated by the NSPM. The evaluation content and the time required to accomplish the evaluation is based on the number of continuing qualification evaluations and sponsor-conducted quarterly inspections missed during the period of inactivity.

(5) The sponsor must notify the NSPM of any changes to the original scheduled time out of service;

b. Simulators qualified prior to October 30, 2007, are not required to meet the general simulation requirements, the objective test requirements, and the subjective test requirements of attachments 1, 2, and 3, respectively, of this appendix.

c. [Reserved]

END QPS REQUIREMENTS

BEGIN INFORMATION

d. Other certificate holders or persons desiring to use an FFS may contract with FFS sponsors to use FFSs previously qualified at a particular level for an airplane type and approved for use within an FAA-approved flight training program. Such FFSs are not required to undergo an additional qualification process, except as described in § 60.16.

e. Each FFS user must obtain approval from the appropriate TPAA to use any FFS in an FAA-approved flight training program.

f. The intent of the requirement listed in § 60.17(b), for each FFS to have a Statement of Qualification within 6 years, is to have the availability of that statement (including the configuration list and the limitations to authorizations) to provide a complete picture of the FFS inventory regulated by the FAA. The issuance of the statement will not require any additional evaluation or require any adjustment to the evaluation basis for the FFS.

g. Downgrading of an FFS is a permanent change in qualification level and will necessitate the issuance of a revised Statement of Qualification to reflect the revised qualification level, as appropriate. If a temporary restriction is placed on an FFS because of a missing, malfunctioning, or inoperative component or on-going repairs, the restriction is not a permanent change in qualification level. Instead, the restriction is temporary and is removed when the reason for the restriction has been resolved.

h. It is not the intent of the NSPM to discourage the improvement of existing simulation (*e.g.*, the ''updating'' of a visual system to a newer model, or the replacement of the IOS with a more capable unit) by requiring the ''updated'' device to meet the qualification standards current at the time of the update. Depending on the extent of the update, the NSPM may require that the updated device be evaluated and may require that an evaluation include all or a portion of the elements of an initial evaluation. However, the standards against which the device would be evaluated are those that are found in the MQTG for that device.

i. The NSPM will determine the evaluation criteria for an FSTD that has been removed from active status. The criteria will be based on the number of continuing qualification evaluations and quarterly inspections missed during the period of inactivity. For example, if the FFS were out of service for a 1 year period, it would be necessary to complete the entire QTG, since all of the quarterly evaluations would have been missed. The NSPM will also consider how the FFS was stored, whether parts were removed from the FFS and whether the FFS was disassembled.

j. The FFS will normally be requalified using the FAA-approved MQTG and the criteria that was in effect prior to its removal from qualification. However, inactive periods of 2 years or more will require requalification under the standards in effect and current at the time of requalification.

END INFORMATION

14. INSPECTION, CONTINUING QUALIFICATION EVALUATION, AND MAINTENANCE REQUIREMENTS (§ 60.19)

BEGIN QPS REQUIREMENTS

a. The sponsor must conduct a minimum of four evenly spaced inspections throughout the year. The objective test sequence and content of each inspection must be developed by the sponsor and must be acceptable to the NSPM.

b. The description of the functional preflight inspection must be contained in the sponsor's QMS.

c. Record ''functional preflight'' in the FFS discrepancy log book or other acceptable location, including any item found to be missing, malfunctioning, or inoperative.

END QPS REQUIREMENTS

BEGIN INFORMATION

d. The sponsor's test sequence and the content of each quarterly inspection required in §60.19(a)(1) should include a balance and a mix from the objective test requirement areas listed as follows:

(1) Performance.
(2) Handling qualities.
(3) Motion system (where appropriate).
(4) Visual system (where appropriate).
(5) Sound system (where appropriate).
(6) Other FFS systems.

e. If the NSP evaluator plans to accomplish specific tests during a normal continuing qualification evaluation that requires the use of special equipment or technicians, the sponsor will be notified as far in advance of the evaluation as practical; but not less than 72 hours. Examples of such tests include latencies, control dynamics, sounds and vibrations, motion, and/or some visual system tests.

f. The continuing qualification evaluations, described in §60.19(b), will normally require 4 hours of FFS time. However, flexibility is necessary to address abnormal situations or situations involving aircraft with additional levels of complexity (*e.g.*, computer controlled aircraft). The sponsor should anticipate that some tests may require additional time. The continuing qualification evaluations will consist of the following:

(1) Review of the results of the quarterly inspections conducted by the sponsor since the last scheduled continuing qualification evaluation.

(2) A selection of approximately 8 to 15 objective tests from the MQTG that provide an adequate opportunity to evaluate the performance of the FFS. The tests chosen will be performed either automatically or manually and should be able to be conducted within approximately one-third (⅓) of the allotted FFS time.

(3) A subjective evaluation of the FFS to perform a representative sampling of the tasks set out in attachment 3 of this appendix. This portion of the evaluation should take approximately two-thirds (⅔) of the allotted FFS time.

(4) An examination of the functions of the FFS may include the motion system, visual system, sound system, instructor operating station, and the normal functions and simulated malfunctions of the airplane systems. This examination is normally accomplished simultaneously with the subjective evaluation requirements.

g. The requirement established in §60.19(b)(4) regarding the frequency of NSPM-conducted continuing qualification evaluations for each FFS is typically 12 months. However, the establishment and satisfactory implementation of an approved QMS for a sponsor will provide a basis for adjusting the frequency of evaluations to exceed 12-month intervals.

END INFORMATION

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15. LOGGING SIMULATOR DISCREPANCIES (§60.20)

There is no additional regulatory or informational material that applies to §60.20. Logging FFS Discrepancies.

16. INTERIM QUALIFICATION OF SIMULATORS FOR NEW AIRPLANE TYPES OR MODELS (§60.21)

There is no additional regulatory or informational material that applies to §60.21, Interim Qualification of FFSs for New Airplane Types or Models.

17. MODIFICATIONS TO SIMULATORS (§60.23)

BEGIN QPS REQUIREMENTS

a. The notification described in §60.23(c)(2) must include a complete description of the planned modification, with a description of the operational and engineering effect the proposed modification will have on the operation of the FFS and the results that are expected with the modification incorporated.

b. Prior to using the modified FFS:

(1) All the applicable objective tests completed with the modification incorporated, including any necessary updates to the MQTG (*e.g.*, accomplishment of FSTD Directives) must be acceptable to the NSPM; and

(2) The sponsor must provide the NSPM with a statement signed by the MR that the factors listed in §60.15(b) are addressed by the appropriate personnel as described in that section.

END QPS REQUIREMENTS

BEGIN INFORMATION

FSTD Directives are considered modifications of an FFS. See Attachment 4 for a sample index of effective FSTD Directives.

END INFORMATION

18. OPERATION WITH MISSING, MALFUNCTIONING, OR INOPERATIVE COMPONENTS (§ 60.25)

BEGIN INFORMATION

a. The sponsor's responsibility with respect to § 60.25(a) is satisfied when the sponsor fairly and accurately advises the user of the current status of an FFS, including any missing, malfunctioning, or inoperative (MMI) component(s).

b. If the 29th or 30th day of the 30-day period described in § 60.25(b) is on a Saturday, a Sunday, or a holiday, the FAA will extend the deadline until the next business day.

c. In accordance with the authorization described in § 60.25(b), the sponsor may develop a discrepancy prioritizing system to accomplish repairs based on the level of impact on the capability of the FFS. Repairs having a larger impact on FFS capability to provide the required training, evaluation, or flight experience will have a higher priority for repair or replacement.

END INFORMATION

19. AUTOMATIC LOSS OF QUALIFICATION AND PROCEDURES FOR RESTORATION OF QUALIFICATION (§ 60.27)

BEGIN INFORMATION

If the sponsor provides a plan for how the FFS will be maintained during its out-of-service period (*e.g.*, periodic exercise of mechanical, hydraulic, and electrical systems; routine replacement of hydraulic fluid; control of the environmental factors in which the FFS is to be maintained) there is a greater likelihood that the NSPM will be able to determine the amount of testing required for requalification.

END INFORMATION

20. OTHER LOSSES OF QUALIFICATION AND PROCEDURES FOR RESTORATION OF QUALIFICATION (§ 60.29)

BEGIN INFORMATION

If the sponsor provides a plan for how the FFS will be maintained during its out-of-service period (*e.g.*, periodic exercise of mechanical, hydraulic, and electrical systems; routine replacement of hydraulic fluid; control of the environmental factors in which the FFS is to be maintained) there is a greater likelihood that the NSPM will be able to determine the amount of testing required for requalification.

END INFORMATION

21. RECORDKEEPING AND REPORTING (§ 60.31)

BEGIN QPS REQUIREMENTS

a. FSTD modifications can include hardware or software changes. For FSTD modifications involving software programming changes, the record required by § 60.31(a)(2) must consist of the name of the aircraft system software, aerodynamic model, or engine model change, the date of the change, a summary of the change, and the reason for the change.

b. If a coded form for record keeping is used, it must provide for the preservation and retrieval of information with appropriate security or controls to prevent the inappropriate alteration of such records after the fact.

END QPS REQUIREMENTS

22. APPLICATIONS, LOGBOOKS, REPORTS, AND RECORDS: FRAUD, FALSIFICATION, OR INCORRECT STATEMENTS (§ 60.33)

There are no additional QPS requirements or informational material that apply to § 60.33, Applications, Logbooks, Reports, and Records: Fraud, Falsification, or Incorrect Statements.

23. SPECIFIC FULL FLIGHT SIMULATOR COMPLIANCE REQUIREMENTS (§ 60.35)

There are no additional QPS requirements or informational material that apply to § 60.35, Specific FFS Compliance Requirements.

24. [RESERVED]

25. FSTD QUALIFICATION ON THE BASIS OF A BILATERAL AVIATION SAFETY AGREEMENT (BASA) (§ 60.37)

There are no additional QPS requirements or informational material that apply to § 60.37, FSTD Qualification on the Basis of a Bilateral Aviation Safety Agreement (BASA).

ATTACHMENT 1 TO APPENDIX A TO PART 60—GENERAL SIMULATOR REQUIREMENTS

BEGIN QPS REQUIREMENTS

1. REQUIREMENTS

a. Certain requirements included in this appendix must be supported with a Statement of Compliance and Capability (SOC), which may include objective and subjective tests. The SOC will confirm that the requirement was satisfied, and describe how the requirement was met, such as gear modeling approach or coefficient of friction sources. The requirements for SOCs and tests are indicated in the ''General Simulator Requirements'' column in Table A1A of this appendix.

b. Table A1A describes the requirements for the indicated level of FFS. Many devices include operational systems or functions that exceed the requirements outlined in this section. However, all systems will be tested and evaluated in accordance with this appendix to ensure proper operation.

END QPS REQUIREMENTS

BEGIN INFORMATION

2. DISCUSSION

a. This attachment describes the general simulator requirements for qualifying an airplane FFS. The sponsor should also consult the objective tests in attachment 2 and the examination of functions and subjective tests listed in attachment 3 to determine the complete requirements for a specific level simulator.

b. The material contained in this attachment is divided into the following categories:

(1) General cockpit configuration.

(2) Simulator programming.

(3) Equipment operation.

(4) Equipment and facilities for instructor/evaluator functions.

(5) Motion system.

(6) Visual system.

(7) Sound system.

c. Table A1A provides the standards for the General Simulator Requirements.

END INFORMATION

TABLE A1A—MINIMUM SIMULATOR REQUIREMENTS

<<<QPS requirements>>>		Simulator levels				<Information>
No.	General simulator requirements	A	B	C	D	notes
1. General Cockpit Configuration						
1.a	The simulator must have a cockpit that is a replica of the airplane simulated with controls, equipment, observable cockpit indicators, circuit breakers, and bulkheads properly located, functionally accurate and replicating the airplane. The direction of movement of controls and switches must be identical to the airplane. Pilot seats must allow the occupant to achieve the design ''eye position'' established for the airplane being simulated. Equipment for the operation of the cockpit windows must be included, but the actual windows need not be operable. Additional equipment such as fire axes, extinguishers, and spare light bulbs must be available in the FFS but may be relocated to a suitable location as near as practical to the original position. Fire axes, landing gear pins, and any similar purpose instruments need only be represented in silhouette. An SOC is required.	X	X	X	X	For simulator purposes, the cockpit consists of all that space forward of a cross section of the flight deck at the most extreme aft setting of the pilots' seats, including additional required crewmember duty stations and those required bulkheads aft of the pilot seats. For clarification, bulkheads containing only items such as landing gear pin storage compartments, fire axes or extinguishers, spare light bulbs, and aircraft document pouches are not considered essential and may be omitted.
1.b	Those circuit breakers that affect procedures or result in observable cockpit indications must be properly located and functionally accurate. An SOC is required.	X	X	X	X	
2. Programming						

TABLE A1A—MINIMUM SIMULATOR REQUIREMENTS—Continued

<<<QPS requirements>>>		Simulator levels				<Information>
No.	General simulator requirements	A	B	C	D	notes
2.a	A flight dynamics model that accounts for various combinations of drag and thrust normally encountered in flight must correspond to actual flight conditions, including the effect of change in airplane attitude, thrust, drag, altitude, temperature, gross weight, moments of inertia, center of gravity location, and configuration.	X	X	X	X	
2.b	The simulator must have the computer capacity, accuracy, resolution, and dynamic response needed to meet the qualification level sought. An SOC is required.	X	X	X	X	
2.c	Surface operations must be represented to the extent that allows turns within the confines of the runway and adequate controls on the landing and roll-out from a crosswind approach to a landing.	X				
	A subjective test is required.					
2.d	Ground handling and aerodynamic programming must include the following: An SOC is required.					
2.d.1	Ground effect		X	X	X	Ground effect includes modeling that accounts for roundout, flare, touchdown, lift, drag, pitching moment, trim, and power while in ground effect.
2.d.2	Ground reaction		X	X	X	Ground reaction includes modeling that accounts for strut deflections, tire friction, and side forces. This is the reaction of the airplane upon contact with the runway during landing, and may differ with changes in factors such as gross weight, airspeed, or rate of descent on touchdown.
2.d.3	Ground handling characteristics, including aerodynamic and ground reaction modeling including steering inputs, operations with crosswind, braking, thrust reversing, deceleration, and turning radius.		X	X	X	

TABLE A1A—MINIMUM SIMULATOR REQUIREMENTS—Continued

<<<QPS requirements>>>		Simulator levels				<Information>
No.	General simulator requirements	A	B	C	D	notes
2.e	The simulator must employ windshear models that provide training for recognition of windshear phenomena and the execution of recovery procedures. Models must be available to the instructor/evaluator for the following critical phases of flight: (1) Prior to takeoff rotation. (2) At liftoff. (3) During initial climb. (4) On final approach, below 500 ft AGL. The QTG must reference the FAA Windshear Training Aid or present alternate airplane related data, including the implementation method(s) used. If the alternate method is selected, wind models from the Royal Windshear Training Aerospace Establishment (RAE), the Joint Airport Weather Studies (JAWS) Project and other recognized sources may be implemented, but must be supported and properly referenced in the QTG. Only those simulators meeting these requirements may be used to satisfy the training requirements of part 121 pertaining to a certificate holder's approved low-altitude windshear flight training program as described in § 121.409. Objective tests are required for qualification; see Attachment 2 and Attachment 5 of this appendix.			X	X	If desired, Level A and B simulators may qualify for windshear training by meeting these standards; see Attachment 5 of this appendix. Windshear models may consist of independent variable winds in multiple simultaneous components. The FAA Windshear Training Aid presents one acceptable means of compliance with simulator wind model requirements.
2.f	The simulator must provide for automatic testing of simulator hardware and software programming to determine compliance with simulator objective tests as prescribed in Attachment 2. An SOC is required.			X	X	Automatic ''flagging'' of out-of-tolerance situations is encouraged.
2.g	Relative responses of the motion system, visual system, and cockpit instruments, measured by latency tests or transport delay tests. Motion onset should occur before the start of the visual scene change (the start of the scan of the first video field containing different information) but must occur before the end of the scan of that video field. Instrument response may not occur prior to motion onset. Test results must be within the following limits:					The intent is to verify that the simulator provides instrument, motion, and visual cues that are, within the stated time delays, like the airplane responses. For airplane response, acceleration in the appropriate, corresponding rotational axis is preferred.
2.g.1	300 milliseconds of the airplane response ..... Objective Tests are required.	X	X			
2.g.2	150 milliseconds of the airplane response ..... Objective Tests are required.			X	X	
2.h	The simulator must accurately reproduce the following runway conditions: (1) Dry. (2) Wet. (3) Icy. (4) Patchy Wet. (5) Patchy Icy. (6) Wet on Rubber Residue in Touchdown Zone. An SOC is required. Objective tests are required only for dry, wet, and icy runway conditions; see Attachment 2.			X	X	

TABLE A1A—MINIMUM SIMULATOR REQUIREMENTS—Continued

<<<QPS requirements>>>		Simulator levels				<Information>
No.	General simulator requirements	A	B	C	D	notes
2.i	The simulator must simulate: (1) brake and tire failure dynamics, including antiskid failure. (2) decreased brake efficiency due to high brake temperatures, if applicable. An SOC is required.			X	X	Simulator pitch, side loading, and directional control characteristics should be representative of the airplane.
2.j	The simulator must replicate the effects of airframe icing. A Subjective Test is required.			X	X	
2.k	The aerodynamic modeling in the simulator must include: (1) Low-altitude level-flight ground effect; (2) Mach effect at high altitude; (3) Normal and reverse dynamic thrust effect on control surfaces; (4) Aeroelastic representations; and (5) Nonlinearities due to sideslip. An SOC is required and must include references to computations of aeroelastic representations and of nonlinearities due to sideslip.				X	See Attachment 2, paragraph 4, for further information on ground effect.
2.l	The simulator must have aerodynamic and ground reaction modeling for the effects of reverse thrust on directional control, if applicable. An SOC is required.		X	X	X	
3. Equipment Operation						
3.a	All relevant instrument indications involved in the simulation of the airplane must automatically respond to control movement or external disturbances to the simulated airplane; e.g., turbulence or windshear. Numerical values must be presented in the appropriate units. A subjective test is required.	X	X	X	X	
3.b	Communications, navigation, caution, and warning equipment must be installed and operate within the tolerances applicable for the airplane. A subjective test is required.	X	X	X	X	See Attachment 3 for further information regarding long-range navigation equipment.
3.c	Simulator systems must operate as the airplane systems operate under normal, abnormal, and emergency operating conditions on the ground and in flight. A subjective test is required.	X	X	X	X	
3.d	The simulator must provide pilot controls with control forces and control travel that correspond to the simulated airplane. The simulator must also react in the same manner as in the airplane under the same flight conditions. A objective test is required.	X	X	X	X	
4. Instructor or Evaluator Facilities						

TABLE A1A—MINIMUM SIMULATOR REQUIREMENTS—Continued

<<<QPS requirements>>>		Simulator levels				<Information>
No.	General simulator requirements	A	B	C	D	notes
4.a	In addition to the flight crewmember stations, the simulator must have at least two suitable seats for the instructor/check airman and FAA inspector. These seats must provide adequate vision to the pilot's panel and forward windows. All seats other than flight crew seats need not represent those found in the airplane, but must be adequately secured to the floor and equipped with similar positive restraint devices. A subjective test is required.	X	X	X	X	The NSPM will consider alternatives to this standard for additional seats based on unique cockpit configurations.
4.b	The simulator must have controls that enable the instructor/evaluator to control all required system variables and insert all abnormal or emergency conditions into the simulated airplane systems as described in the sponsor's FAA-approved training program; or as described in the relevant operating manual as appropriate. A subjective test is required.	X	X	X	X	
4.c	The simulator must have instructor controls for environmental conditions including wind speed and direction. A subjective test is required.	X	X	X	X	
4.d	The simulator must provide the instructor or evaluator the ability to present ground and air hazards. A subjective test is required.			X	X	For example, another airplane crossing the active runway or converging airborne traffic.
5. Motion System						
5.a	The simulator must have motion (force) cues perceptible to the pilot that are representative of the motion in an airplane. A subjective test is required.	X	X	X	X	For example, touchdown cues should be a function of the rate of descent (RoD) of the simulated airplane.
5.b	The simulator must have a motion (force cueing) system with a minimum of three degrees of freedom (at least pitch, roll, and heave). An SOC is required.	X	X			
5.c	The simulator must have a motion (force cueing) system that produces cues at least equivalent to those of a six-degrees-of-freedom, synergistic platform motion system (i.e., pitch, roll, yaw, heave, sway, and surge). An SOC is required.			X	X	
5.d	The simulator must provide for the recording of the motion system response time. An SOC is required.	X	X	X	X	
5.e	The simulator must provide motion effects programming to include: (1) Thrust effect with brakes set. (2) Runway rumble, oleo deflections, effects of ground speed, uneven runway, centerline lights, and taxiway characteristics. (3) Buffets on the ground due to spoiler/speedbrake extension and thrust reversal. (4) Bumps associated with the landing gear. (5) Buffet during extension and retraction of landing gear. (6) Buffet in the air due to flap and spoiler/speedbrake extension. (7) Approach-to-Stall buffet.		X	X	X	

TABLE A1A—MINIMUM SIMULATOR REQUIREMENTS—Continued

<<<QPS requirements>>>		Simulator levels				<Information>
No.	General simulator requirements	A	B	C	D	notes
	(8) Representative touchdown cues for main and nose gear. (9) Nosewheel scuffing, if applicable. (10) Mach and maneuver buffet. A subjective test is required.					
5.f	The simulator must provide characteristic motion vibrations that result from operation of the airplane if the vibration marks an event or airplane state that can be sensed in the cockpit. A objective test is required.				X	The simulator should be programmed and instrumented in such a manner that the characteristic buffet modes can be measured and compared to airplane data.
6. Visual System						
6.a	The simulator must have a visual system providing an out-of-the-cockpit view. A subjective test is required.	X	X	X	X	
6.b	The simulator must have operational landing lights for night scenes. Where used, dusk (or twilight) scenes require operational landing lights. A subjective test is required.	X	X	X	X	
6.c	The simulator must have instructor controls for the following: (1) Cloudbase. (2) Visibility in statute miles (km) and runway visual range (RVR) in ft. (m). (3) Airport selection. (4) Airport lighting. A subjective test is required.	X	X	X	X	
6.d	Each airport scene displayed must include the following: (1) Airport runways and taxiways. (2) Runway definition. (i) Runway surface and markings. (ii) Lighting for the runway in use, including runway threshold, edge, centerline, touchdown zone, VASI or PAPI, and approach lighting of appropriate colors, as appropriate. (iii) Taxiway lights. A subjective test is required.	X	X	X	X	
6.e	The distances at which runway features are visible, as measured from runway threshold to an airplane aligned with the runway on an extended 3° glide slope must not be less than listed below: (1) Runway definition, strobe lights, approach lights, runway edge white lights VASI or PAPI system lights from 5 statute miles (8 kilometers (km)) of the runway threshold. (2) Runway centerline lights and taxiway definition from 3 statute miles (4.8 km). (3) Threshold lights and touchdown zone lights from 2 statute miles (3.2 km). (4) Runway markings within range of landing lights for night scenes and as required by three (3) arc-minutes resolution on day scenes. A subjective test is required.	X	X	X	X	
6.f	The simulator must provide visual system compatibility with dynamic response programming. A subjective test is required.	X	X	X	X	

TABLE A1A—MINIMUM SIMULATOR REQUIREMENTS—Continued

<<<QPS requirements>>>		Simulator levels				<Information>
No.	General simulator requirements	A	B	C	D	notes
6.g	The simulator must show that the segment of the ground visible from the simulator flight deck is the same as from the airplane flight deck (within established tolerances) when at the correct airspeed, in the landing configuration, at a main wheel height of 100 feet (30 meters) above the touchdown zone, and with visibility of 1,200 ft (350 m) RVR. An SOC is required. An objective test is required.	X	X	X	X	This will show the modeling accuracy of RVR, glideslope, and localizer for a given weight, configuration, and speed within the airplane's operational envelope for a normal approach and landing.
6.h	The simulator must provide visual cues necessary to assess sink rates (provide depth perception) during takeoffs and landings, to include: (1) Surface on runways, taxiways, and ramps. (2) Terrain features. A subjective test is required.		X	X	X	
6.i	The simulator must provide for accurate portrayal of the visual environment relating to the simulator attitude. A subjective test is required.	X	X	X	X	Visual attitude vs. simulator attitude is a comparison of pitch and roll of the horizon as displayed in the visual scene compared to the display on the attitude indicator.
6.j	The simulator must provide for quick confirmation of visual system color, RVR, focus, and intensity. An SOC is required. A subjective test is required.			X	X	
6.k	The simulator must provide a minimum of three airport scenes including: (1) Surfaces on runways, taxiways, and ramps. (2) Lighting of appropriate color for all runways, including runway threshold, edge, centerline, VASI or PAPI, and approach lighting for the runway in use. (3) Airport taxiway lighting. (4) Ramps and buildings that correspond to the sponsor's Line Oriented scenarios, as appropriate. A subjective test is required.			X	X	
6.l	The simulator must be capable of producing at least 10 levels of occulting. A subjective test is required.			X	X	
6.m	Night Visual Scenes. When used in training, testing, or checking activities, the simulator must provide night visual scenes with sufficient scene content to recognize the airport, the terrain, and major landmarks around the airport. The scene content must allow a pilot to successfully accomplish a visual landing. Scenes must include a definable horizon and typical terrain characteristics such as fields, roads and bodies of water and surfaces illuminated by airplane landing lights.	X	X	X	X	

TABLE A1A—MINIMUM SIMULATOR REQUIREMENTS—Continued

<<<QPS requirements>>>		Simulator levels				<Information>
No.	General simulator requirements	A	B	C	D	notes
6.n	Dusk (or Twilight) Visual Scenes. When used in training, testing, or checking activities, the simulator must provide dusk (or twilight) visual scenes with sufficient scene content to recognize the airport, the terrain, and major landmarks around the airport. The scene content must allow a pilot to successfully accomplish a visual landing. Scenes must include a definable horizon and typical terrain characteristics such as fields, roads and bodies of water and surfaces illuminated by airplane landing lights. An SOC is required. A subjective test is required.			X	X	
6.o	Daylight Visual Scenes. The simulator must have night dusk (twilight), and daylight visual scenes with sufficient scene content to recognize the airport, the terrain, and major landmarks around the airport. The scene content must allow a pilot to successfully accomplish a visual landing. Any ambient lighting must not ''washout'' the displayed visual scene. Note: These requirements are applicable to any level of simulator equipped with a ''daylight'' visual system. An SOC is required. A subjective test is required.				X	Brightness capability may be demonstrated with a test pattern of white light using a spot photometer. Daylight visual system is defined as a visual system capable of producing, at a minimum, full color presentations, scene content comparable in detail to that produced by 4,000 edges or 1,000 surfaces for daylight and 4,000 lightpoints for night and dusk scenes, 6 foot-lamberts (20 cd/m^2) of light measured at the pilot's eye position (highlight brightness) and a display which is free of apparent quantization and other distracting visual effects while the simulator is in motion.
6.p	The simulator must provide operational visual scenes that portray physical relationships known to cause landing illusions to pilots. A subjective test is required.				X	For example: short runways, landing approaches over water, uphill or downhill runways, rising terrain on the approach path, unique topographic features.
6.q	The simulator must provide special weather representations of light, medium, and heavy precipitation near a thunderstorm on takeoff and during approach and landing. Representations need only be presented at and below an altitude of 2,000 ft. (610 m) above the airport surface and within 10 miles (16 km) of the airport. A subjective test is required.				X	
6.r	The simulator must present visual scenes of wet and snow-covered runways, including runway lighting reflections for wet conditions, partially obscured lights for snow conditions, or suitable alternative effects. A subjective test is required.				X	
6.s	The simulator must present realistic color and directionality of all airport lighting. A subjective test is required.				X	
7. Sound System						
7.a	The simulator must provide cockpit sounds that result from pilot actions that correspond to those that occur in the airplane.	X	X	X	X	

TABLE A1A—MINIMUM SIMULATOR REQUIREMENTS—Continued

<<<QPS requirements>>>		Simulator levels				<Information>
No.	General simulator requirements	A	B	C	D	notes
7.b	The simulator must accurately simulate the sound of precipitation, windshield wipers, and other significant airplane noises perceptible to the pilot during normal operations, and include the sound of a crash (when the simulator is landed in an unusual attitude or in excess of the structural gear limitations); normal engine and thrust reversal sounds; and the sounds of flap, gear, and spoiler extension and retraction. An SOC is required. A subjective test is required.			X	X	
7.c	The simulator must provide realistic amplitude and frequency of cockpit noises and sounds. Simulator performance must be recorded, compared to amplitude and frequency of the same sounds recorded in the airplane, and be made a part of the QTG. Objective tests are required.				X	

TABLE A1B [RESERVED]

ATTACHMENT 2 TO APPENDIX A TO PART 60—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TEST

BEGIN INFORMATION

1. For the purposes of this attachment, the flight conditions specified in the Flight Conditions Column of Table A2A, are defined as follows:

(a) Ground—on ground, independent of airplane configuration;

(b) Take-off—gear down with flaps/slats in any certified takeoff position;

(c) First segment climb— gear down with flaps/slats in any certified takeoff position (normally not above 50 ft AGL);

(d) Second segment climb—gear up with flaps/slats in any certified takeoff position (normally between 50 ft and 400 ft AGL);

(e) Clean—flaps/slats retracted and gear up;

(f) Cruise—clean configuration at cruise altitude and airspeed;

(g) Approach—gear up or down with flaps/slats at any normal approach position as recommended by the airplane manufacturer; and

(h) Landing—gear down with flaps/slats in any certified landing position.

2. The format for numbering the objective tests in appendix A, Attachment 2, Table A2A, and the objective tests in appendix B, Attachment 2, Table B2A, is identical. However, each test required for FFSs is not necessarily required for FTDs. Also, each test required for FTDs is not necessarily required for FFSs. Therefore, when a test number (or series of numbers) is not required, the term ''Reserved'' is used in the table at that location. Following this numbering format provides a degree of commonality between the two tables and substantially reduces the potential for confusion when referring to objective test numbers for either FFSs or FTDs.

3. The QPS Requirements section imposes a duty on the sponsor or other data provider to ensure that a steady state condition exists at the instant of time captured by the ''snapshot'' for cases where the objective test results authorize a ''snapshot test'' or a ''series of snapshot tests'' results in lieu of a time-history. This is often verified by showing that a steady state condition existed from some period prior to, through some period following, the snap shot. The time period most frequently used is from 5 seconds prior through 2 seconds following the instant of time captured by the snap shot. Other time periods may be acceptable as authorized by the NSPM.

4. The reader is encouraged to review the Airplane Flight Simulator Evaluation Handbook, Volumes I and II, published by the Royal Aeronautical Society, London, UK, and FAA Advisory Circulars (AC) 25–7, as may be amended, Flight Test Guide for Certification of Transport Category Airplanes, and (AC) 23–8, as may be amended, Flight Test Guide for Certification of Part 23 Airplanes, for references and examples regarding flight testing requirements and techniques.

5. If relevant winds are present in the objective data, the wind vector should be clearly noted as part of the data presentation, expressed in conventional terminology, and related to the runway being used for the test.

END INFORMATION

BEGIN QPS REQUIREMENTS

1. TEST REQUIREMENTS

a. The ground and flight tests required for qualification are listed in Table of A2A, FFS Objective Tests. Computer generated simulator test results must be provided for each test except where an alternative test is specifically authorized by the NSPM. If a flight condition or operating condition is required for the test but does not apply to the airplane being simulated or to the qualification level sought, it may be disregarded (e.g., an engine out missed approach for a single-engine airplane or a maneuver using reverse thrust for an airplane without reverse thrust capability). Each test result is compared against the validation data described in §60.13 and in this appendix. Although use of a driver program designed to automatically accomplish the tests is encouraged for all simulators and required for Level C and Level D simulators, it must be possible to conduct each test manually while recording all appropriate parameters. The results must be produced on an appropriate recording device acceptable to the NSPM and must include simulator number, date, time, conditions, tolerances, and appropriate dependent variables portrayed in comparison to the validation data. Time histories are required unless otherwise indicated in Table A2A. All results must be labeled using the tolerances and units given.

b. Table A2A in this attachment sets out the test results required, including the parameters, tolerances, and flight conditions for simulator validation. Tolerances are provided for the listed tests because mathematical modeling and acquisition and development of reference data are often inexact. All tolerances listed in the following tables are applied to simulator performance. When two tolerance values are given for a parameter, the less restrictive may be used unless otherwise indicated.

c. Certain tests included in this attachment must be supported with a Statement of Compliance and Capability (SOC). In Table A2A, requirements for SOCs are indicated in the ''Test Details'' column.

d. When operational or engineering judgment is used in making assessments for flight test data applications for simulator validity, such judgment must not be limited to a single parameter. For example, data that exhibit rapid variations of the measured parameters may require interpolations or a ''best fit'' data selection. All relevant parameters related to a given maneuver or flight condition must be provided to allow overall interpretation. When it is difficult or impossible to match simulator to airplane data throughout a time history, differences must be justified by providing a comparison of other related variables for the condition being assessed.

e. It is not acceptable to program the FFS so that the mathematical modeling is correct only at the validation test points. Unless otherwise noted, simulator tests must represent airplane performance and handling qualities at operating weights and centers of gravity (CG) typical of normal operation. If a test is supported by airplane data at one extreme weight or CG, another test supported by airplane data at mid-conditions or as close as possible to the other extreme must be included, except as may be authorized by the NSPM. Certain tests that are relevant only at one extreme CG or weight condition need not be repeated at the other extreme. Tests of handling qualities must include validation of augmentation devices.

f. When comparing the parameters listed to those of the airplane, sufficient data must also be provided to verify the correct flight condition and airplane configuration changes. For example, to show that control force is within the parameters for a static stability test, data to show the correct airspeed, power, thrust or torque, airplane configuration, altitude, and other appropriate datum identification parameters must also be given. If comparing short period dynamics, normal acceleration may be used to establish a match to the airplane, but airspeed, altitude, control input, airplane configuration, and other appropriate data must also be given. If comparing landing gear change dynamics, pitch, airspeed, and altitude may be used to establish a match to the airplane, but landing gear position must also be provided. All airspeed values must be properly annotated (e.g., indicated versus calibrated). In addition, the same variables must be used for comparison (e.g., compare inches to inches rather than inches to centimeters).

g. The QTG provided by the sponsor must clearly describe how the simulator will be set up and operated for each test. Each simulator subsystem may be tested independently, but overall integrated testing of the simulator must be accomplished to assure that the total simulator system meets the prescribed standards. A manual test procedure with explicit and detailed steps for completing each test must also be provided.

h. In those cases where the objective test results authorize a ''snapshot test'' or ''a series of snapshot test'' results in lieu of a time-history result, the sponsor or other data provider must ensure that a steady state condition exists at the instant of time captured by the ''snapshot.''

i. For previously qualified simulators, the tests and tolerances of this attachment may be used in subsequent continuing qualification evaluations for any given test if the sponsor has submitted a proposed MQTG revision to the NSPM and has received NSPM approval.

j. Simulators are evaluated and qualified with an engine model simulating the airplane data supplier's flight test engine. For qualification of alternative engine models (either variations of the flight test engines or other manufacturer's engines) additional tests with the alternative engine models may be required. This Attachment contains guidelines for alternative engines.

k. For testing Computer Controlled Airplane (CCA) simulators, or other highly augmented airplane simulators, flight test data is required for the Normal (N) and/or Non-normal (NN) control states, as indicated in this Attachment. Where test results are independent of control state, Normal or Non-normal control data may be used. All tests in Table A2A require test results in the Normal control state unless specifically noted otherwise in the Test Details section following the CCA designation. The NSPM will determine what tests are appropriate for airplane simulation data. When making this determination, the NSPM may require other levels of control state degradation for specific airplane tests. Where Non-normal control states are required, test data must be provided for one or more Non-normal control states, and must include the least augmented state. Where applicable, flight test data must record Normal and Non-normal states for:

(1) Pilot controller deflections or electronically generated inputs, including location of input; and

(2) Flight control surface positions unless test results are not affected by, or are independent of, surface positions.

l. Tests of handling qualities must include validation of augmentation devices. FFSs for highly augmented airplanes will be validated both in the unaugmented configuration (or failure state with the maximum permitted degradation in handling qualities) and the augmented configuration. Where various levels of handling qualities result from failure states, validation of the effect of the failure is necessary. Requirements for testing will be mutually agreed to between the sponsor and the NSPM on a case-by-case basis.

m. Some tests will not be required for airplanes using airplane hardware in the simulator cockpit (*e.g.*, ''side stick controller''). These exceptions are noted in Section 2 ''Handling Qualities'' in Table A2A of this attachment. However, in these cases, the sponsor must provide a statement that the airplane hardware meets the appropriate manufacturer's specifications and the sponsor must have supporting information to that fact available for NSPM review.

n. For objective test purposes, ''Near maximum'' gross weight is a weight chosen by the sponsor or data provider that is not less than the basic operating weight (BOW) of the airplane being simulated plus 80% of the difference between the maximum certificated gross weight (either takeoff weight or landing weight, as appropriate for the test) and the BOW. ''Light'' gross weight is a weight chosen by the sponsor or data provider that is not more than 120% of the BOW of the airplane being simulated or as limited by the minimum practical operating weight of the test airplane. ''Medium'' gross weight is a weight chosen by the sponsor or data provider that is approximately ±10% of the average of the numerical values of the BOW and the maximum certificated gross weight. (NOTE: BOW is the empty weight of the aircraft plus the weight of the following: normal oil quantity; lavatory servicing fluid; potable water; required crewmembers and their baggage; and emergency equipment. (References: Advisory Circular 120–27, ''Aircraft Weight and Balance;'' and FAA–H–8083–1, ''Aircraft Weight and Balance Handbook.'').

END QPS REQUIREMENTS

TABLE A2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS

<<<QPS REQUIREMENTS>>>										Information notes
Test		Tolerance	Flight Conditions	Test details	Simulator Level					
No.	Title				A	B	C	D		
1. Performance										
1.a.	**Taxi**									
1.a.1	Minimum Radius Turn	±3 ft (0.9 m) or 20% of airplane turn radius.	Ground	Record both Main and Nose gear turning radius. This test is to be accomplished without the use of brakes and only minimum thrust, except for airplanes requiring asymmetric thrust or braking to turn.		X	X	X		
1.a.2	Rate of Turn vs. Nosewheel Steering Angle (NWA).	±10% or ±2% sec. turn rate	Ground	Record a minimum of two speeds, greater than minimum turning radius speed, with a spread of at least 5 knots groundspeed.		X	X	X		

1.b	Takeoff			All commonly used takeoff flap settings are to be demonstrated at least once in the tests for minimum unstick (1.b.3.), normal takeoff (1.b.4.), critical engine failure on takeoff (1.b.5.), or crosswind takeoff (1.b.6.).					
1.b.1	Ground Acceleration Time andDistance.	±5% time and distance or ±5% time and ±200 ft (61 m) of distance.	Takeoff	Record acceleration time and distance for a minimum of 80% of the time from brake release to V_R. Preliminary aircraft certification data may be used.	X	X	X	X	May be combined with normal takeoff (1.b.4.) or rejected takeoff (1.b.7.). Plotted data should be shown using appropriate scales for each portion of the maneuver.

TABLE A2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS—Continued

<<<QPS REQUIREMENTS>>>									Information notes
Test		Tolerance	Flight Conditions	Test details	Simulator Level				
No.	Title				A	B	C	D	
1.b.2	Minimum Control Speed—ground (V_{mcg}) using aerodynamic controls only (per applicable airworthiness standard or alternative) or engine inoperative test to demonstrate ground control characteristics.	±25% of maximum airplane lateral deviation or ±5 ft (1.5 m). Additionally, for those simulators of airplanes with reversible flight control systems: Rudder pedal force; ±10% or ±5 lb (2.2 daN).	Takeoff	Engine failure speed must be within ±1 knot of airplane engine failure speed. Engine thrust decay must be that resulting from the mathematical model for the engine variant applicable to the full flight simulator under test. If the modeled engine is not the same as the airplane manufacturer's flight test engine, a further test may be run with the same initial conditions using the thrust from the flight test data as the driving parameter.	X	X	X	X	If a V_{mcg} test is not available an acceptable alternative is a flight test snap engine deceleration to idle at a speed between $V_1$1 and V_1—10 knots, followed by control of heading using aerodynamic control only. Recovery should be achieved with the main gear on the ground. To ensure only aerodynamic control is used, nosewheel steering should be disabled (i.e., castored) or the nosewheel held slightly off the ground.

1.b.3	Minimum Unstick Speed (V_{mu}) or equivalent test to demonstrate early rotation takeoff characteristics.	±3 kts airspeed, ±1.5° pitch angle.	Takeoff	Record main landing gear strut compression or equivalent air/ground signal. Record from 10 kt before start of rotation until at least 5 seconds after the occurrence of main gear lift-off.	X	X	X	X	V_{mu} is defined as the minimum speed at which the last main landing gear leaves the ground. Main landing gear strut compression or equivalent air/ground signal should be recorded. If a V_{mu} test is not available, alternative acceptable flight tests are a constant high-attitude take-off run through main gear lift-off of an early rotation take-off.

TABLE A2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS—Continued

<<<QPS REQUIREMENTS>>>

Test		Tolerance	Flight Conditions	Test details	Simulator Level				Information notes
No.	Title				A	B	C	D	
1.b.4	Normal Takeoff	±3 kts airspeed, ±1.5° pitch angle, ±1.5° angle of attack, ±20 ft (6 m) height. Additionally, for those simulators of airplanes with reversible flight control systems: Stick/Column Force; ±10% or ± 5 lb (2.2 daN).	Takeoff	Record takeoff profile from brake release to at least 200 ft (61 m) above ground level (AGL). If the airplane has more than one certificated takeoff configuration, a different configuration must be used for each weight. Data are required for a takeoff weight at near maximum takeoff weight with a mid-center of gravity and for a light takeoff weight with an aft center of gravity, as defined in appendix F.	X	X	X	X	This test may be used for ground acceleration time and distance (1.b.1.). Plotted data should be shown using appropriate scales for each portion of the maneuver.

1.b.5	Critical Engine Failure on Takeoff.	±3 kts airspeed, ±1.5° pitch angle, ±1.5° angle of attack, ±20 ft (6 m) height, ±3° heading angle, ±2° bank angle, ±2° sideslip angle. Additionally, for those simulators of airplanes with reversible flight control systems: Stick/Column Force; ±10% or ±5 lb (2.2 daN); Wheel Force; ±10% or ±3 lb (1.3 daN); and Rudder Pedal Force; ±10% or ±5 lb (2.2 daN).	Takeoff	Record takeoff profile at near maximum takeoff weight from prior to engine failure to at least 200 ft (61 m) AGL. Engine failure speed must be within ±3 kts of airplane data.	X	X	X	X	
1.b.6	Crosswind Takeoff	±3 kts airspeed, ±1.5° pitch angle, ±1.5° angle of attack, ±20 ft (6 m) height, ±2° bank angle, ±2° sideslip angle; ±3° heading angle. Additionally, for those simulators of airplanes with reversible flight control systems: Stick/Column Force; ±10% or ±5 lb (2.2 daN) stick/column force, ±10% or ±3 lb (1.3 daN) wheel force, ±10% or ±5 lb (2.2 daN) rudder pedal force.	Takeoff	Record takeoff profile from brake release to at least 200 ft (61 m) AGL. Requires test data, including information on wind profile for a crosswind component of at least 60% of the maximum demonstrated in the Airplane Flight Manual (AFM), as measured at 33 ft (10 m) above the runway.	X	X	X	X	In those situations where a maximum crosswind or a maximum demonstrated crosswind is not included in the AFM, contact the NSPM.

TABLE A2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS—Continued

<<<QPS REQUIREMENTS>>>									Information notes
Test		Tolerance	Flight Conditions	Test details	Simulator Level				
No.	Title				A	B	C	D	
1.b.7	Rejected Takeoff	±5% time or ±1.5 sec, ±7.5% distance or ±250 ft (±76 m).	Takeoff	Record time and distance from brake release to full stop. Speed for initiation of the reject must be at least 80% of V_1 speed. The airplane must be at or near the maximum takeoff gross weight. Use maximum braking effort, auto or manual.	X	X	X	X	Autobrakes will be used where applicable.
1.b.8	Dynamic Engine Failure After Takeoff.	±20% or ±2°/sec body angular rates.	Takeoff	Engine failure speed must be within ±3 kts of airplane data. Record Hands Off from 5 secs. before to at least 5 secs. after engine failure or 30° Bank, whichever occurs first. Engine failure may be a snap deceleration to idle. (**CCA:** Test in Normal and Non-normal control state.).			X	X	For safety considerations, airplane flight test may be performed out of ground effect at a safe altitude, but with correct airplane configuration and airspeed.
1.c.	Climb								

1.c.1	Normal Climb, all engines operating.	±3 kts airspeed, ±5% or ±100 FPM (0.5 m/Sec.) climb rate.	Clean	Flight test data is preferred, however, airplane performance manual data is an acceptable alternative. Record at nominal climb speed and mid-initial climb altitude. Flight simulator performance must be recorded over an interval of at least 1,000 ft. (300m).	X	X	X	X
1.c.2	One engine Inoperative	±3 kts airspeed, ±5% or ±100 FPM (0.5 m/Sec.) climb rate, but not less than the FAA-Apprioved Airplane Flight Manual (AFM) values.	For part 23 airplanes, in accordance with part 23. For part 25 airplanes, Second Segment Climb.	Flight test data is preferred, however, airplane performance manual data is an acceptable alternative. Test at weight, altitude, or temperature limiting conditions. Record at nominal climb speed. Flight simulator performance must be recorded over an interval of at least 1,000 ft. (300m).	X	X	X	X
1.c.3	One Engine Inoperative En route Climb.	±10% time, ±10% distance, ±10% fuel used.	Clean	Record results for at least a 5000 ft (1550 m) climb segment. Flight test data or airplane performance manual data may be used.			X	X

TABLE A2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS—Continued

<<<QPS REQUIREMENTS>>>									Information notes
Test		Tolerance	Flight Conditions	Test details	Simulator Level				
No.	Title				A	B	C	D	
1.c.4	One Engine Inoperative Approach Climb (if the approved AFM requires specific performance in icing conditions).	±3 kts airspeed, ±5% or ±100 FPM (0.5 m/Sec.) climb rate, but not less than the climb gradient requirements of 14 CFR parts 23 or 25 climb gradient, as appropriate.	Approach	Record results at near maximum gross landing weight as defined in appendix F. Flight test data or airplane performance manual data may be used. Flight simulator performance must be recorded over an interval of at least 1,000 ft. (300m).	X	X	X	X	The airplane should be configured with all anti-ice and de-ice systems operating normally, with the gear up and go-around flaps set. All icing accountability considerations should be applied in accordance with the AFM for an approach in icing conditions.
1.d	Cruise/Descent								
1.d.1	Level flight acceleration	±5% Time	Cruise	Record results for a minimum of 50 kts speed increase using maximum continuous thrust rating or equivalent.	X	X	X	X	
1.d.2	Level flight deceleration	±5% Time	Cruise	Record results for a minimum of 50 kts speed decrease using idle power.	X	X	X	X	

1.d.3	Cruise performance	±0.05 EPR or ±5% of N_1, or ±5% of Torque, ±5% of fuel flow.	Cruise	May be a single snapshot showing instantaneous fuel flow or a minimum of 2 consecutive snapshots with a spread of at least 3 minutes in steady flight.			X	X
1.e	Stopping							
1.e.1	Stopping time and distance, using manual application of wheel brakes and no reverse thrust on a dry runway.	±5% of time. For distance up to 4000 ft (1220 m): ±200 ft (61 m) or ±10%, whichever is smaller. For distance greater than 4000 ft (1220 m): ±5% of distance.	Landing	Record time and distance for at least 80% of the total time from touch down to full stop. Data is required for weights at medium and near maximum landing weights. Data for brake system pressure and position of ground spoilers (including method of deployment, if used) must be provided. Engineering data may be used for the medium gross weight condition.	X	X	X	X

TABLE A2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS—Continued

<<<QPS REQUIREMENTS>>>									Information notes
Test		Tolerance	Flight Conditions	Test details	Simulator Level				
No.	Title				A	B	C	D	
1.e.2	Stopping time and distance, using reverse thrust and no wheel brakes on a dry runway.	±5% time and the smaller of ±10% or ±200 ft (61 m) of distance.	Landing	Record time and distance for at least 80% of the total time from initiation of reverse thrust to the minimum operating speed with full reverse thrust. Data is required for medium and near maximum landing gross weights. Data on the position of ground spoilers, (including method of deployment, if used) must be provided. Engineering data may be used for the medium gross weight condition.	X	X	X	X	

1.e.3	Stopping distance, using wheel brakes and no reverse thrust on a wet runway.	±10% of distance or ±200 ft (61 m).	Landing	Either flight test data or manufacturer's performance manual data must be used where available. Engineering data based on dry runway flight test stopping distance modified by the effects of contaminated runway braking coefficients are an acceptable alternative.		X	X
1.e.4	Stopping distance, using wheel brakes and no reverse thrust on an icy runway.	±10% of distance or ±200 ft (61 m).	Landing	Either flight test or manufacturer's performance manual data must be used, where available. Engineering data based on dry runway flight test stopping distance modified by the effects of contaminated runway braking coefficients are an acceptable alternative.		X	X
1.f	Engines						

TABLE A2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS—Continued

Test		Tolerance	Flight Conditions	Test details	Simulator Level				Information notes
					A	B	C	D	
<<<QPS REQUIREMENTS>>>									
No.	Title								
1.f.1	Acceleration	±10% T_t and ±10% T_i, or ±0.25 sec.	Approach or landing	Record engine power (N_1, N_2, EPR, Torque) from flight idle to go-around power for a rapid (slam) throttle movement.	X	X	X	X	T_i is the total time from initial throttle movement until reaching a 10% response of engine power. T_t is the total time from initial throttle movement to reaching 90% of go around power.
1.f.2	Deceleration	±10% T_t and ±10% T_i, or ±0.25 sec.	Ground	Record engine power (N_1, N_2, EPR, Torque) from Max T/O power to 90% decay of Max T/O power for a rapid (slam) throttle movement.					T_i is the total time from initial throttle movement until reaching a 10% response of engine power. T_t is the total time from initial throttle movement to reaching 90% decay of maximum takeoff power.
2. Handling Qualities									

	For simulators requiring Static or Dynamic tests at the controls (i.e., column, wheel, rudder pedal), special test fixtures will not be required during initial or upgrade evaluations if the sponsor's QTG/MQTG shows both text fixture results *and* the results of an alternative approach, such as computer plots produced concurrently, that provide satisfactory agreement. Repeat of the alternative method during the initial or upgrade evaluation would then satisfy this test requirement. For initial and upgrade evaluations, the control dynamic characteristics must be measured at and recorded directly from the cockpit controls, and must be accomplished in takeoff, cruise, and landing flight conditions and configurations. Testing of position versus force is not applicable if forces are generated solely by use of airplane hardware in the full flight simulator								Contact the NSPM for clarification of any issue regarding airplanes with reversible controls.
2.a	Static Control Tests								
2.a.1.a	Pitch Controller Position vs. Force and Surface Position Calibration.	±2 lb (0.9 daN) breakout, ±10% or ±5 lb (2.2 daN) force, ±2° elevator.	Ground	Record results for an uninterrupted control sweep to the stops.	X	X	X	X	Test results should be validated (where possible) with in-flight data from tests such as longitudinal static stability or stalls. Static and dynamic flight control tests should be accomplished at the same feel or impact pressures.
2.a.1.b	(Reserved)								
2.a.2.a	Roll Controller Position vs. Force Surface Position Calibration.	±2 lb (0.9 daN) breakout, ±10% or ±3 lb (1.3 daN) force, ±2° aileron, ±3° spoiler angle.	Ground	Record results for an uninterrupted control sweep to the stops.	X	X	X	X	Test results should be validated with in-flight data from tests such as engine out trims, steady state or sideslips. Static and dynamic flight control tests should be accomplished at the same feel or impact pressures.
2.a.2.b. ...	(Reserved).								

TABLE A2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS—Continued

<<<QPS REQUIREMENTS>>>									Information notes
Test		Tolerance	Flight Conditions	Test details	Simulator Level				
No.	Title				A	B	C	D	
2.a.3.a. ...	Rudder Pedal Position vs. Force and Surface Position Calibration.	±5 lb (2.2 daN) breakout, ±10% or ±5 lb (2.2 daN) force, ±2½ rudder angle.	Ground	Record results for an uninterrupted control sweep to the stops.	X	X	X	X	Test results should be validated with in-flight data from tests such as engine out trims, steady state or sideslips. Static and dynamic flight control tests should be accomplished at the same feel or impact pressures.
2.a.3.b. ...	(Reserved).								
2.a.4	Nosewheel Steering Controller Force & Position Calibration.	±2 lb (0.9 daN) breakout, ±10% or ±3 lb (1.3 daN) force, ±2½ nosewheel angle.	Ground	Record results for an uninterrupted control sweep to the stops.	X	X	X	X	
2.a.5	Rudder Pedal Steering Calibration.	±°nosewheel angle	Ground	Record results for an uninterrupted control sweep to the stops.	X	X	X	X	
2.a.6	Pitch Trim Indicator vs. Surface Position Calibration.	±0.5° of computed trim surface angle.	Ground	.....	X	X	X	X	The purpose of the test is to compare full flight simulator against design data or equivalent
2.a.7	(Reserved)	.							

2.a.8	Alignment of Cockpit Throttle Lever vs. Selected Engine Parameter.	±5° of throttle lever angle, or ±3% N1 or ±03 EPR, or ± torque. For propeller-driven airplanes where the propeller control levers do not have angular travel, a tolerance of ±0.8 inch (±2 cm.) applies.	Ground	Requires simultaneous recording for all engines. The tolerances apply against airplane data and between engines. In the case of propeller powered airplanes, if a propeller lever is present, it must also be checked. For airplanes with throttle "detents," all detents must be presented. May be a series of snapshot test results..	X	X	X	X	
2.a.9	Brake Pedal Position vs. Force and Brake System Pressure Calibation.	±5 lb (2.2 daN) or 10% force, ±150 psi (1.0 MPa) or ±10% brake system pressure.	Ground	Hydraulic system pressure must be related to pedal position through a ground static test.	X	X	X	X	Full flight simulator computer output results may be used to show compliance.
2.b	Dynamic Control Tests.								
	(3) Tests 2.b.1., 2.b.2., and 2.b.3 are not applicable if dynamic response is generated solely by use of airplane hardware in the full flight simulator. Power setting is that required for level flight unless otherwise specified.								

TABLE A2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS—Continued

<<<QPS REQUIREMENTS>>>									Information notes
Test		Tolerance	Flight Conditions	Test details	Simulator Level				
No.	Title				A	B	C	D	
2.b.1	Pitch Control	For underdamped systems ±10% of time from 90% of initial displacement (0.9 A_d) to first zero crossing and ±10 (n+1)% of period thereafter ±10% amplitude of first overshoot applied to all overshoots greater than 5% of initial displacement (.05 A_d). ±1 overshoot (first significant overshoot must be matched). For overdamped systems: ±10% of time from 90% of initial displacement (0.9 A_d) to 10% of initial displacement (0.1 A_d)	Takeoff, Cruise, and Landing.	Data must show normal control displacement in both directions. Tolerances apply against the absolute values of each period (considered independently). Normal control displacement for this test is 25% to 50% of the maximum allowable pitch controller deflection for flight conditions limited by the maneuvering load envelope.			X	X	"n" is the sequential period of a full cycle of oscillation. Refer to paragraph 3 of this attachment for more information. Static and dynamic flight control tests should be accomplished at the same feel or impact pressures. For the alternate method (see paragraph 3 of this attachment). The slow sweep is the equivalent to the static test 2.a.1. For the moderate and rapid sweeps: ±2 lb (0.9 daN) or ±10% dynamic increment above the static force.

2.b.2	Roll Control	For underdamped systems: ±10% of time from 90% of initial displacement (0.9 A_d) to first zero crossing, and ±10 (n+1)% of period thereafter. ±10% amplitude of first overshoot, applied to all overshoots greater than 5% of initial displacement (.05 A_d), ±1 overshoot (first significant overshoot must be matched) For overdamped systems: ±10% of time from 90% of initial displacement (0.9 A_d) to 10% of initial displacement (0.1 A_d)	Takeoff, Cruise, and Landing.	Data must show normal control displacement in both directions. Tolerances apply against the absolute values of each period (considered independently). Normal control displacement for this test is 25% to 50% of maximum allowable roll controller deflection for flight conditions limited by the maneuvering load envelope.			X	X	"n" is the sequential period of a full cycle of oscillation. Refer to paragraph 3 of this attachment for more information. Static and dynamic flight control tests should be accomplished at the same feel or impact pressures. For the alternate method (see paragraph 3 of this attachment). The slow sweep is the equivalent to the static test 2.a.2. For the moderate and rapid sweeps: ±2 lb (0.9 daN) or ±10% dynamic increment above the static force.

TABLE A2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS—Continued

<<<QPS REQUIREMENTS>>>

Test		Tolerance	Flight Conditions	Test details	Simulator Level				Information notes
No.	Title				A	B	C	D	
2.b.3	Yaw Control	For underdamped systems: ±10% of time from 90% of initial displacement (0.9 A_{ij}) to first zero crossing, and ±10 (n+1)% of period thereafter ±10% amplitude of first overshoot, applied to all overshoots greater than 5% of initial displacement (.05 A_{ij}), ±1 overshoot (first significant overshoot must be matched). For overdamped systems: ±10% of time from 90% of initial displacement (0.9 A_{ij}) to 10% of initial displacement (0.1 A_{ij})	Takeoff, Cruise, and Landing.	Data must show normal control displacement in both directions. Tolerances apply against the absolute values of each period (considered independently). Normal control displacement for this test is 25% to 50% of full throw.			X	X	"n" is the sequential period of a full cycle of oscillation. Refer to paragraph 3 of this attachment for more information. Static and dynamic flight control tests should be accomplished at the same feel or impact pressures. For the alternate method (see paragraph 3 of this attachment). The slow sweep is the equivalent to the static test 2.a.3. For the moderate and rapid sweeps: ±2 lb (0.9 daN) or ±10% dynamic increment above the static force.

2.b.4	Small Control Inputs—Pitch.	±0.15°/sec body pitch rate or ±20% of peak body pitch rate applied throughout the time history.	Approach or Landing	Control inputs must be typical of minor corrections made while established on an ILS approach course (approximately 0.5°/sec to 2°/sec pitch rate). The test must be in both directions, showing time history data from 5 seconds before until at least 5 seconds after initiation of control input. CCA: Test in normal and non-normal control states.			X	X

TABLE A2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS—Continued

<<<QPS REQUIREMENTS>>>									Information notes
Test		Tolerance	Flight Conditions	Test details	Simulator Level				
No.	Title				A	B	C	D	
2.b.5	Small Control Inputs—Roll.	±0.15°/sec body roll rate or ±20% of peak body roll rate applied throughout the time history.	Approach or landing	Control inputs must be typical of minor corrections made while established on an ILS approach course (approximately 0.5°/sec to 2°/sec roll rate). The test must be run in only one direction; however, for airplanes that exhibit non-symmetrical behavior, the test must include both directions. Time history data must be recorded from 5 seconds before until at least 5 seconds after initiation of control input. CCA: Test in normal and non-normal control states.			X	X	

2.b.6	Small Control Inputs—Yaw.	±0.15°/sec body yaw rate or ±20% of peak body yaw rate applied throughout the time history.	Approach or landing	Control inputs must be typical of minor corrections made while established on an ILS approach course (approximately 0.5°/sec to 2°/sec yaw rate). The test must be run in only one direction; however, for airplanes that exhibit non-symmetrical behavior, the test must include both directions. Time history data must be recorded from 5 seconds before until at least 5 seconds after initiation of control input. CCA: Test in normal and non-normal control states.			X	X
2.c	Longitudinal Control Tests							
	Power setting is that required for level flight unless otherwise specified							

TABLE A2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS—Continued

<<<QPS REQUIREMENTS>>>									Information notes
Test		Tolerance	Flight Conditions	Test details	Simulator Level				
No.	Title				A	B	C	D	
2.c.1	Power Change Dynamics	±3 kt airspeed, ±100 ft (30 m) altitude, ±20% or ±1.5° pitch angle.	Approach	Power is changed from the thrust setting required for approach or level flight to maximum continuous thrust or go-around power setting. Record the uncontrolled free response from at least 5 seconds before the power change is initiated to 15 seconds after the power change is completed. CCA: Test in normal and non-normal control states.	X	X	X	X	

2.c.2	Flap/Slat Change Dynamics.	±3 kt airspeed, ±100 ft (30 m) altitude, ±20% or ±1.5° angle.	Takeoff through initial flap retraction, and approach to landing.	Record the uncontrolled free response from at least 5 seconds before the configuration change is initiated to 15 seconds after the configuration change is completed. CCA: Test in normal and non-normal control states.	X	X	X	X	
2.c.3	Spoiler/Speedb rake Change Dynamics.	±3 kt airspeed, ±100 ft (30 m) altitude, ±20% or ±1.5° pitch angle.	Cruise	Record the uncontrolled free response from at least 5 seconds before the configuration change is initiated to 15 seconds after the configuration change is completed. Record results for both extension and retraction. CCA: Test in normal and non-normal control states.	X	X	X	X	

TABLE A2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS—Continued

<<<QPS REQUIREMENTS>>>									
Test		Tolerance	Flight Conditions	Test details	Simulator Level				Information notes
No.	Title				A	B	C	D	
2.c.4	Gear Change Dynamics	±3 kt airspeed, ±100 ft (30 m) altitude, ±20% or ±1.5° pitch angle.	Takeoff (retraction), and Approach (extension).	Record the time history of uncontrolled free response for a time increment from at least 5 seconds before the configuration change is initiated to 15 seconds after the configuration change is completed. CCA: Test in normal and non-normal control states.	X	X	X	X	
2.c.5	Longitudinal Trim	±0.5° stabilizer, ±1° elevator, ±1° pitch angle, ±5% net thrust or equivalent.	Cruise, Approach, and Landing.	Record steady-state condition with wings level and thrust set for level flight. May be a series of snapshot tests. CCA: Test in normal and non-normal control states.	X	X	X	X	

2.c.6	Longitudinal Maneuvering Stability (Stick Force/g).	±5 lb (±2.2 daN) or ±10% pitch controller force.. Alternative method: ±1° or ±10% change of elevator	Cruise, Approach, and Landing.	Continuous time history data or a series of snapshot tests may be used. Record results up to approximately 30° of bank for approach and landing configurations. Record results for up to approximately 45° of bank for the cruise configuration. The force tolerance is not applicable if forces are generated solely by the use of airplane hardware in the full flight simulator. The alternative method applies to airplanes that do not exhibit "stick-force-per-g" characteristics. CCA: Test in normal and non-normal control states.	X	X	X	X

TABLE A2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS—Continued

<<<QPS REQUIREMENTS>>>									
Test		Tolerance	Flight Conditions	Test details	Simulator Level				Information notes
No.	Title				A	B	C	D	
2.c.7	Longitudinal	±5 lb (±2.2 daN) or ±10% pitch controller force.. Alternative method: ±1° or ±10% change of elevator.	Approach	Record results for at least 2 speeds above and 2 speeds below trim speed. May be a series of snapshot test results. The force tolerance is not applicable if forces are generated solely by the use of airplane hardware in the full flight simulator. The alternative method applies to airplanes that do not exhibit speed stability characteristics. CCA: Test in normal and non-normal control states.	X	X	X	X	

2.c.8	Stall Characteristics	±3 kt airspeed for initial buffet, stall warning, and stall speeds. Additionally, for those simulators with reversible flight control systems: ±10% or ±5 lb (2.2 daN)) Stick/Column force (prior to "g break" only).	Second Segment Climb, and Approach or Landing.	The stall maneuver must be entered with thrust at or near idle power and wings level (1g). Record the stall warning signal and initial buffet, if applicable. Time history data must be recorded for full staff and initiation of recovery. The stall warning signal must occur in the proper relation to buffet/stall. Full flight simulators of airplanes exhibiting a sudden pitch attitude change or "g break" must demonstrate this characteristic. CCA: Test in normal and non-normal control states.	X	X	X	X

TABLE A2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS—Continued

<<<QPS REQUIREMENTS>>>										
Test		Tolerance	Flight Conditions	Test details	Simulator Level				Information notes
No.	Title				A	B	C	D	
2.c.9	Phugoid Dynamics	±10% period, ±10% of time to ½ or double amplitude or ±.02 of damping ratio.	Cruise	The test must include whichever is less of the following: Three full cycles (six overshoots after the input is completed), or the number of cycles sufficient to determine time to ½ or double amplitude. CCA: Test in Non-normal and non-normal control states.	X	X	X	X	
2.c.10	Short Period Dynamics ..	±1.5° pitch angle or ±2°/sec pitch rate, ±0.10g acceleration.	Cruise	CCA: Test in Normal and Non-normal control states.		X	X		
2.c.11	(Reserved)	.....	.....	.....					
2.d	Lateral Directional Tests								
	Power setting is that required for level flight unless otherwise specified								

2.d.1	Minimum Control Speed, Air (V_{mca} or V_{mcl}), per Applicable Airworthiness Standard or Low Speed Engine Inoperative Handling Characteristics in the Air.	±3 kt airspeed	Takeoff or Landing (whichever is most critical in the airplane).	Takeoff thrust must be used on the operating engine(s). A time history or a series of snapshot tests may be used. CCA: Test in Normal and Non-normal control states.	X	X	X	X	Low Speed Engine Inoperative Handling may be governed by a performance or control limit that prevents demonstration of V_{mca} in the conventional manner.
2.d.2	Roll Response (Rate)	±10% or ±2°/sec roll rate. Additionally, for those simulators of airplanes with reversible flight control systems: ±10% or ±3lb (1.3 daN) wheel force.	Cruise, and Approach or Landing.	Record results for normal roll controller deflection (about one-third of maximum roll controller travel). May be combined with step input of flight deck roll controller test (2.d.3).	X	X	X	X	
2.d.3	Roll Response to Cockpit Roll Controller Step Input.	±10% or ±2° bank angle	Approach or Landing	Record from initiation of roll through 10 seconds after control is returned to neutral and released. May be combined with roll response (rate) test (2.d.2). CCA: Test in Normal and Non-normal control states.	X	X	X	X	With wings level, apply a step roll control input using approximately one-third of the roll controller travel. When reaching approximately 20° to 30° of bank, abruptly return the roll controller to neutral and allow approximately 10 seconds of airplane free response.

TABLE A2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS—Continued

<<<QPS REQUIREMENTS>>>									Information notes
Test		Tolerance	Flight Conditions	Test details	Simulator Level				
No.	Title				A	B	C	D	
2.d.4	Spiral Stability	Correct trend and ±2° or ±10% bank angle in 20 seconds. Alternate test requires correct trend and ±2° aileron.	Cruise	Record results for both directions. Airplane data averaged from multiple tests may be used. As an alternate test, demonstrate the lateral control required to maintain a steady turn with a bank angle of approximately 30° CCA: Test in Normal and Non-normal control states.	X	X	X	X	
2.d.5	Engine Inoperative Trim	±1° rudder angle or ±1° tab angle or equivalent pedal, ±2° sideslip angle.	Second Segment Climb, and Approach or Landing.	May be a series of snapshot tests.	X	X	X	X	The test should be performed in a manner similar to that for which a pilot is trained to trim an engine failure condition. Second segment climb test should be at takeoff thrust. Approach or landing test should be at thrust for level flight.

2.d.6	Rudder Response	±2°/sec or ±10% yaw rate	Approach or Landing	Record results for stability augmentation system ON and OFF. A rudder step input of 20%–30% rudder pedal throw is used. CCA: Test in Normal and Non-normal control states.	X	X	X	X
2.d.7	Dutch Roll (Yaw Damper OFF).	±0.5 sec or ±10% of period, ±10% of time to ½ or double amplitude or ±.02 of damping ratio. ±20% or ±1 sec of time difference between peaks of bank and sideslip.	Cruise, and Approach or Landing.	Record results for at least 6 complete cycles with stability augmentation OFF. CCA: Test in Normal and Non-normal control states.		X	X	X
2.d.8	Steady State Sideslip	For given rudder position, ±2° bank angle, ±1° sideslip angle, ±10% or ±2° aileron, ±10% or ±5° spoiler or equivalent roll, controller position or force. Additionally, for those simulators of airplanes with reversible flight control systems: ±10% or ±3 lb (1.3 daN) wheel force ±10% or ±5 lb (2.2 daN) rudder pedal force.	Approach or Landing	May be a series of snapshot test results using at least two rudder positions. Propeller driven airplanes must test in each direction.	X	X	X	X
2.e	Landings							

TABLE A2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS—Continued

<<<QPS REQUIREMENTS>>>									Information notes
Test		Tolerance	Flight Conditions	Test details	Simulator Level				
No.	Title				A	B	C	D	
2.e.1	Normal Landing	±3 kt airspeed, ±1.5° pitch angle, ±1.5° angle of attack, ±10% or ±10 ft (3 m) height. Additionally, for those simulators of airplanes with reversible flight control systems: ±10% or ±5 lbs (±2.2 daN) stick/column force.	Landing	Record results from a minimum of 200 ft (61 m) AGL to nose-wheel touchdown.. CCA: Test in Normal and Non-normal control states		X	X	X	Tests should be conducted with two normal landing flap settings (if applicable). One should be at or near maximum certificated landing weight. The other should be at light or medium landing weight.
2.e.2	Miminum Flap Landing ..	±3 kt airspeed, ±1.5° pitch angle, ±1.5° angle of attack, ±10% or ±10 ft (3 m) height. Additionally, for those simulators of airplanes with reversible flight control systems: ±10% or ±5 lbs (2.2 daN) stick/column force.	Minimum Certified Landing Flap Configuration.	Record results from a minimum of 200 ft (61 m) AGL to nosewheel touchdown with airplane at near Maximum Landing Weight.			X	X	
2.e.3	Crosswind Landing	±3 kt airspeed, ±1.5° pitch angle, ±1.5° angle of attack, ±10% or ±10 ft (3 m) height ±2° bank angle, ±2° sideslip angle, ±3° heading angle. Additionally, for those simulators of airplanes with reversible flight control systems: ±10% or ±3 lbs (1.3 daN) wheel force ±10% or ±5 lb (2.2 daN) rudder pedal force.	Landing	Record results from a minimum of 200 ft (61 m) AGL, through nosewheel touchdown, to 50% decrease in main landing gear touchdown speed.		X	X	X	Test data should include information on wind profile, for a crosswind component of 60% of the maximum described in the AFM as measured at 33 ft (10m) above the runway.

2.e.4	One Engine Inoperative Landing.	±3 kt airspeed, ±1.5° pitch angle, ±1.5° angle of attack, ±10% height or ±10 ft (3 m); ±2° bank angle, ±2° sideslip angle, ±3° heading.	Landing	Record results from a minimum of 200 ft (61 m) AGL, through nosewheel touchdown, to 50% decrease in main landing gear touchdown speed or less.		X	X	X	
2.e.5	Autopilot landing (if applicable).	±5 ft (1.5m) flare height, ±0.5 sec T_f, ±140 ft/min (.7 m/sec) rate of descent at touchdown. ±10 ft (3 m) lateral deviation during rollout.	Landing	If autopilot provides rollout guidance, record lateral deviation from touchdown to a 50% decrease in main landing gear touchdown speed or less. Time of autopilot flare mode engage and main gear touchdown must be noted.		X	X	X	T_f = duration of flare
2.e.6	All engines operating, autopilot, go around.	±3 kt airspeed, ±1.5° pitch angle, ±1.5° angle of attack.	As per AFM	Normal, all-engines-operating, Go Around with the autopilot engaged (if applicable) at medium landing weight. CCA: Test in Normal and Non-normal control states		X	X	X	

TABLE A2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS—Continued

<<<QPS REQUIREMENTS>>>									Information notes
Test		Tolerance	Flight Conditions	Test details	Simulator Level				
No.	Title				A	B	C	D	
2.e.7	One engine inoperative go around.	±3 kt airspeed, ±1.5° pitch angle, ±1.5° angle of attack, ±2° bank angle, ±2° slideslip angle.	As per AFM	The one engine inoperative go around is required at near maximum certificated landing weight with the critical engine inoperative using manual controls. If applicable, an additional engine inoperative go around test must be accomplished with the autopilot engaged. CCA: Test in Normal and Non-normal control states		X	X	X	
2.e.8	Directional control (rudder effectiveness) with symmetric reverse thrust.	±2°/sec yaw rate, ±5 kts airspeed.	Landing	Record results starting from a speed approximating touchdown speed to the minimum thrust reverser operation speed. With full reverse thrust, apply yaw control in both directions until reaching minimum thrust reverser operation speed.		X	X	X	

2.e.9	Directional control (rudder effectiveness) with symmetric reverse thrust.	±5 kt airspeed, ±3° heading angle.	Landing	Maintain heading with yaw control with full reverse thrust on the operating engine(s). Record results starting from a speed approximating touchdown speed to a speed at which control of yaw cannot be maintained or until reaching minimum thrust reverser operation speed, whichever is higher. The tolerance applies to the low speed end of the data recording.		X	X	X	
2.f	Ground Effect.								
	Test to demonstrate Ground Effect.	±1° elevator or stabilizer angle, ±5% net thrust or equivalent, ±1° angle of attack, ±10% height or ±5 ft (1.5 m), ±3 kt airspeed, ±1° pitch angle.	Landing	The Ground Effect model must be validated by the test selected and a rationale must be provided for selecting the particular test.		X	X	X	See paragraph 4, Ground Effect, in this attachment for additional information.
2.g	Windshear								

TABLE A2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS—Continued

<<<QPS REQUIREMENTS>>>									Information notes
Test		Tolerance	Flight Conditions	Test details	Simulator Level				
No.	Title				A	B	C	D	
	Four tests, two takeoff and two landing, with one of each conducted in still air and the other with windshear active to demonstrate windshear models.	See Attachment 5	Takeoff and Landing	Requires windshear models that provide training in the specific skills needed to recognize windshear phenomena and to execute recovery procedures. See Attachment 5 for tests, tolerances, and procedures.			X	X	See Attachment 5 for information related to Level A and B simulators.
2.h	Flight Maneuver and Envelope Protection Functions								
	The requirements of tests h(1) through (6) of this attachment are applicable to computer controlled airplanes only. Time history results are required for simulator response to control inputs during entry into envelope protection limits including both normal and degraded control states if the function is different. See thrust as required to reach the envelope protection function								
2.h.1	Overspeed	±5 kt airspeed	Cruise	.....		X	X	X	
2.h.2	Minimum Speed	±3 kt airspeed	Takeoff, Cruise, and Approach or Landing.	.....		X	X	X	
2.h.3	Load Factor	±0.1g normal load factor	Takeoff, Cruise	.....		X	X	X	
2.h.4	Pitch Angle	±1.5° pitch angle	Cruise, Approach	.....		X	X	X	
2.h.5	Bank Angle	±2° or ±10% bank angle	Approach	.....		X	X	X	

2.h.6	Angle of Attack	±1.5° angle of attack	Second Segment Climb, and Approach or Landing.	.....		X	X	X		
3. Motion System										
3.a	Frequency response.									
		Based on Simulator Capability	N/A	The test must demonstrate frequency response of the motion system.	X	X	X	X	X	This test is not required as part of continuing qualification evaluations, and should be part of the MQTG.
3.b	(Reserved)									
3.c	(Reserved)									
3.d	Motion system repeatability									
		±0.05g actual platform linear acceleration.	None	A demonstration is required and must be made part of the MQTG. The assessment procedures must be designed to ensure that the motion system hardware and software (in normal flight simulator operating mode) continue to perform as originally qualified.	X	X	X	X		
3.e	(Reserved)									
3.f	(Reserved)									
4. Visual System										

TABLE A2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS—Continued

<<<QPS REQUIREMENTS>>>									
Test		Tolerance	Flight Conditions	Test details	Simulator Level				Information notes
No.	Title				A	B	C	D	
4.a	Visual System Response Time: Relative responses of the motion system, visual system, and cockpit instruments must be coupled closely to provide integrated sensory cues. Visual change may start before motion response, but motion acceleration must be initiated before completion of the visual scan of the first video field containing different information								See paragraph 14 of this attachment for additional information.
4.a.1	Latency								

These systems must respond to abrupt input at the pilot's position.	The response must not be prior to that time when the airplane responds and may respond 300 ms (or less) after the airplane responds under the same conditions.	N/A	Simultaneously record: 1) the output from the pilot's controller(s); 2) the output from an accelerometer attached to the motion system platform located at an acceptable location near the pilots' seats; 3) the output signal to the visual system display (including visual system analog delays); and 4) the output signal to the pilot's attitude indicator or an equivalent test approved by the Administrator.	X	X		The intent is to verify that the simulator provides instrument, motion, and visual cues that are, within the stated time delays, like the airplane responses. For airplane response, acceleration in the appropriate, corresponding rotational axis is preferred. Simulator Latency is measured from the start of a control input to the appropriate perceivable change in flight instrument indication; visual system response; or motion system response (this does not include airplane response time as per the manufacturer's data).

TABLE A2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS—Continued

Test		Tolerance	Flight Conditions	Test details	Simulator Level				Information notes
No.	Title				A	B	C	D	
<<<QPS REQUIREMENTS>>>									
		The response must not be prior to that time when the airplane responds and may respond 150 ms (or less) after the airplane responds under the same conditions.	N/A	Simultaneously record: 1) the output from the pilot's controller(s); 2) the output from an accelerometer attached to the motion system platform located at an acceptable location near the pilots' seats; 3) the output signal to the visual system display (including visual system analog delays); and 4) the output signal to the pilot's attitude indicator or an equivalent test approved by the Administrator.			X	X	The transport delay is the time between the control input and the individual hardware (i.e., instruments, motion system, visual system) responses. If Transport Delay is the chosen method to demonstrate relative responses, it is expected that, when reviewing those existing tests where latency can be identified (*e.g.*, short period, roll response, rudder response) the sponsor and the NSPM will apply additional scrutiny to ensure proper simulator response.
4.a.2	Transport Delay								

As an alternative to the Latency requirement a transport delay objective test may be used to demonstrate that the simulator system does not exceed the specified limit. The sponsor must measure all the delay encountered by a step signal migrating from the pilot's control through the control loading electronics and interfacing through all the simulation software modules in the correct order, using a handshaking protocol, finally through the normal output interfaces to the instrument displays, the motion system, and the visual system An SOC is required.	A recordable start time for the test must be provided with the pilot flight control input. The migration of the signal must permit normal computation time to be consumed and must not alter the flow of information through the hardware/software system.								The transport delay is the time between the control input and the individual hardware (*i.e.*, instruments, motion system, visual system) responses. If Transport Delay is the chosen method to demonstrate relative responses, it is expected that, when reviewing those existing tests where latency can be identified (*e.g.*, short period, roll response, rudder response) the sponsor and the NSPM will apply additional scrutiny to ensure proper simulator response.
		N/A	.....	X	X				
	The response must not be prior to that time when the airplane responds and may respond 300 ms (or less) after controller movement.								
		N/A	.....			X	X		
	The response must not be prior to that time when the airplane responds and may respond 150 ms (or less) after controller movement.								

TABLE A2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS—Continued

<<<QPS REQUIREMENTS>>>									Information notes
Test		Tolerance	Flight Conditions	Test details	Simulator Level				
No.	Title				A	B	C	D	
	.....	The response must not be prior to that time when the airplane responds and may respond 150 ms (or less) after controller movement.	N/A	.....			X	X	response, rudder response) the sponsor and the NSPM will apply additional scrutiny to ensure proper simulator response.
4.b	Field of View								
4.b.1	Continuous collimated visual field of view.	Minimum continuous collimated field of view providing 45° horizontal and 30° vertical field of view for each pilot seat. Both pilot seat visual systems must be operable simultaneously.	N/A	Required as part of MQTG but not required as part of continuing evaluations.	X	X			A vertical field of view of 30° may be insufficient to meet visual ground segment requirements.
4.b.2.	(Reserved)								
4.b.3.	(Reserved)								
4.c.	(Reserved)								
4.d.	Surface contrast ratio								

		Not less than 5:1	N/A	The ratio is calculated by dividing the brightness level of the center, bright square (providing at least 2 foot-lamberts or 7 cd/m^2) by the brightness level of any adjacent dark square. This requirement is applicable to any level of simulator equipped with a daylight visual system.		X	X	Measurements should be made using a 1° spot photometer and a raster drawn test pattern filling the entire visual scene (all channels) with a test pattern of black and white squares, 5° per square, with a white square in the center of each channel. During contrast ratio testing, simulator aft-cab and flight deck ambient light levels should be zero.
4.e.	Highlight brightness							

TABLE A2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS—Continued

Test		Tolerance	Flight Conditions	Test details	Simulator Level				Information notes
No.	Title				A	B	C	D	
		Not less than six (6) foot-lamberts (20 cd/m²).	N/A	Measure the brightness of a white square while superimposing a highlight on that white square. The use of calligraphic capabilities to enhance the raster brightness is acceptable; however, measuring lightpoints is not acceptable. This requirement is applicable to any level of simulator equipped with a daylight visual system.			X	X	Measurements should be made using a 1° spot photometer and a raster drawn test pattern filling the entire visual scene (all channels) with a test pattern of black and white squares, 5° per square, with a white square in the center of each channel.
4.f	Surface resolution								

	Not greater than three (3) arc minutes.	N/A	An SOC is required and must include the relevant calculations and an explanation of those calculations. This requirement is applicable to any level of simulator equipped with a daylight visual system.			X	X	The eye will subtend two arc minutes when positioned on a 3° glide slope, 6,876 ft slant range from the centrally located threshold of a black runway surface painted with white threshold bars that are 16 ft wide with 4-foot gaps between the bars.
4.g.	Light point size							
	.....	Not greater than six (6) arc-minutes.	N/A	An SOC is required and must include the relevant calculations and an explanation of those calculations. This requirement is applicable to any level of simulator equipped with a daylight visual system.		X	X	Light point size should be measured using a test pattern consisting of a centrally located single row of light points reduced in length until modulation is just discernible in each visual channel. A row of 48 lights will form a 4° angle or less.
4.h. ..... 4.h.1.	Light point contrast ratio (Reserved)							

TABLE A2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS—Continued

<<<QPS REQUIREMENTS>>>									
Test		Tolerance	Flight Conditions	Test details	Simulator Level				Information notes
No.	Title				A	B	C	D	
4.h.2	For Level C and D simulators.	Not less than 25:1.	N/A	An SOC is required and must include the relevant calculations.			X	X	A 1° spot photometer is used to measure a square of at least 1° filled with light points (where light point modulation is just discernible) and compare the results to the measured adjacent background. During contrast ratio testing, simulator aft-cab and flight deck ambient light levels should be zero.
4.i	Visual ground segment								

The QTG must contain appropriate calculations and a drawing showing the pertinent data used to establish the airplane location and the segment of the ground that is visible considering design eyepoint, the airplane attitude, cockpit cut-off angle, and a visibility of 1200 ft (350 m) RVR. Simulator performance must be measured against the QTG calculations. Sponsors must provide this data for each simulator (regardless of previous qualification standards) to qualify the simulator for all instrument approaches. The data submitted must include at least the following:.	.....	The simulator must be verified for visual ground segment and visual scene content for the airplane in landing configuration and a main wheel height of 100 ft (30m) above the touchdown zone, on glide slope with an RVR value set at 1,200 ft (350m).	X	X	X	X	Pre-position for this test is encouraged but may be achieved via manual or autopilot control to the desired position.
(1) Static airplane dimensions as follows:							
(i) Horizontal and vertical distance from main landing gear (MLG) to glideslope reception antenna.							
(ii) Horizontal and vertical distance from MLG to pilot's eyepoint.							
(iii) Static cockpit cutoff angle.							
(2) Approach data as follows:							
(i) Identification of runway.							
(ii) Horizontal distance from runway threshold to glideslope intercept with runway.							
(iii) Glideslope angle.							
(iv) Airplane pitch angle on approach.							
(3) Airplane data for manual testing:							
(i) Gross weight.							

TABLE A2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS—Continued

<<<QPS REQUIREMENTS>>>										Information notes
Test		Tolerance	Flight Conditions	Test details	Simulator Level					
No.	Title				A	B	C	D		
		(ii) airplane configuration. (iii) Approach airspeed.								

5. (Reserved)

BEGIN INFORMATION

2. GENERAL

a. If relevant winds are present in the objective data, the wind vector should be clearly noted as part of the data presentation, expressed in conventional terminology, and related to the runway being used for test near the ground.

b. The reader is encouraged to review the Airplane Flight Simulator Evaluation Handbook, Volumes I and II, published by the Royal Aeronautical Society, London, UK, and FAA Advisory Circulars (AC) 25–7, as may be amended, Flight Test Guide for Certification of Transport Category Airplanes, and (AC) 23–8, as may be amended, Flight Test Guide for Certification of Part 23 Airplanes, for references and examples regarding flight testing requirements and techniques.

END INFORMATION

BEGIN INFORMATION

3. CONTROL DYNAMICS

a. General. The characteristics of an airplane flight control system have a major effect on handling qualities. A significant consideration in pilot acceptability of an airplane is the ''feel'' provided through the flight controls. Considerable effort is expended on airplane feel system design so that pilots will be comfortable and will consider the airplane desirable to fly. In order for a FFS to be representative, it should ''feel'' like the airplane being simulated. Compliance with this requirement is determined by comparing a recording of the control feel dynamics of the FFS to actual airplane measurements in the takeoff, cruise and landing configurations.

(1) Recordings such as free response to an impulse or step function are classically used to estimate the dynamic properties of electromechanical systems. In any case, it is only possible to estimate the dynamic properties as a result of only being able to estimate true inputs and responses. Therefore, it is imperative that the best possible data be collected since close matching of the FFS control loading system to the airplane system is essential. The required dynamic control tests are described in Table A2A of this attachment.

(2) For initial and upgrade evaluations, the QPS requires that control dynamics characteristics be measured and recorded directly from the flight controls (Handling Qualities—Table A2A). This procedure is usually accomplished by measuring the free response of the controls using a step or impulse input to excite the system. The procedure should be accomplished in the takeoff, cruise and landing flight conditions and configurations.

(3) For airplanes with irreversible control systems, measurements may be obtained on the ground if proper pitot-static inputs are provided to represent airspeeds typical of those encountered in flight. Likewise, it may be shown that for some airplanes, takeoff, cruise, and landing configurations have like effects. Thus, one may suffice for another. In either case, engineering validation or airplane manufacturer rationale should be submitted as justification for ground tests or for eliminating a configuration. For FFSs requiring static and dynamic tests at the controls, special test fixtures will not be required during initial and upgrade evaluations if the QTG shows both test fixture results and the results of an alternate approach (e.g., computer plots that were produced concurrently and show satisfactory agreement). Repeat of the alternate method during the initial evaluation would satisfy this test requirement.

b. Control Dynamics Evaluation. The dynamic properties of control systems are often stated in terms of frequency, damping and a number of other classical measurements. In order to establish a consistent means of validating test results for FFS control loading, criteria are needed that will clearly define the measurement interpretation and the applied tolerances. Criteria are needed for underdamped, critically damped and overdamped systems. In the case of an underdamped system with very light damping, the system may be quantified in terms of frequency and damping. In critically damped or overdamped systems, the frequency and damping are not readily measured from a response time history. Therefore, the following suggested measurements may be used:

(1) For Level C and D simulators. Tests to verify that control feel dynamics represent the airplane should show that the dynamic damping cycles (free response of the controls) match those of the airplane within specified tolerances. The NSPM recognizes that several different testing methods may be used to verify the control feel dynamic response. The NSPM will consider the merits of testing methods based on reliability and consistency. One acceptable method of evaluating the response and the tolerance to be applied is described below for the underdamped and critically damped cases. A sponsor using this method to comply with the QPS requirements should perform the tests as follows:

(a) Underdamped response. Two measurements are required for the period, the time to first zero crossing (in case a rate limit is present) and the subsequent frequency of oscillation. It is necessary to measure cycles on an individual basis in case there are nonuniform periods in the response. Each period

will be independently compared to the respective period of the airplane control system and, consequently, will enjoy the full tolerance specified for that period. The damping tolerance will be applied to overshoots on an individual basis. Care should be taken when applying the tolerance to small overshoots since the significance of such overshoots becomes questionable. Only those overshoots larger than 5 per cent of the total initial displacement should be considered. The residual band, labeled $T(A_d)$ on Figure A2A is ±5 percent of the initial displacement amplitude A_d from the steady state value of the oscillation. Only oscillations outside the residual band are considered significant. When comparing FFS data to airplane data, the process should begin by overlaying or aligning the FFS and airplane steady state values and then comparing amplitudes of oscillation peaks, the time of the first zero crossing and individual periods of oscillation. The FFS should show the same number of significant overshoots to within one when compared against the airplane data. The procedure for evaluating the response is illustrated in Figure A2A.

(b) Critically damped and overdamped response. Due to the nature of critically damped and overdamped responses (no overshoots), the time to reach 90 percent of the steady state (neutral point) value should be the same as the airplane within ±10 percent. Figure A2B illustrates the procedure.

(c) Special considerations. Control systems that exhibit characteristics other than classical overdamped or underdamped responses should meet specified tolerances. In addition, special consideration should be given to ensure that significant trends are maintained.

(2) Tolerances.

(a) The following table summarizes the tolerances, T, for underdamped systems, and ''n'' is the sequential period of a full cycle of oscillation. See Figure A2A of this attachment for an illustration of the referenced measurements.

$T(P_0)$ ±10% of P_0
$T(P_1)$ ±20% of P_1
$T(P_2)$ ±30% of P_2
$T(P_n)$ ±10(n+1)% of P_n
$T(A_n)$ ±10% of A_1
$T(A_d)$ ±5% of A_d = residual band
Significant overshoots First overshoot and ±1 subsequent overshoots

(b) The following tolerance applies to critically damped and overdamped systems only. See Figure A2B for an illustration of the reference measurements:

$T(P_0)$ ±10% of P_0

c. Alternate method for Control Dynamics Evaluation. Another acceptable method of evaluating the response and the tolerance to be applied for airplanes with hydraulically powered flight controls and artificial feel systems is described below. Instead of free response measurements, the system is validated by measurements of control force and rate of movement. A sponsor using this alternate method to comply with the QPS requirements should perform the tests as follows:

(1) For each axis of pitch, roll and yaw, the control should be forced to its maximum extreme position for the following distinct rates. These tests would be conducted at typical taxi, takeoff, cruise and landing conditions.

(a) Static test. Slowly move the control such that approximately 100 seconds are required to achieve a full sweep. A full sweep is defined as movement of the controller from neutral to the stop (usually aft or right stop), then to the opposite stop, then to the neutral position.

(b) Slow dynamic test. Achieve a full sweep in approximately 10 seconds.

(c) Fast dynamic test. Achieve a full sweep in approximately 4 seconds.

(NOTE: Dynamic sweeps may be limited to forces not exceeding 100 lb (44.5 daN).

(2) *Tolerances.*

(a) Static test. Same as tests 2.a.1., 2.a.2., and 2.a.3. in Table A2A in this attachment.

(b) Dynamic test. ±2 lb (±0.9 daN)or ±10 per cent on dynamic increment above static test.

(c) The NSPM are open to alternative means such as the one described above. Such alternatives, however, would have to be justified and appropriate to the application. For example, the method described here may not apply to all manufacturers' systems and certainly not to airplanes with reversible control systems. Hence, each case shall be considered on its own merit on an ad hoc basis. If the NSPM finds that alternative methods do not result in satisfactory performance, then more conventionally accepted methods must be used.

END INFORMATION

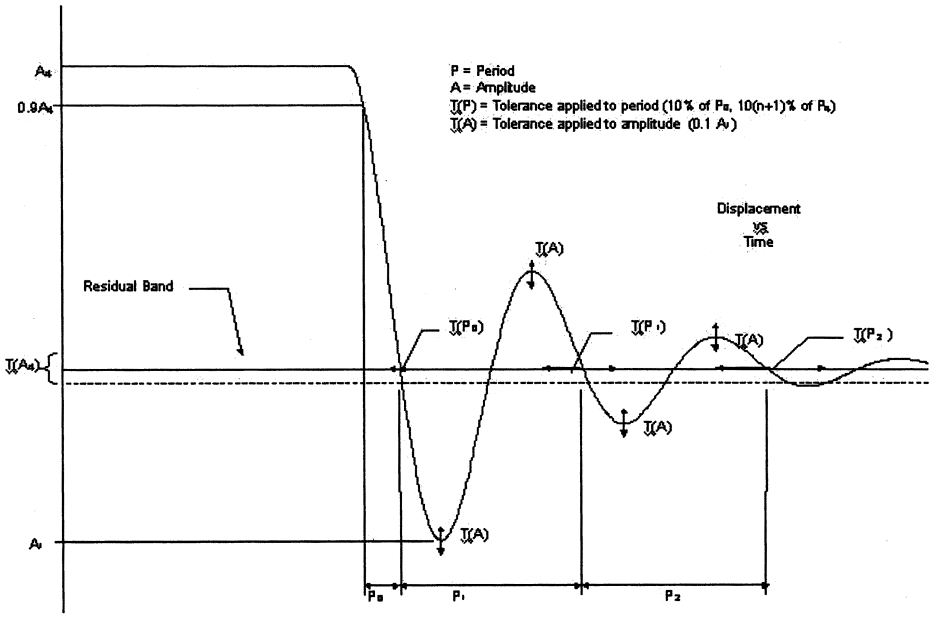


Figure A2A
Underdamped Step Response

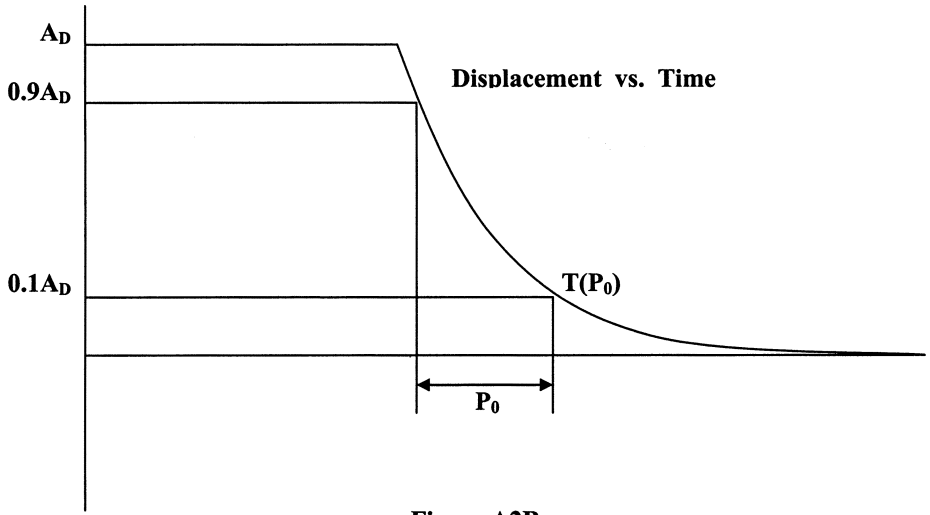


Figure A2B
Critically and Overdamped Step Response

BEGIN INFORMATION

4. GROUND EFFECT

a. For an FFS to be used for take-off and landing (not applicable to Level A simulators in that the landing maneuver may not be credited in a Level A simulator) it should reproduce the aerodynamic changes that occur in ground effect. The parameters chosen for FFS validation should indicate these changes.

(1) A dedicated test should be provided that will validate the aerodynamic ground effect characteristics.

(2) The organization performing the flight tests may select appropriate test methods and procedures to validate ground effect. However, the flight tests should be performed with enough duration near the ground to sufficiently validate the ground-effect model.

b. The NSPM will consider the merits of testing methods based on reliability and consistency. Acceptable methods of validating ground effect are described below. If other methods are proposed, rationale should be provided to conclude that the tests performed validate the ground-effect model. A sponsor using the methods described below to comply with the QPS requirements should perform the tests as follows:

(1) Level fly-bys. The level fly-bys should be conducted at a minimum of three altitudes within the ground effect, including one at no more than 10% of the wingspan above the ground, one each at approximately 30% and 50% of the wingspan where height refers to main gear tire above the ground. In addition, one level-flight trim condition should be conducted out of ground effect (*e.g.*, at 150% of wingspan).

(2) Shallow approach landing. The shallow approach landing should be performed at a glide slope of approximately one degree with negligible pilot activity until flare.

c. The lateral-directional characteristics are also altered by ground effect. For example, because of changes in lift, roll damping is affected. The change in roll damping will affect other dynamic modes usually evaluated for FFS validation. In fact, Dutch roll dynamics, spiral stability, and roll-rate for a given lateral control input are altered by ground effect. Steady heading sideslips will also be affected. These effects should be accounted for in the FFS modeling. Several tests such as crosswind landing, one engine inoperative landing, and engine failure on take-off serve to validate lateral-directional ground effect since portions of these tests are accomplished as the aircraft is descending through heights above the runway at which ground effect is an important factor.

5. [RESERVED]

6. [RESERVED]

7. [RESERVED]

8. [RESERVED]

9. [RESERVED]

10. [RESERVED]

11. [RESERVED]

12. [RESERVED]

13. [RESERVED]

14. [RESERVED]

15. [RESERVED]

END INFORMATION

BEGIN INFORMATION

16. ALTERNATIVE DATA SOURCES, PROCEDURES, AND INSTRUMENTATION: LEVEL A AND LEVEL B SIMULATORS ONLY

a. In recent years, considerable progress has been made in the improvement of aerodynamic modeling techniques. Additionally, those who have demonstrated success in combining these modeling techniques with minimal flight testing have incorporated the use of highly mature flight controls models and have had extensive experience in comparing the output of their effort with actual flight test data.

b. It has become standard practice for experienced simulator manufacturers to use modeling techniques to establish databases for new simulator configurations while awaiting the availability of actual flight test data. The data generated from the aerodynamic modeling techniques is then compared to the flight test data when it becomes available. The results of such comparisons have become increasingly consistent, indicating that these techniques, applied with the appropriate experience, are dependable and accurate for the development of aerodynamic models for use in Level A and Level B simulators.

c. Based on this history of successful comparisons, the NSPM has concluded that those who are experienced in the development of aerodynamic models may use modeling techniques to alter the method for acquiring flight test data for Level A or Level B simulators.

d. The information in Table A2E (Alternative Data Sources, Procedures, and Instrumentation) is presented to describe an acceptable alternative to data sources for simulator modeling and validation and an acceptable alternative to the procedures and

instrumentation traditionally used to gather such modeling and validation data.

(1) Alternative data sources that may be used for part or all of a data requirement are the Airplane Maintenance Manual, the Airplane Flight Manual (AFM), Airplane Design Data, the Type Inspection Report (TIR), Certification Data or acceptable supplemental flight test data.

(2) The sponsor should coordinate with the NSPM prior to using alternative data sources in a flight test or data gathering effort.

e. The NSPM position regarding the use of these alternative data sources, procedures, and instrumentation is based on the following presumptions:

(1) Data gathered through the alternative means does not require angle of attack (AOA) measurements or control surface position measurements for any flight test. However, AOA can be sufficiently derived if the flight test program ensures the collection of acceptable level, unaccelerated, trimmed flight data. All of the simulator time history tests that begin in level, unaccelerated, and trimmed flight, including the three basic trim tests and ''fly-by'' trims, can be a successful validation of angle of attack by comparison with flight test pitch angle. (NOTE: Due to the criticality of angle of attack in the development of the ground effects model, particularly critical for normal landings and landings involving cross-control input applicable to Level B simulators, stable ''fly-by'' trim data will be the acceptable norm for normal and cross-control input landing objective data for these applications.)

(2) The use of a rigorously defined and fully mature simulation controls system model that includes accurate gearing and cable stretch characteristics (where applicable), determined from actual aircraft measurements. Such a model does not require control surface position measurements in the flight test objective data in these limited applications.

(3) The authorized uses of Level A and Level B simulators (as listed in the appropriate Commercial, Instrument, or Airline Transport Pilot and/or Type Rating Practical Test Standards) for ''initial,'' ''transition,'' or ''upgrade'' training, still requires additional flight training and/or flight testing/checking in the airplane or in a Level C or Level D simulator.

f. The sponsor is urged to contact the NSPM for clarification of any issue regarding airplanes with reversible control systems. Table A2E is not applicable to Computer Controlled Aircraft full flight simulators.

g. Utilization of these alternate data sources, procedures, and instrumentation does not relieve the sponsor from compliance with the balance of the information contained in this document relative to Level A or Level B FFSs.

h. The term ''inertial measurement system'' is used in the following table to include the use of a functional global positioning system (GPS).

END INFORMATION

TABLE A2E—ALTERNATIVE DATA SOURCES, PROCEDURES, AND INSTRUMENTATION

Information				
Table of objective tests	Sim level		Alternative data sources, procedures, and instrumentation	Notes and reminders
Test reference number and title	A	B		
1.a.1. Performance. Taxi. Minimum Radius turn.	X	X	TIR, AFM, or Design data may be used.	
1.a.2. Performance. Taxi. Rate of Turn vs. Nosewheel Steering Angle.		X	Data may be acquired by using a constant tiller position, measured with a protractor or full rudder pedal application for steady state turn, and synchronized video of heading indicator. If less than full rudder pedal is used, pedal position must be recorded.	A single procedure may not be adequate for all airplane steering systems, therefore appropriate measurement procedures must be devised and proposed for NSPM concurrence.
1.b.1. Performance. Takeoff. Ground Acceleration Time and Distance.	X	X	Preliminary certification data may be used. Data may be acquired by using a stopwatch, calibrated airspeed, and runway markers during a takeoff with power set before brake release. Power settings may be hand recorded. If an inertial measurement system is installed, speed and distance may be derived from acceleration measurements.	

TABLE A2E—ALTERNATIVE DATA SOURCES, PROCEDURES, AND INSTRUMENTATION—Continued

Information				
Table of objective tests	Sim level		Alternative data sources, procedures, and instrumentation	Notes and reminders
Test reference number and title	A	B		
1.b.2. Performance. Takeoff. Minimum Control Speed—ground (V_{mcg}) using aerodynamic controls only (per applicable airworthiness standard) or low speed, engine inoperative ground control characteristics.	X	X	Data may be acquired by using an inertial measurement system and a synchronized video of: The calibrated airplane instruments and the force/position measurements of cockpit controls..	Rapid throttle reductions at speeds near V_{mcg} may be used while recording appropriate parameters. The nose wheel must be free to caster, or equivalently freed of sideforce generation.
1.b.3. Performance. Takeoff. Minimum Unstick Speed (V_{mu}) or equivalent test to demonstrate early rotation takeoff characteristics.	X	X	Data may be acquired by using an inertial measurement system and a synchronized video of: The calibrated airplane instruments and the force/position measurements of cockpit controls.	
1.b.4. Performance. Takeoff. Normal Takeoff.	X	X	Data may be acquired by using an inertial measurement system and a synchronized video of: The calibrated airplane instruments and the force/position measurements of cockpit controls. AOA can be calculated from pitch attitude and flight path.	
1.b.5. Performance. Takeoff. Critical Engine Failure during Takeoff.	X	X	Data may be acquired by using an inertial measurement system and a synchronized video of: The calibrated airplane instruments and the force/position measurements of cockpit controls.	Record airplane dynamic response to engine failure and control inputs required to correct flight path.
1.b.6. Performance. Takeoff. Crosswind Takeoff.	X	X	Data may be acquired by using an inertial measurement system and a synchronized video of: The calibrated airplane instruments and the force/position measurements of cockpit controls.	The ''1:7 law'' to 100 feet (30 meters) is an acceptable wind profile.
1.b.7. Performance. Takeoff. Rejected Takeoff.	X	X	Data may be acquired with a synchronized video of: Calibrated airplane instruments, thrust lever position, engine parameters, and distance (e.g., runway markers). A stopwatch is required.	
1.b.8. Dynamic Engine Failure After Takeoff.	N/A	N/A	Applicable only to Level C or Level D FSTDs.	
1.c.1. Performance. Climb. Normal Climb all engines operating..	X	X	Data may be acquired with a synchronized video of: Calibrated airplane instruments and engine power throughout the climb range.	
1.c.2. Performance. Climb. One engine Inoperative Climb.	X	X	Data may be acquired with a synchronized video of: Calibrated airplane instruments and engine power throughout the climb range.	
1.c.3. One Engine Inoperative—Enroute Climb.	N/A	N/A	Applicable only to Level C or Level D FSTDs.	
1.c.4. Performance. Climb. One Engine Inoperative Approach Climb (if approved AFM requires specific performance in icing conditions).	X	X	Data may be acquired with a synchronized video of calibrated airplane instruments and engine power throughout the climb range.	

TABLE A2E—ALTERNATIVE DATA SOURCES, PROCEDURES, AND INSTRUMENTATION—Continued

Information				
Table of objective tests	Sim level		Alternative data sources, procedures, and instrumentation	Notes and reminders
Test reference number and title	A	B		
1.d.1. Cruise/Descent. Level flight acceleration..	X	X	Data may be acquired with a synchronized video of: calibrated airplane instruments, thrust lever position, engine parameters, and elapsed time.	
1.d.2. Cruise/Descent. Level flight deceleration.	X	X	Data may be acquired with a synchronized video of: Calibrated airplane instruments, thrust lever position, engine parameters, and elapsed time.	
1.d.3. Cruise Performance	N/A	N/A	Applicable only to Level C or Level D FSTDs.	
1.d.4. Cruise/Descent. Idle descent.	X	X	Data may be acquired with a synchronized video of: calibrated airplane instruments, thrust lever position, engine parameters, and elapsed time.	
1.d.5. Cruise/Descent. Emergency Descent.	X	X	Data may be acquired with a synchronized video of: calibrated airplane instruments, thrust lever position, engine parameters, and elapsed time.	
1.e.1. Performance. Stopping. Deceleration time and distance, using manual application of wheel brakes and no reverse thrust on a dry runway.	X	X	Data may be acquired during landing tests using a stopwatch, runway markers, and a synchronized video of: Calibrated airplane instruments, thrust lever position and the pertinent parameters of engine power.	
1.e.2. Performance. Ground. Deceleration Time and Distance, using reverse thrust and no wheel brakes.	X	X	Data may be acquired during landing tests using a stop watch, runway markers, and a synchronized video of: Calibrated airplane instruments, thrust lever position and the pertinent parameters of engine power.	
1.e.3. Stopping Distance—wheel brakes, and no reverse thrust on a wet runway.	N/A	N/A	Applicable only to Level C and Level D FSTDs.	
1.e.4. Stopping Distance—wheel brakes, and no reverse thrust on an icy runway.	N/A	N/A	Applicable only to Level C and Level D FSTDs.	
1.f.1. Performance. Engines. Acceleration.	X	X	Data may be acquired with a synchronized video recording of: engine instruments and throttle position.	
1.f.2. Performance. Engines. Deceleration.	X	X	Data may be acquired with a synchronized video recording of: Engine instruments and throttle position.	
2.a.1.a. Handling Qualities. Static Control Checks. Pitch Controller Position vs. Force and Surface Position Calibration.	X	X	Surface position data may be acquired from flight data recorder (FDR) sensor or, if no FDR sensor, at selected, significant column positions (encompassing significant column position data points), acceptable to the NSPM, using a control surface protractor on the ground (for airplanes with reversible control systems, this function should be accomplished with winds less than 5 kts.). Force data may be acquired by using a hand-held force gauge at the same column position data points.	

TABLE A2E—ALTERNATIVE DATA SOURCES, PROCEDURES, AND INSTRUMENTATION—Continued

Information				
Table of objective tests	Sim level		Alternative data sources, procedures, and instrumentation	Notes and reminders
Test reference number and title	A	B		
2.a.2.a. Handling Qualities. Static Control Checks. Roll Controller Position vs. Force and Surface Position Calibration.	X	X	Surface position data may be acquired from flight data recorder (FDR) sensor or, if no FDR sensor, at selected, significant wheel positions (encompassing significant wheel position data points), acceptable to the NSPM, using a control surface protractor on the ground (for airplanes with reversible control systems, this function should be accomplished with winds less than 5 kts.). Force data may be acquired by using a hand-held force gauge at the same wheel position data points.	
2.a.3.a. Handling Qualities. Static Control Checks. Rudder Pedal Position vs. Force and Surface Position Calibration.	X	X	Surface position data may be acquired from flight data recorder (FDR) sensor or, if no FDR sensor, at selected, significant rudder pedal positions (encompassing significant rudder pedal position data points), acceptable to the NSPM, using a control surface protractor on the ground (for airplanes with reversible control systems, this function should be accomplished with winds less than 5 kts.). Force data may be acquired by using a hand-held force gauge at the same rudder pedal position data points.	
2.a.4. Handling Qualities. Static Control Checks. Nosewheel Steering Controller Force & Position.	X	X	Breakout data may be acquired with a hand-held force gauge. The remainder of the force to the stops may be calculated if the force gauge and a protractor are used to measure force after breakout for at least 25% of the total displacement capability.	
2.a.5. Handling Qualities. Static Control Checks. Rudder Pedal Steering Calibration.	X	X	Data may be acquired through the use of force pads on the rudder pedals and a pedal position measurement device, together with design data for nose wheel position.	
2.a.6. Handling Qualities. Static Control Checks. Pitch Trim Indicator vs. Surface Position Calibration.	X	X	Data may be acquired through calculations.	
2.a.7. Handling qualities. Static control tests. Pitch trim rate..	X	X	Data may be acquired by using a synchronized video of pitch trim indication and elapsed time through range of trim indication.	
2.a.8. Handling Qualities. Static Control tests. Alignment of Cockpit Throttle Lever Angle vs. Selected engine parameter.	X	X	Data may be acquired through the use of a temporary throttle quadrant scale to document throttle position. Use a synchronized video to record steady state instrument readings or hand-record steady state engine performance readings.	
2.a.9. Handling qualities. Static control tests. Brake pedal position vs. force and brake system pressure calibration.	X	X	Use of design or predicted data is acceptable. Data may be acquired by measuring deflection at ''zero'' and ''maximum'' and calculating deflections between the extremes using the airplane design data curve.	

TABLE A2E—ALTERNATIVE DATA SOURCES, PROCEDURES, AND INSTRUMENTATION—Continued

Information				
Table of objective tests	Sim level		Alternative data sources, procedures, and instrumentation	Notes and reminders
Test reference number and title	A	B		
2.c.1. Handling qualities. Longitudinal control tests. Power change dynamics.	X	X	Data may be acquired by using an inertial measurement system and a synchronized video of: The calibrated airplane instruments and throttle position.	
2.c.2. Handling qualities. Longitudinal control tests. Flap/slat change dynamics.	X	X	Data may be acquired by using an inertial measurement system and a synchronized video of: Calibrated airplane instruments and flap/slat position.	
2.c.3. Handling qualities. Longitudinal control tests. Spoiler/speedbrake change dynamics.	X	X	Data may be acquired by using an inertial measurement system and a synchronized video of: The calibrated airplane instruments and spoiler/speedbrake position.	
2.c.4. Handling qualities. Longitudinal control tests. Gear change dynamics.	X	X	Data may be acquired by using an inertial measurement system and a synchronized video of: The calibrated airplane instruments and gear position.	
2.c.5. Handling qualities. Longitudinal control tests. Longitudinal trim.	X	X	Data may be acquired through use of an inertial measurement system and a synchronized video of: The cockpit controls position (previously calibrated to show related surface position) and the engine instrument readings.	
2.c.6. Handling qualities. Longitudinal control tests. Longitudinal maneuvering stability (stick force/g).	X	X	Data may be acquired through the use of an inertial measurement system and a synchronized video of: The calibrated airplane instruments; a temporary, high resolution bank angle scale affixed to the attitude indicator; and a wheel and column force measurement indication.	
2.c.7. Handling qualities. Longitudinal control tests. Longitudinal static stability.	X	X	Data may be acquired through the use of a synchronized video of: the airplane flight instruments and a hand-held force gauge.	
2.c.8. Handling qualities. Longitudinal control tests. Stall characteristics.	X	X	Data may be acquired through a synchronized video recording of: A stopwatch and the calibrated airplane airspeed indicator. Hand-record the flight conditions and airplane configuration.	Airspeeds may be cross-checked with those in the TIR and AFM.
2.c.9. Handling qualities. Longitudinal control tests. Phugoid dynamics.	X	X	Data may be acquired by using an inertial measurement system and a synchronized video of: The calibrated airplane instruments and the force/position measurements of cockpit controls.	
2.c.10. Handling qualities. Longitudinal control tests. Short period dynamics.		X	Data may be acquired by using an inertial measurement system and a synchronized video of: The calibrated airplane instruments and the force/position measurements of cockpit controls.	
2.d.1. Handling qualities. Lateral directional tests. Minimum control speed, air (V_{mca} or V_{mci}), per applicable airworthiness standard or Low speed engine inoperative handling characteristics in the air.	X	X	Data may be acquired by using an inertial measurement system and a synchronized video of: The calibrated airplane instruments and the force/position measurements of cockpit controls.	

TABLE A2E—ALTERNATIVE DATA SOURCES, PROCEDURES, AND INSTRUMENTATION—Continued

Information				
Table of objective tests	Sim level		Alternative data sources, procedures, and instrumentation	Notes and reminders
Test reference number and title	A	B		
2.d.2. Handling qualities. Lateral directional tests. Roll response (rate).	X	X	Data may be acquired by using an inertial measurement system and a synchronized video of: The calibrated airplane instruments and the force/position measurements of cockpit lateral controls.	May be combined with step input of cockpit roll controller test, 2.d.3
2.d.3. Handling qualities. Lateral directional tests. Roll response to cockpit roll controller step input.	X	X	Data may be acquired by using an inertial measurement system and a synchronized video of: The calibrated airplane instruments and the force/position measurements of cockpit lateral controls..	
2.d.4. Handling qualities. Lateral directional tests. Spiral stability.	X	X	Data may be acquired by using an inertial measurement system and a synchronized video of: The calibrated airplane instruments; the force/position measurements of cockpit controls; and a stopwatch.	
2.d.5. Handling qualities. Lateral directional tests. Engine inoperative trim.	X	X	Data may be hand recorded in-flight using high resolution scales affixed to trim controls that have been calibrated on the ground using protractors on the control/trim surfaces with winds less than 5 kts.. OR Data may be acquired during second segment climb (with proper pilot control input for an engine-out condition) by using a synchronized video of: The calibrated airplane instruments; and the force/position measurements of cockpit controls	Trimming during second segment climb is not a certification task and should not be conducted until a safe altitude is reached.
2.d.6. Handling qualities. Lateral directional tests. Rudder response.	X	X	Data may be acquired by using an inertial measurement system and a synchronized video of: The calibrated airplane instruments; the force/position measurements of rudder pedals.	
2.d.7. Handling qualities. Lateral directional tests. Dutch roll, (yaw damper OFF).	X	X	Data may be acquired by using an inertial measurement system and a synchronized video of: The calibrated airplane instruments; the force/position measurements of cockpit controls.	
2.d.8. Handling qualities. Lateral directional tests. Steady state sideslip.		X	Data may be acquired by using an inertial measurement system and a synchronized video of: The calibrated airplane instruments; the force/position measurements of cockpit controls. Ground track and wind corrected heading may be used for sideslip angle..	
2.e.1. Handling qualities. Landings. Normal landing.		X	Data may be acquired by using an inertial measurement system and a synchronized video of: The calibrated airplane instruments; the force/position measurements of cockpit controls.	

TABLE A2E—ALTERNATIVE DATA SOURCES, PROCEDURES, AND INSTRUMENTATION—Continued

Information				
Table of objective tests	Sim level		Alternative data sources, procedures, and instrumentation	Notes and reminders
Test reference number and title	A	B		
2.e.3. Handling qualities. Landings. Crosswind landing.		X	Data may be acquired by using an inertial measurement system and a synchronized video of: The calibrated airplane instruments; the force/position measurements of cockpit controls.	
2.e.4. Handling qualities. Landings. One engine inoperative landing.		X	Data may be acquired by using an inertial measurement system and a synchronized video of: The calibrated airplane instruments; the force/position measurements of cockpit controls. Normal and lateral accelerations may be recorded in lieu of AOA and sideslip.	
2.e.5. Handling qualities. Landings. Autopilot landing (if applicable).		X	Data may be acquired by using an inertial measurement system and a synchronized video of: the calibrated airplane instruments; the force/position measurements of cockpit controls. Normal and lateral accelerations may be recorded in lieu of AOA and sideslip.	
2.e.6. Handling qualities. Landings. All engines operating, autopilot, go around.		X	Data may be acquired by using an inertial measurement system and a synchronized video of: The calibrated airplane instruments; the force/position measurements of cockpit controls. Normal and lateral accelerations may be recorded in lieu of AOA and sideslip.	
2.e.7. Handling qualities. Landings. One engine inoperative go around.		X	Data may be acquired by using an inertial measurement system and a synchronized video of: The calibrated airplane instruments; the force/position measurements of cockpit controls. Normal and lateral accelerations may be recorded in lieu of AOA and sideslip.	
2.e.8. Handling qualities. Landings. Directional control (rudder effectiveness with symmetric thrust).		X	Data may be acquired by using an inertial measurement system and a synchronized video of: The calibrated airplane instruments; the force/position measurements of cockpit controls. Normal and lateral accelerations may be recorded in lieu of AOA and sideslip.	
2.e.9. Handling qualities. Landings. Directional control (rudder effectiveness with asymmetric reverse thrust).			Data may be acquired by using an inertial measurement system and a synchronized video of: The calibrated airplane instruments; the force/position measurements of cockpit controls. Normal and lateral accelerations may be recorded in lieu of AOA and sideslip.	
2.f. Handling qualities. Ground effect. Test to demonstrate ground effect.		X	Data may be acquired by using calibrated airplane instruments, an inertial measurement system, and a synchronized video of: The calibrated airplane instruments; the force/position measurements of cockpit controls.	

ATTACHMENT 3 TO APPENDIX A TO PART 60—SIMULATOR SUBJECTIVE EVALUATION

1. DISCUSSION

BEGIN INFORMATION

a. The subjective tests provide a basis for evaluating the capability of the simulator to perform over a typical utilization period; determining that the simulator accurately simulates each required maneuver, procedure, or task; and verifying correct operation of the simulator controls, instruments, and systems. The items listed in the following Tables are for simulator evaluation purposes only. They must not be used to limit or exceed the authorizations for use of a given level of simulator as described on the Statement of Qualification or as may be approved by the TPAA.

b. The tests in Table A3A, Operations Tasks, in this attachment, address pilot functions, including maneuvers and procedures (called flight tasks), and is divided by flight phases. The performance of these tasks by the NSPM includes an operational examination of the visual system and special effects. There are flight tasks included to address some features of advanced technology airplanes and innovative training programs. For example, ''high angle-of-attack maneuvering'' is included to provide a required alternative to ''approach to stalls'' for airplanes employing flight envelope protection functions.

c. The tests in Table A3A, Operations Tasks, and Table A3G, Instructor Operating Station of this attachment, address the overall function and control of the simulator including the various simulated environmental conditions; simulated airplane system operations (normal, abnormal, and emergency); visual system displays; and special effects necessary to meet flight crew training, evaluation, or flight experience requirements.

d. All simulated airplane systems functions will be assessed for normal and, where appropriate, alternate operations. Normal, abnormal, and emergency operations associated with a flight phase will be assessed during the evaluation of flight tasks or events within that flight phase. Simulated airplane systems are listed separately under ''Any Flight Phase'' to ensure appropriate attention to systems checks. Operational navigation systems (including inertial navigation systems, global positioning systems, or other long-range systems) and the associated electronic display systems will be evaluated if installed. The NSP pilot will include in his report to the TPAA, the effect of the system operation and any system limitation.

e. Simulators demonstrating a satisfactory circling approach will be qualified for the circling approach maneuver and may be approved for such use by the TPAA in the sponsor's FAA-approved flight training program. To be considered satisfactory, the circling approach will be flown at maximum gross weight for landing, with minimum visibility for the airplane approach category, and must allow proper alignment with a landing runway at least 90° different from the instrument approach course while allowing the pilot to keep an identifiable portion of the airport in sight throughout the maneuver (reference—14 CFR 91.175(e)).

f. At the request of the TPAA, the NSPM may assess a device to determine if it is capable of simulating certain training activities in a sponsor's training program, such as a portion of a Line Oriented Flight Training (LOFT) scenario. Unless directly related to a requirement for the qualification level, the results of such an evaluation would not affect the qualification level of the simulator. However, if the NSPM determines that the simulator does not accurately simulate that training activity, the simulator would not be approved for that training activity.

g. Previously qualified simulators with certain early generation Computer Generated Image (CGI) visual systems, are limited by either the capability of the Image Generator or the display system used. These systems are:

(1) Early CGI visual systems that are excepted from the requirement of including runway numbers as a part of the specific runway marking requirements are:

(a) Link NVS and DNVS.

(b) Novoview 2500 and 6000.

(c) FlightSafety VITAL series up to, and including, VITAL III, but not beyond.

(d) Redifusion SP1, SP1T, and SP2.

(2) Some early CGI visual systems are excepted from the requirement of including runway numbers, unless the runways are used for LOFT training sessions. These LOFT airport models require runway numbers but only for the specific runway end (one direction) used in the LOFT session. The systems required to display runway numbers only for LOFT scenes are:

(a) FlightSafety VITAL IV.

(b) Redifusion SP3 and SP3T.

(c) Link-Miles Image II.

(3) The following list of previously qualified CGI and display systems are incapable of generating blue lights. These systems are not required to have accurate taxi-way edge lighting:

(a) Redifusion SP1.

(b) FlightSafety Vital IV.

(c) Link-Miles Image II and Image IIT.

(d) XKD displays (even though the XKD image generator is capable of generating blue colored lights, the display cannot accommodate that color).

The NSPM will evaluate each device to determine the appropriate qualification level

based on the limitations of the visual system.

END INFORMATION

TABLE A3A—FUNCTIONS AND SUBJECTIVE TESTS

<<< QPS requirements >>>					
Item No.	Operations tasks	Simulator level			
		A	B	C	D
	Tasks in this table are subjecgt to evaluation if appropriate for the airplane simulated as indicated in the SOQ Configuration List and/or the level of simulator qualification involved. Items not installed or not functional on the simulator and, therefore, not appearing on the SOQ Configuration List, are not required to be listed as exceptions on the SOQ.				
1.	Preparation For Flight. Preflight. Accomplish a functions check of all switches, indicators, systems, and equipment at all crewmembers' and instructors' stations and determine that the flight deck design and functions are identical to that of the airplane simulated.	X	X	X	X
2.	Surface Operations (Pre-Take-Off).				
2.a.	Engine Start.				
2.a.1.	Normal start	X	X	X	X
2.a.2.	Alternate start procedures	X	X	X	X
2.a.3.	Abnormal starts and shutdowns (e.g., hot/hung start, tail pipe fire)	X	X	X	X
2.b.	Pushback/Powerback		X	X	X
2.c.	Taxi.				
2.c.1.	Thrust response	X	X	X	X
2.c.2.	Power lever friction	X	X	X	X
2.c.3.	Ground handling	X	X	X	X
2.c.4.	Nose wheel scuffing			X	X
2.c.5.	Brake operation (normal and alternate/emergency)	X	X	X	X
2.c.6.	Brake fade (if applicable)	X	X	X	X
3.	Take-off.				
3.a.	Normal.				
3.a.1.	Airplane/engine parameter relationships	X	X	X	X
3.a.2.	Acceleration characteristics (motion)	X	X	X	X
3.a.3.	Nose wheel and rudder steering	X	X	X	X
3.a.4.	Crosswind (maximum demonstrated)	X	X	X	X
3.a.5.	Special performance (e.g., reduced V_1, max de-rate, short field operations)	X	X	X	X
3.a.6.	Low visibility take-off	X	X	X	X
3.a.7.	Landing gear, wing flap leading edge device operation	X	X	X	X
3.a.8.	Contaminated runway operation			X	X
3.b.	Abnormal/emergency				
3.b.1.	Rejected Take-off	X	X	X	X
3.b.2.	Rejected special performance (e.g., reduced V_1, max de-rate, short field operations).	X	X	X	X
3.b.3.	With failure of most critical engine at most critical point, continued take-off	X	X	X	X

TABLE A3A—FUNCTIONS AND SUBJECTIVE TESTS—Continued

<<< QPS requirements >>>					
Item No.	Operations tasks	Simulator level			
		A	B	C	D
3.b.4.	With wind shear	X	X	X	X
3.b.5.	Flight control system failures, reconfiguration modes, manual reversion and associated handling.	X	X	X	X
3.b.6.	Rejected takeoff with brake fade			X	X
3.b.7.	Rejected, contaminated runway			X	X
	(i).				
4.	Climb.				
4.a.	Normal.	X	X	X	X
4.b.	One or more engines inoperative	X	X	X	X
5.	Cruise.				
5.a.	Performance characteristics (speed vs. power)	X	X	X	X
5.b.	High altitude handling	X	X	X	X
5.c.	High Mach number handling (Mach tuck, Mach buffet) and recovery (trim change).	X	X	X	X
5.d.	Overspeed warning (in excess of V_{mo} or M_{mo})	X	X	X	X
5.e.	High IAS handling	X	X	X	X
6.	Maneuvers.				
6.a.	High angle of attack, approach to stalls, stall warning, buffet, and g-break (takeoff, cruise, approach, and landing configuration).	X	X	X	X
6.b.	Flight envelope protection (high angle of attack, bank limit, overspeed, etc)	X	X	X	X
6.c.	Turns with/without speedbrake/spoilers deployed	X	X	X	X
6.d.	Normal and steep turns	X	X	X	X
6.e.	In flight engine shutdown and restart (assisted and windmill)	X	X	X	X
6.f.	Maneuvering with one or more engines inoperative, as appropriate	X	X	X	X
6.g.	Specific flight characteristics (e.g., direct lift control)	X	X	X	X
6.h.	Flight control system failures, reconfiguration modes, manual reversion and associated handling.	X	X	X	X
7.	Descent.				
7.a.	Normal	X	X	X	X
7.b.	Maximum rate (clean and with speedbrake, etc)	X	X	X	X
7.c.	With autopilot	X	X	X	X
7.d.	Flight control system failures, reconfiguration modes, manual reversion and associated handling.	X	X	X	X
8.	Instrument Approaches and Landing.				

TABLE A3A—FUNCTIONS AND SUBJECTIVE TESTS—Continued

<<< QPS requirements >>>					
Item No.	Operations tasks	Simulator level			
		A	B	C	D
	Those instrument approach and landing tests relevant to the simulated airplane type are selected from the following list. Some tests are made with limiting wind velocities, under windshear conditions, and with relevant system failures, including the failure of the Flight Director. If Standard Operating Procedures allow use autopilot for non-precision approaches, evaluation of the autopilot will be included. Level A simulators are not authorized to credit the landing maneuver.				
8.a.	Precision.				
8.a.1.	PAR	X	X	X	X
8.a.2.	CAT I/GBAS (ILS/MLS) published approaches	X	X	X	X
	(i) Manual approach with/without flight director including landing	X	X	X	X
	(ii) Autopilot/autothrottle coupled approach and manual landing	X	X	X	X
	(iii) Manual approach to DH and go-around all engines.	X	X	X	X
	(iv) Manual one engine out approach to DH and go-around	X	X	X	X
	(v) Manual approach controlled with and without flight director to 30 m (100 ft) below CAT I minima.				
	A. With cross-wind (maximum demonstrated)	X	X	X	X
	B. With windshear	X	X	X	X
	(vi) Autopilot/autothrottle coupled approach, one engine out to DH and go-around approach, one engine out to DH and go-around.	X	X	X	X
	(vii) Approach and landing with minimum/standby electrical power	X	X	X	X
8.a.3.	CAT II/GBAS (ILS/MLS) published approaches.	X	X	X	X
	(i) Autopilot/autothrottle coupled approach to DH and landing	X	X	X	X
	(ii) Autopilot/autothrottle coupled approach to DH and go-around	X	X	X	X
	(iii) Autocoupled approach to DH and manual go-around	X	X	X	X
	(iv) Category II published approach (auto-coupled, autothrottle)	X	X	X	X
8.a.4.	CAT III/GBAS (ILS/MLS) published approaches	X	X	X	X
	(i) Autopilot/autothrottle coupled approach to land and rollout	X	X	X	X
	(ii) Autopilot/autothrottle coupled approach to DH/Alert Height and go-around	X	X	X	X
	(iii) Autopilot/autothrottle coupled approach to land and rollout with one engine out.	X	X	X	X
	(iv) Autopilot/autothrottle coupled approach to DH/Alert Height and go-around with one engine out.	X	X	X	X
	(v) Autopilot/autothrottle coupled approach (to land or to go around)	X	X	X	X
	A. With generator failure	X	X	X	X
	B. With 10 knot tail wind	X	X	X	X
	C. With 10 knot crosswind	X	X	X	X
		X	X	X	X
8.b.	Non-precision.				
8.b.1.	NDB	X	X	X	X
8.b.2.	VOR, VOR/DME, VOR/TAC	X	X	X	X
8.b.3.	RNAV (GNSS/GPS)	X	X	X	X
8.b.4.	ILS LLZ (LOC), LLZ(LOC)/BC	X	X	X	X

TABLE A3A—FUNCTIONS AND SUBJECTIVE TESTS—Continued

<<< QPS requirements >>>					
Item No.	Operations tasks	Simulator level			
		A	B	C	D
8.b.5.	ILS offset localizer	X	X	X	X
8.b.6.	Direction finding facility (ADF/SDF)	X	X	X	X
8.b.7.	Airport surveillance radar (ASR)	X	X	X	X
9.	Visual Approaches (Visual Segment) And Landings				
	Flight simulators with visual systems, which permit completing a special approach procedure in accordance with applicable regulations, may be approved for that particular approach procedure				
9.a.	Maneuvering, normal approach and landing, all engines operating with and without visual approach aid guidance.	X	X	X	X
9.b.	Approach and landing with one or more engines inoperative	X	X	X	X
9.c.	Operation of landing gear, flap/slats and speedbrakes (normal and abnormal)	X	X	X	X
9.d.	Approach and landing with crosswind (max. demonstrated)	X	X	X	X
9.e.	Approach to land with windshear on approach	X	X	X	X
9.f.	Approach and landing with flight control system failures, reconfiguration modes, manual reversion and associated handling (most significant degradation which is probable).	X	X	X	X
9.g.	Approach and landing with trim malfunctions	X	X	X	X
9.g.1.	Longitudinal trim malfunction	X	X	X	X
9.g.2.	Lateral-directional trim malfunction	X	X	X	X
9.h.	Approach and landing with standby (minimum) electrical/hydraulic power	X	X	X	X
9.i.	Approach and landing from circling conditions (circling approach)	X	X	X	X
9.j.	Approach and landing from visual traffic pattern	X	X	X	X
9.k.	Approach and landing from non-precision approach	X	X	X	X
9.l.	Approach and landing from precision approach	X	X	X	X
9.m.	Approach procedures with vertical guidance (APV), e.g., SBAS.	X	X	X	X
10.	Missed Approach.				
10.a.	All engines	X	X	X	X
10.b.	One or more engine(s) out	X	X	X	X
10.c.	With flight control system failures, reconfiguration modes, manual reversion and associated handling.	X	X	X	X
11.	Surface Operations (Landing roll and taxi).				
11.a.	Spoiler operation	X	X	X	X
11.b.	Reverse thrust operation	X	X	X	X
11.c.	Directional control and ground handling, both with and without reverse thrust		X	X	X
11.d.	Reduction of rudder effectiveness with increased reverse thrust (rear pod-mounted engines).		X	X	X
11.e.	Brake and anti-skid operation with dry, wet, and icy conditions			X	X
11.f.	Brake operation, to include auto-braking system where applicable	X	X	X	X
12.	Any Flight Phase.				

TABLE A3A—FUNCTIONS AND SUBJECTIVE TESTS—Continued

<<< QPS requirements >>>

Item No.	Operations tasks	Simulator level			
		A	B	C	D
12.a.	Airplane and engine systems operation.				
12.a.1.	Air conditioning and pressurization (ECS)	X	X	X	X
12.a.2.	De-icing/anti-icing	X	X	X	X
12.a.3.	Auxiliary power unit (APU)	X	X	X	X
12.a.4.	Communications	X	X	X	X
12.a.5.	Electrical	X	X	X	X
12.a.6.	Fire and smoke detection and suppression	X	X	X	X
12.a.7.	Flight controls (primary and secondary)	X	X	X	X
12.a.8.	Fuel and oil, hydraulic and pneumatic	X	X	X	X
12.a.9.	Landing gear	X	X	X	X
12.a.10.	Oxygen	X	X	X	X
12.a.11.	Engine	X	X	X	X
12.a.12.	Airborne radar	X	X	X	X
12.a.13.	Autopilot and Flight Director	X	X	X	X
12.a.14.	Collision avoidance systems. (e.g., (E)GPWS, TCAS)	X	X	X	X
12.a.15.	Flight control computers including stability and control augmentation	X	X	X	X
12.a.16.	Flight display systems	X	X	X	X
12.a.17.	Flight management computers	X	X	X	X
12.a.18.	Head-up guidance, head-up displays	X	X	X	X
12.a.19.	Navigation systems	X	X	X	X
12.a.20.	Stall warning/avoidance	X	X	X	X
12.a.21.	Wind shear avoidance equipment	X	X	X	X
12.a.22.	Automatic landing aids	X	X	X	X
12.b.	Airborne procedures				
12.b.1.	Holding	X	X	X	X
12.b.2.	Air hazard avoidance (Traffic, Weather)			X	X
12.b.3.	Windshear.			X	X
12.b.4.	Effects of airframe ice			X	X
12.c.	Engine shutdown and parking.				
12.c.1.	Engine and systems operation	X	X	X	X
12.c.2.	Parking brake operation	X	X	X	X

Table A3B [Reserved]
Table A3C [Reserved]
Table A3D [Reserved]
Table A3E [Reserved]
Table A3F [Reserved]

TABLE A3G— FUNCTIONS AND SUBJECTIVE TESTS

<<< QPS requirements >>>					
Item number	Operations tasks	Simulator level			
		A	B	C	D
	Functions in this table are subject to evaluation only if appropriate for the airplane and/or the system is installed on the specific simular.				
1.	Simulator Power Switch(es)	X	X	X	X
2.	Airplane conditions.				
2.a.	Gross weight, center of gravity, fuel loading and allocation	X	X	X	X
2.b.	Airplane systems status	X	X	X	X
2.c.	Ground crew functions (e.g., ext. power, push back)	X	X	X	X
3.	Airports.				
3.a.	Number and selection	X	X	X	X
3.b.	Runway selection	X	X	X	X
3.c.	Runway surface condition (e.g., rough, smooth, icy, wet)			X	X
3.d.	Preset positions (e.g., ramp, gate, #1 for takeoff, takeoff position, over FAF)	X	X	X	X
3.e.	Lighting controls	X	X	X	X
4.	Environmental controls.				
4.a	Visibility (statute miles (kilometers))	X	X	X	X
4.b.	Runway visual range (in feet (meters))	X	X	X	X
4.c.	Temperature	X	X	X	X
4.d.	Climate conditions (e.g., ice, snow, rain)	X	X	X	X
4.e.	Wind speed and direction	X	X	X	X
4.f.	Windshear			X	X
4.g.	Clouds (base and tops)	X	X	X	X
5.	Airplane system malfunctions (Inserting and deleting malfunctions into the simulator).	X	X	X	X
6.	Locks, Freezes, and Repositioning				
6.a.	Problem (all) freeze / release	X	X	X	X
6.b.	Position (geographic) freeze/release	X	X	X	X
6.c.	Repositioning (locations, freezes, and releases).	X	X	X	X
6.d.	Ground speed control	X	X	X	X
7.	Remote IOS	X	X	X	X
8.	Sound Controls On/ off/ adjustment	X	X	X	X
9.	Motion / Control Loading System.				
9.a.	On / off / emergency stop	X	X	X	X
9.b.	Crosstalk (motion response in a given degree of freedom not perceptible in other degrees of freedom).	X	X	X	X
9.c.	Smoothness (no perceptible ‘‘turn-around bump’’ as the direction of motion reverses with the simulator being ‘‘flown’’ normally).	X	X	X	X
10.	Observer Seats / Stations. Position / Adjustment / Positive restraint system.	X	X	X	X

BEGIN INFORMATION

1. INTRODUCTION

a. The following is an example test schedule for an Initial/Upgrade evaluation that covers the majority of the requirements set out in the Functions and Subjective test requirements. It is not intended that the schedule be followed line by line, rather, the example should be used as a guide for preparing a schedule that is tailored to the airplane, sponsor, and training task.

b. Functions and subjective tests should be planned. This information has been organized as a reference document with the considerations, methods, and evaluation notes for each individual aspect of the simulator task presented as an individual item. In this way the evaluator can design their own test plan, using the appropriate sections to provide guidance on method and evaluation criteria. Two aspects should be present in any test plan structure:

(1) An evaluation of the simulator to determine that it replicates the aircraft and performs reliably for an uninterrupted period equivalent to the length of a typical training session.

(2) The simulator should be capable of operating reliably after the use of training device functions such as repositions or malfunctions.

c. A detailed understanding of the training task will naturally lead to a list of objectives that the simulator should meet. This list will form the basis of the test plan. Additionally, once the test plan has been formulated, the initial conditions and the evaluation criteria should be established. The evaluator should consider all factors that may have an influence on the characteristics observed during particular training tasks in order to make the test plan successful.

2. EVENTS

a. Initial Conditions.
(1) Airport;
(2) QNH;
(3) Temperature;
(4) Wind/Crosswind;
(5) Zero Fuel Weight/Fuel/Gross Weight/Center of Gravity
b. Initial Checks.
(1) Documentation of Simulator.
(a) Simulator Acceptance Test Manuals.
(b) Simulator Approval Test Guide.
(c) Technical Logbook Open Item List.
(d) Daily Functional Pre-flight Check.
(2) Documentation of User/Carrier Flight Logs.
(a) Simulator Operating/Instructor Manual.
(b) Difference List (Aircraft/Simulator).
(c) Flight Crew Operating Manuals.
(d) Performance Data for Different Fields.
(e) Crew Training Manual.
(f) Normal/Abnormal/Emergency Checklists.
(3) Simulator External Checks.
(a) Appearance and Cleanliness.
(b) Stairway/Access Bridge.
(c) Emergency Rope Ladders.
(d) ''Motion On''/''Flight in Progress'' Lights.
(4) Simulator Internal Checks.
(a) Cleaning/Disinfecting Towels (for cleaning oxygen masks).
(b) Cockpit Layout (compare with difference list).
(5) Equipment.
(a) Quick Donning Oxygen Masks.
(b) Head Sets.
(c) Smoke Goggles.
(d) Sun Visors.
(e) Escape Rope.
(f) Chart Holders.
(g) Flashlights.
(h) Fire Extinguisher (inspection date).
(i) Crash Axe.
(j) Gear Pins.
c. Power Supply and APU Start Checks.
(1) Batteries and Static Inverter.
(2) APU Start with Battery.
(3) APU Shutdown using Fire Handle.
(4) External Power Connection.
(5) APU Start with External Power.
(6) Abnormal APU Start/Operation.
d. Cockpit Checks.
(1) Cockpit Preparation Checks.
(2) FMC Programming.
(3) Communications and Navigational Aids Checks.
e. Engine Start.
(1) Before Start Checks.
(2) Battery Start with Ground Air Supply Unit.
(3) Engine Crossbleed Start.
(4) Normal Engine Start.
(5) Abnormal Engine Starts.
(6) Engine Idle Readings.
(7) After Start Checks.
f. Taxi Checks.
(1) Pushback/Powerback.
(2) Taxi Checks.
(3) Ground Handling Check:
(a) Power required to initiate ground roll.
(b) Thrust response.
(c) Nose Wheel and Pedal Steering.
(d) Nosewheel Scuffing.
(e) Perform 180 degree turns.
(f) Brakes Response and Differential Braking using Normal, Alternate and Emergency.
(g) Brake Systems.
(h) Eye height and fore/aft position.
(4) Runway Roughness.
g. Visual Scene—Ground Assessment.
(Select 3 different visual models and perform the following checks with Day, Dusk and Night selected, as appropriate):
(1) Visual Controls.
(a) Daylight, Dusk, Night Scene Controls.
(b) Cockpit ''Daylight'' ambient lighting.

(c) Environment Light Controls.
(d) Runway Light Controls.
(e) Taxiway Light Controls.
(2) Scene Content.
(a) Ramp area for buildings, gates, airbridges, maintenance ground equipment, parked aircraft.
(b) Daylight shadows, night time light pools.
(c) Taxiways for correct markings, taxiway/runway, marker boards, CAT I & II/III hold points, taxiway shape/grass areas, taxiway light (positions and colors).
(d) Runways for correct markings, lead-off lights, boards, runway slope, runway light positions, and colors, directionality of runway lights.
(e) Airport environment for correct terrain and, significant features.
(f) Visual scene aliasing, color, and occulting levels.
(3) Ground Traffic Selection.
(4) Environment Effects.
(a) Low cloud scene.
(i) Rain:
(A) Runway surface scene.
(B) Windshield wiper—operation and sound.
(ii) Hail:
(A) Runway surface scene.
(B) Windshield wiper—operation and sound.
(b) Lightning/thunder.
(c) Snow/ice runway surface scene.
(d) Fog.
h. Takeoff.
(Select one or several of the following test cases):
(1) T/O Configuration Warnings.
(2) Engine Takeoff Readings.
(3) Rejected Takeoff (Dry/Wet/Icy Runway) and check the following:
(a) Autobrake function.
(b) Anti-skid operation.
(c) Motion/visual effects during deceleration.
(d) Record stopping distance (use runway plot or runway lights remaining).
(Continue taxiing along the runway while applying brakes and check the following).
(e) Center line lights alternating red/white for 2000 feet/600 meters.
(f) Center line lights all red for 1000 feet/300 m.
(g) Runway end, red stop bars.
(h) Braking fade effect.
(i) Brake temperature indications.
(4) Engine Failure between VI and V2.
(5) Normal Takeoff:
(a) During ground roll check the following:
(i) Runway rumble.
(ii) Acceleration cues.
(iii) Groundspeed effects.
(iv) Engine sounds.
(v) Nosewheel and rudder pedal steering.
(b) During and after rotation, check the following:
(i) Rotation characteristics.
(ii) Column force during rotation.
(iii) Gear uplock sounds/bumps.
(iv) Effect of slat/flap retraction during climbout.
(6) Crosswind Takeoff (check the following):
(a) Tendency to turn into or out of the wind.
(b) Tendency to lift upwind wing as airspeed increases.
(7) Windshear during Takeoff (check the following):
(a) Controllable during windshear encounter.
(b) Performance adequate when using correct techniques.
(c) Windshear Indications satisfactory.
(d) Motion cues satisfactory (particularly turbulence).
(8) Normal Takeoff with Control Malfunction.
(9) Low Visibility T/O (check the following):
(a) Visual cues.
(b) Flying by reference to instruments.
(c) SID Guidance on LNAV.
i. Climb Performance.
Select one or several of the following test cases:
(1) Normal Climb—Climb while maintaining recommended speed profile and note fuel, distance and time.
(2) Single Engine Climb—Trim aircraft in a zero wheel climb at V2.
NOTE: Up to 5° bank towards the operating engine(s) is permissible. Climb for 3 minutes and note fuel, distance, and time. Increase speed toward en route climb speed and retract flaps. Climb for 3 minutes and note fuel, distance, and time.
j. Systems Operation During Climb.
Check normal operation and malfunctions as appropriate for the following systems:
(1) Air conditioning/Pressurization/Ventilation.
(2) Autoflight.
(3) Communications.
(4) Electrical.
(5) Fuel.
(6) Icing Systems.
(7) Indicating and Recording systems.
(8) Navigation/FMS.
(9) Pneumatics.
k. Cruise Checks.
(Select one or several of the following test cases):
(1) Cruise Performance.
(2) High Speed/High Altitude Handling (check the following):
(a) Overspeed warning.
(b) High Speed buffet.
(c) Aircraft control satisfactory.
(d) Envelope limiting functions on Computer Controlled Airplanes.
(Reduce airspeed to below level flight buffet onset speed, start a turn, and check the following:)

(e) High Speed buffet increases with G loading.

(Reduce throttles to idle and start descent, deploy the speedbrake, and check the following:)

(f) Speedbrake indications.

(g) Symmetrical deployment.

(h) Airframe buffet.

(i) Aircraft response hands off.

(3) Yaw Damper Operation.

(Switch off yaw dampers and autopilot. Initiate a Dutch roll and check the following:)

(a) Aircraft dynamics.

(b) Simulator motion effects.

(Switch on yaw dampers, re-initiate a Dutch roll and check the following:)

(c) Damped aircraft dynamics.

(4) APU Operation.

(5) Engine Gravity Feed.

(6) Engine Shutdown and Driftdown Check: FMC operation Aircraft performance.

(7) Engine Relight.

l. Descent.

Select one of the following test cases:

(1) Normal Descent Descend while maintaining recommended speed profile and note fuel, distance and time.

(2) Cabin Depressurization/Emergency Descent

m. Medium Altitude Checks.

(Select one or several of the following test cases)

(1) High Angle of Attack/Stall. Trim the aircraft at 1.4 Vs, establish 1 kt/sec^2 deceleration rate, and check the following—

(a) System displays/operation satisfactory.

(b) Handling characteristics satisfactory.

(c) Stall and Stick shaker speed.

(d) Buffet characteristics and onset speed.

(e) Envelope limiting functions on Computer Controlled Airplanes.

(Recover to straight and level flight and check the following:)

(f) Handling characteristics satisfactory.

(2) Turning Flight.

(Roll aircraft to left, establish a 30° to 45° bank angle, and check the following:)

(a) Stick force required, satisfactory.

(b) Wheel requirement to maintain bank angle.

(c) Slip ball response, satisfactory.

(d) Time to turn 180°.

(Roll aircraft from 45° bank one way to 45° bank the opposite direction while maintaining altitude and airspeed—check the following:)

(e) Controllability during maneuver.

(3) Degraded flight controls.

(4) Holding Procedure (check the following:)

(a) FMC operation.

(b) Auto pilot auto thrust performance.

(5) Storm Selection (check the following:)

(a) Weather radar controls.

(b) Weather radar operation.

(c) Visual scene corresponds with WXR pattern.

(Fly through storm center, and check the following:)

(d) Aircraft enters cloud.

(e) Aircraft encounters representative turbulence.

(f) Rain/hail sound effects evident.

(As aircraft leaves storm area, check the following:)

(g) Storm effects disappear.

(6) TCAS (check the following:)

(a) Traffic appears on visual display.

(b) Traffic appears on TCAS display(s).

(As conflicting traffic approaches, take relevant avoiding action, and check the following:)

(c) Visual and TCAS system displays.

n. Approach And Landing.

Select one or several of the following test cases while monitoring flight control and hydraulic systems for normal operation and with malfunctions selected:

(1) Flaps/Gear Normal Operation (Check the following:)

(a) Time for extension/retraction.

(b) Buffet characteristics.

(2) Normal Visual Approach and Landing.

Fly a normal visual approach and landing—check the following:

(a) Aircraft handling.

(b) Spoiler operation.

(c) Reverse thrust operation.

(d) Directional control on the ground.

(e) Touchdown cues for main and nose wheel.

(f) Visual cues.

(g) Motion cues.

(h) Sound cues.

(i) Brake and Anti-skid operation.

(3) Flaps/Gear Abnormal Operation or with hydraulic malfunctions.

(4) Abnormal Wing Flaps/Slats Landing.

(5) Manual Landing with Control Malfunction.

(a) Aircraft handling.

(b) Aircraft handling.

(c) Radio Aids and instruments.

(d) Visual scene content and cues.

(e) Motion cues.

(f) Sound cues.

(6) Non-precision Approach—All Engines Operating.

(a) Aircraft handling.

(b) Aircraft handling.

(c) Radio Aids and instruments.

(d) Visual scene content and cues.

(e) Motion cues.

(f) Sound cues.

(7) Circling Approach.

(a) Aircraft handling.

(b) Aircraft handling.

(c) Radio Aids and instruments.

(d) Visual scene content and cues.

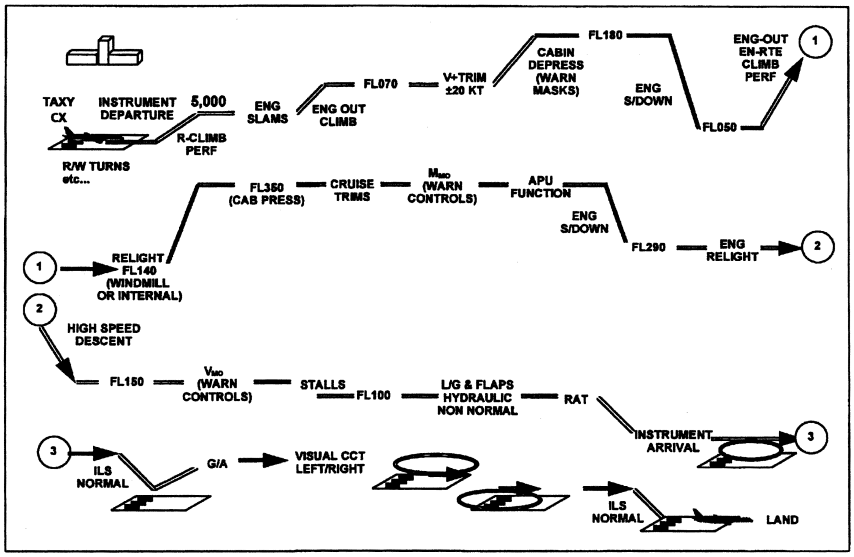
(e) Motion cues.

(f) Sound cues.

(8) Non-precision Approach—One Engine Inoperative.
(a) Aircraft handling.
(b) Aircraft handling.
(c) Radio Aids and instruments.
(d) Visual scene content and cues.
(e) Motion cues.
(f) Sound cues.
(9) One Engine Inoperative Go-around.
(a) Aircraft handling.
(b) Aircraft handling.
(c) Radio Aids and instruments.
(d) Visual scene content and cues.
(e) Motion cues.
(f) Sound cues.
(10) CAT I Approach and Landing with raw-data ILS.
(a) Aircraft handling.
(b) Aircraft handling.
(c) Radio Aids and instruments.
(d) Visual scene content and cues.
(e) Motion cues.
(f) Sound cues.
(11) CAT I Approach and Landing with Limiting Crosswind.
(a) Aircraft handling.
(b) Aircraft handling.
(c) Radio Aids and instruments.
(d) Visual scene content and cues.
(e) Motion cues.
(f) Sound cues.
(12) CAT I Approach with Windshear. Check the following:
(a) Controllable during windshear encounter.
(b) Performance adequate when using correct techniques.
(c) Windshear indications/warnings.
(d) Motion cues (particularly turbulence).
(13) CAT II Approach and Automatic Go-Around.
(14) CAT III Approach and Landing—System Malfunctions.
(15) CAT III Approach and Landing—1 Engine Inoperative.
(16) GPWS evaluation.
o. Visual Scene—In-Flight Assessment.
Select three (3) different visual models and perform the following checks with ''day,'' ''dusk,'' and ''night'' (as appropriate) selected. Reposition the aircraft at or below 2000 feet within 10 nm of the airfield. Fly the aircraft around the airport environment and assess control of the visual system and evaluate the visual scene content as described below:
(1) Visual Controls.
(a) Daylight, Dusk, Night Scene Controls.
(b) Cockpit ambient lighting during ''daylight'' conditions.
(c) Environment Light Controls.
(d) Runway Light Controls.
(e) Taxiway Light Controls.
(f) Approach Light Controls.
(2) Scene Content.
(a) Airport environment for correct terrain and significant features.
(b) Runways for correct markings, runway slope, directionality of runway lights.
(c) Visual scene for aliasing, colour, and occulting.
Reposition the aircraft to a long, final approach for an ''ILS runway.'' Select flight freeze when the aircraft is 5-statute miles (sm)/8-kilometers (km) out and on the glide slope.
Check the following:
(3) Scene content.
(a) Airfield features.
(b) Approach lights.
(c) Runway definition.
(d) Runway definition.
(e) Runway edge lights and VASI lights.
(f) Strobe lights.
Release flight freeze. Continue flying the approach with NP engaged. Select flight freeze when aircraft is 3 sm/5 km out and on the glide slope. Check the following:
(4) Scene Content.
(a) Runway centerline light.
(b) Taxiway definition and lights.
Release flight freeze and continue flying the approach with A/P engaged. Select flight freeze when aircraft is 2 sm/3 km out and on the glide slope. Check the following:
(5) Scene content.
(a) Runway threshold lights.
(b) Touchdown zone lights. At 200 ft radio altitude and still on glide slope, select Flight Freeze. Check the following:
(6) Scene content.
(a) Runway markings.
Set the weather to Category I conditions and check the following:
(7) Scene content.
(a) Visual ground segment.
Set the weather to Category II conditions, release Flight Freeze, re-select Flight Freeze at 100 feet radio altitude, and check the following:
(8) Scene content.
(a) Visual ground segment.
Select night/dusk (twilight) conditions and check the following:
(9) Scene content.
(a) Runway markings visible within landing light lobes.
Set the weather to Category III conditions, release Flight Freeze, re-select Flight Freeze at 50 feet radio altitude and check the following:
(10) Scene content.
(a) Visual ground segment.
Set WX to ''missed approach'' conditions, release Flight Freeze, re-select Flight Freeze at 15 feet radio altitude, and check the following:
(11) Scene content.
(a) Visual ground segment.
When on the ground, stop the aircraft. Set 0 feet RVR, ensure strobe/beacon lights are switched on and check the following:
(12) Scene content.
(a) Visual effect of strobe and beacon.

Reposition to final approach, set weather to ''Clear,'' continue approach for an automatic landing, and check the following:
(13) Scene content.
(a) Visual cues during flare to assess sink rate.
(b) Visual cues during flare to assess Depth perception.
(c) Cockpit height above ground.
p. After Landing Operations.
(1) After Landing Checks.
(2) Taxi back to gate (Check the following:)
(a) Visual model satisfactory.
(b) Parking brake operation satisfactory.
(3) Shutdown Checks.
q. Crash Function.
(1) Gear-up Crash.
(2) Excessive rate of descent Crash.
(3) Excessive bank angle Crash.

Typical Subjective Continuing Qualification Evaluation Profile (2 hours)



End Information

ATTACHMENT 4 TO APPENDIX A TO PART 60—SAMPLE DOCUMENTS

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ATTACHMENT 4 TO APPENDIX A TO PART 60—
Figure A4A – Sample Letter , Request for Initial, Upgrade, or Reinstatement Evaluation
INFORMATION

Date _____

Edward D. Cook, Ph.D.
Manager, National Simulator Program
Federal Aviation Administration
100 Hartsfield Centre Parkway
Suite 400
Atlanta, GA 30354

Dear Dr. Cook:

RE: Request for Initial/Upgrade Evaluation Date

This is to advise you of our intent to request an (initial or upgrade) evaluation of our (FSTD Manufacturer), (Aircraft Type/Level) Flight Simulation Training Device (FSTD), (FAA ID Number, if previously qualified), located in (City, State) at the (Facility) on (Proposed Evaluation Date). (The proposed evaluation date shall not be more than 180 days following the date of this letter.) The FSTD will be sponsored by (Name of Training Center/Air Carrier), FAA Designator (4 Letter Code). The FSTD will be sponsored under the following options: (Select One)

☐ The FSTD will be used within the sponsor's FAA approved training program and placed on the sponsor's Training/Operations Specifications; or

☐ The FSTD will be used for dry lease only in accordance with Paragraph 3b, FSTD Guidance Bulletin 03-08.

We agree to provide the formal request for the evaluation (*Ref: Appendix 4, AC 120-40B*) to your staff as follows: (check one)

☐ For QTG tests run at the factory, not later, than 45 days prior to the proposed evaluation date with the additional "l/3 on-site" tests provided not later than 14 days prior to the proposed evaluation date.

☐ For QTG tests run on-site, not later than 30 days prior to the proposed evaluation date.

We understand that the formal request will contain the following documents:

1. Sponsor's Letter of Request (*Company Compliance Letter*).
2. Principal Operations Inspector (POI) or Training Center Program Manager's (TCPM) endorsement.
3. Complete QTG.

If we are unable to meet the above requirements, we understand this may result in a significant delay, perhaps 45 days or more, in rescheduling and completing the evaluation.

(The sponsor should add additional comments as necessary).

Please contact (Name Telephone and Fax Number of Sponsor's Contact) to confirm the date for this initial evaluation. We understand a member of your National Simulator Program staff will respond to this request within 14 days.

A copy of this letter of intent has been provided to (Name), the Principal Operations Inspector (POI) and/or Training Center Program Manager (TCPM).

Sincerely,

Attachment: FSTD Information Form
cc: POI/TCPM

ATTACHMENT 4 TO APPENDIX A TO PART 60—
Figure A4B – Sample Letter , Request for Initial, Upgrade, or Reinstatement Evaluation
Attachment: FSTD Information Form
INFORMATION

Date: ____					
Section 1. FSTD Information and Characteristics					
Sponsor Name:	____		**FSTD Location:**		
Address:	____ ____		**Physical Address:**	____ ____	
City:	____		**City:**	____	
State:	____		**State:**	____	
Country:	____		**Country:**	____	
ZIP:	____		**ZIP:**	____	
Manager	____				
Sponsor ID No: *(Four Letter FAA Designator)*	____		**Nearest Airport:** *(Airport Designator)*	____	
Type of Evaluation Requested:			☐ **Initial** ☐ **Upgrade** ☐ **Recurrent** ☐ **Special** ☐ **Reinstatement**		
Qualification Basis: ____	☐ **A**	☐ **B**	☐ **Interim C**	☐ **C**	☐ **D**
	☐ **6**	☐ **7**	☐ **Provisional Status**		
Initial Qualification: (If Applicable)	**Date:** ____ **Level** ____		**Manufacturer's Identification/Serial No:**	____	
Upgrade Qualification: (If Applicable)	**Date:** ____ **Level** ____ MM/DD/YYYY		☐ **eQTG**		
Other Technical Information:					
FAA FSTD ID No: (If Applicable)	____		**FSTD Manufacturer:**	____	
Convertible FSTD:	☐**Yes:**		**Date of Manufacture:**	____ MM/DD/YYYY	
Related FAA ID No. (If Applicable)	____ ____ ____		**Sponsor FSTD ID No:** ____		
Airplane model/series: ____			**Source of aerodynamic model:** ____		
Engine model(s) and data revision: ____			**Source of aerodynamic coefficient data:** ____		
FMS identification and revision level: ____			**Aerodynamic data revision number:** ____		
Visual system manufacturer/model: ____			**Visual system display:** ____		
Flight control data revision: ____			**FSTD computer(s) identification:** ____		
Motion system manufacturer/type: ____					
National Aviation Authority (NAA): (If Applicable)	____			____	

ATTACHMENT 4 TO APPENDIX A TO PART 60—
Figure A4B – Sample Letter , Request for Initial, Upgrade, or Reinstatement Evaluation
Attachment: FSTD Information Form
INFORMATION

Visual System Manufacturer and Type:	____	**Motion System Manufacturer and Type:**	____
Aircraft Make/Model/Series:	____	**FSTD Seats Available:**	____

Aircraft Equipment	**ENGINE TYPE(S):** ____	**Flight Instrumentation:** ☐ **EFIS** ☐ **HUD** ☐ **HGS** ☐ **EFVS** ☐ **TCAS** ☐ **GPWS** ☐ **Plain View** ☐ **GPS** ☐ **FMS Type:** ____ ☐ **WX Radar** ☐ **Other:** ____	Engine Instrumentation: ☐ **EICAS** ☐ **FADEC** ☐ **Other:** ____

Airport Models:	3.6.1 ____ *Airport Designator*	3.6.2____ *Airport Designator*	3.6.3 ____ *Airport Designator*
Circle to Land:	3. 7.1 ____ *Airport Designator*	3. 7.2____ *Approach*	3. 7.3 ____ *Landing Runway*
Visual Ground Segment	3.8.1 ____ *Airport Designator*	3.8 .2____ *Approach*	3. 8.3 ____ *Landing Runway*

Section 2. Supplementary Information

FAA Training Program Approval Authority:		☐ **POI** ☐ **TCPM** ☐ **Other:** ____	
Name:	____	**Office:**	____
Tel:	____	**Fax:**	____
Email:	____		

FSTD Scheduling Person:			
Name:	____		
Address 1:	____	**Address 2**	____
City:	____	**State:**	____
ZIP:	____	**Email:**	____
Tel:	____	**Fax:**	____

FSTD Technical Contact:			
Name:	____		
Address 1:	____	**Address 2**	____
City:	____	**State:**	____
ZIP:	____	**Email:**	____
Tel:	____	**Fax:**	____

Section 3. Training, Testing and Checking Considerations

Area/Function/Maneuver	Requested	Remarks
Private Pilot - Training / Checks: (142)	☐	____
Commercial Pilot - Training /Checks:(142)	☐	____
Multi-Engine Rating - Training / Checks (142)	☐	____
Instrument Rating -Training / Checks (142)	☐	____
Type Rating - Training / Checks (135/121/142)	☐	____
Proficiency Checks (135/121/142)	☐	____

ATTACHMENT 4 TO APPENDIX A TO PART 60—
Figure A4B – Sample Letter , Request for Initial, Upgrade, or Reinstatement Evaluation
Attachment: FSTD Information Form
INFORMATION

Section 3. Training, Testing and Checking Considerations		
Area/Function/Maneuver	**Requested**	**Remarks**
Private Pilot - Training / Checks: (142)	☐	____
Commercial Pilot - Training /Checks:(142)	☐	____
Multi-Engine Rating - Training / Checks (142)	☐	____
Instrument Rating -Training / Checks (142)	☐	____
Type Rating - Training / Checks (135/121/142)	☐	____
Proficiency Checks (135/121/142)	☐	____
CAT I: (RVR 2400/1800 ft. DH200 ft)	☐	____
CAT II: (RVR 1200 ft. DH 100 ft)	☐	____
CAT III * (lowest minimum) ____ RVR ____ ft. ** State CAT III (≤ 700 ft.), CAT IIIb (≤ 150 ft.), or CAT IIIc (0 ft.)*	☐	____
Circling Approach	☐	____
Windshear Training: (FSTD GB 03-05)	☐	____
Windshear Training IAW 121.409d (121 Turbojets Only) (FSTD GB 03-05)	☐	____
Generic Unusual Attitudes and Recoveries within the Normal Flight Envelope (FSTD GB 04-03)	☐	____
Specific Unusual Attitudes Recoveries (HBAT 95-10) (FSTD GB 04-03)	☐	____
Auto-coupled Approach/Auto Go Around	☐	____
Auto-land / Roll Out Guidance	☐	____
TCAS/ACAS I / II	☐	____
WX-Radar	☐	____
HUD (FSTD GB 03-02)	☐	____
HGS (FSTD GB 03-02)	☐	
EFVS (FSTD GB 03-03)	☐	
Future Air Navigation Systems (HBAT 98-16A)	☐	____
GPWS / EGPWS	☐	____
ETOPS Capability	☐	____
GPS	☐	____
SMGCS	☐	____
Helicopter Slope Landings	☐	____
Helicopter External Load Operations	☐	____
Helicopter Pinnacle Approach to Landings	☐	____
Helicopter Night Vision Maneuvers	☐	____
Helicopter Category A Takeoffs	☐	____

ATTACHMENT 4 TO APPENDIX A TO PART 60—
Figure A4C – Sample Qualification Test Guide Cover Page
INFORMATION

SPONSOR NAME

SPONSOR ADDRESS

FAA QUALIFICATION TEST GUIDE

(SPECIFIC AIRPLANE MODEL)
for example
Stratos BA797-320A

(Type of Simulator)

(Simulator Identification Including Manufacturer, Serial Number, Visual System Used)

(Simulator Level)

(Qualification Performance Standard Used)

(Simulator Location)

FAA Initial Evaluation

Date: _____

_____ Date: _____
(Sponsor)

_____ Date: _____
Manager, National
Simulator Program, FAA

ATTACHMENT 4 TO APPENDIX A TO PART 60—
Figure A4D – Sample Statement of Qualification - Certificate

INFORMATION

Federal Aviation Administration
National Simulator Program

Statement of Qualification

This is to certify that representatives of the National Simulator Program Completed an evaluation of the

Go-Fast Airlines
Farnsworth Z-100 Full Flight Simulator
FAA Identification Number 999

And found it to meet the standards set forth in
AC 120-40B

The Master Qualification Test Guide and the attached Configuration List and Restrictions List Provide the Qualification Basis for this device to operate at

Level D

Until January 31, 2009

Unless sooner rescinded or extended by the National Simulator Program Manager

December 15, 2007 (date)

I. B. Checkin, Jr. (for the NSPM)

ATTACHMENT 4 TO APPENDIX A TO PART 60—

Figure A4E – Sample Statement of Qualification; Configuration List

INFORMATION

STATEMENT of QUALIFICATION
CONFIGURATION LIST

Date: ____				
Section 1. FSTD Information and Characteristics				
Sponsor Name:	____		**FSTD Location:**	
Address:	____ ____		**Physical Address:**	____ ____
City:	____		**City:**	____
State:	____		**State:**	____
Country:	____		**Country:**	____
ZIP:	____		**ZIP:**	____
Manager	____			
Sponsor ID No: *(Four Letter FAA Designator)*	____		**Nearest Airport:** *(Airport Designator)*	____
Type of Evaluation Requested:			☐ **Initial** ☐ **Upgrade** ☐ **Recurrent** ☐ **Special** ☐ **Reinstatement**	
Qualification Basis: ____	☐ **A**	☐ **B**	☐ **Interim C**	☐ **C** ☐ **D**
	☐ **6**	☐ **7**	☐ **Provisional Status**	
Initial Qualification: (If Applicable)	**Date:** ____ **Level** ____		**Manufacturer's Identification/Serial No:**	____
Upgrade Qualification: (If Applicable)	**Date:** ____ **Level** ____ MM/DD/YYYY		☐ **eQTG**	
Other Technical Information:				
FAA FSTD ID No: (If Applicable)	____		**FSTD Manufacturer:**	____
Convertible FSTD:	☐**Yes:**		**Date of Manufacture:**	____ MM/DD/YYYY
Related FAA ID No. (If Applicable)	____ ____ ____		**Sponsor FSTD ID No:** ____	
Aircraft model/series: ____			**Source of aerodynamic model:** ____	
Engine model(s) and data revision: ____			**Source of aerodynamic coefficient data:** ____	
FMS identification and revision level: ____			**Aerodynamic data revision number:** ____	
Visual system manufacturer/model: ____			**Visual system display:** ____	
Flight control data revision: ____			**FSTD computer(s) identification:** ____	
Motion system manufacturer/type: ____				

ATTACHMENT 4 TO APPENDIX A TO PART 60—

Figure A4E – Sample Statement of Qualification; Configuration List

INFORMATION

NAA Qualification Basis:	____		
Visual System Manufacturer and Type:	____	**Motion System Manufacturer and Type:**	____
Aircraft Make/Model/Series:	____	**FSTD Seats Available:**	____

Aircraft Equipment	**ENGINE TYPE(S):** ____	**Flight Instrumentation:** ☐ EFIS ☐ HUD ☐ HGS ☐ EFVS ☐ TCAS ☐ GPWS ☐ Plain View ☐ GPS ☐ FMS Type: ____ ☐ WX Radar ☐ Other: ____	Engine Instrumentation: ☐ EICAS ☐ FADEC ☐ Other:

Airport Models:	3.6.1 ____ *Airport Designator*	3.6.2 ____ *Airport Designator*	3.6.3 ____ *Airport Designator*
Circle to Land:	3. 7.1 ____ *Airport Designator*	3. 7.2 ____ *Approach*	3. 7.3 ____ *Landing Runway*
Visual Ground Segment	3.8.1 ____ *Airport Designator*	3.8 .2 ____ *Approach*	3. 8.3 ____ *Landing Runway*

Section 2. Supplementary Information

FAA Training Program Approval Authority:		☐ POI ☐ TCPM ☐ Other: ____	
Name:	____	**Office:**	____
Tel:	____	**Fax:**	____
Email:	____		
FSTD Scheduling Person:			
Name:	____		
Address 1:	____	**Address 2**	____
City:	____	**State:**	____
ZIP:	____	**Email:**	____
Tel:	____	**Fax:**	____
FSTD Technical Contact:			
Name:	____		
Address 1:	____	**Address 2**	____
City:	____	**State:**	____
ZIP:	____	**Email:**	____
Tel:	____	**Fax:**	____

Section 3. Training, Testing and Checking Considerations

Area/Function/Maneuver	Requested	Remarks
Private Pilot - Training / Checks: (142)	☐	____
Commercial Pilot - Training /Checks:(142)	☐	____
Multi-Engine Rating - Training / Checks (142)	☐	____
Instrument Rating -Training / Checks (142)	☐	____
Type Rating - Training / Checks (135/121/142)	☐	____

ATTACHMENT 4 TO APPENDIX A TO PART 60—

Figure A4E – Sample Statement of Qualification; Configuration List

INFORMATION

ZIP:	____	**Email:**	____
Tel:	____	**Fax:**	____

Section 3. Training, Testing and Checking Considerations		
Area/Function/Maneuver	**Requested**	**Remarks**
Private Pilot - Training / Checks: (142)	☐	____
Commercial Pilot - Training /Checks:(142)	☐	____
Multi-Engine Rating - Training / Checks (142)	☐	____
Instrument Rating -Training / Checks (142)	☐	____
Type Rating - Training / Checks (135/121/142)	☐	____
Proficiency Checks (135/121/142)	☐	____
CAT I: (RVR 2400/1800 ft. DH200 ft)	☐	____
CAT II: (RVR 1200 ft. DH 100 ft)	☐	____
CAT III * (lowest minimum) _____ RVR _____ ft. ** State CAT III (≤ 700 ft.), CAT IIIb (≤ 150 ft.), or CAT IIIc (0 ft.)*	☐	____
Circling Approach	☐	____
Windshear Training: (FSTD GB 03-05)	☐	____
Windshear Training IAW 121.409d (121 Turbojets Only) (FSTD GB 03-05)	☐	____
Generic Unusual Attitudes and Recoveries within the Normal Flight Envelope (FSTD GB 04-03)	☐	____
Specific Unusual Attitudes Recoveries (HBAT 95-10) (FSTD GB 04-03)	☐	____
Auto-coupled Approach/Auto Go Around	☐	____
Auto-land / Roll Out Guidance	☐	____
TCAS/ACAS I / II	☐	____
WX-Radar	☐	____
HUD (FSTD GB 03-02)	☐	____
HGS (FSTD GB 03-02)	☐	
EFVS (FSTD GB 03-03)	☐	
Future Air Navigation Systems (HBAT 98-16A)	☐	____
GPWS / EGPWS	☐	____
ETOPS Capability	☐	____
GPS	☐	____
SMGCS	☐	____
Helicopter Slope Landings	☐	____
Helicopter External Load Operations	☐	____
Helicopter Pinnacle Approach to Landings	☐	____
Helicopter Night Vision Maneuvers	☐	____
Helicopter Category A Takeoffs	☐	____

ATTACHMENT 4 TO APPENDIX A TO PART 60—

Figure A4F – Sample Statement of Qualification – List of Qualified Tasks

INFORMATION

STATEMENT of QUALIFICATION
List of Qualified Tasks
Go Fast Airline Training -- Farnsworth Z-100 -- Level D -- FAA ID# 999

The FSTD is qualified to perform all of the Maneuvers, Procedures, Tasks, and Functions Listed in Appendix A, Attachment 1, Table A1B, Minimum FSTD Requirements In Effect on [mm/dd/yyyy] except for the following listed Tasks or Functions.

Qualified for all tasks in Table A1B, for which the sponsor has requested qualification, except for the following: 3.e(1)(i) NDB approach 3.f. Recovery from Unusual Attitudes 4.3. Circling Approach
Additional tasks for which this FSTD is qualified (i.e., in addition to the list in Table A1B) 1. Enhanced Visual System 2. Windshear Training IAW Section 121.409(d).
The airport visual models evaluated for qualification at this level are: 1. Atlanta Hartsfield International Airport (KATL) 2. Miami International Airport (KMIA) 3. Dallas/Ft.Worth Regional Airport (KDFW)

Attachment 4 to Appendix A to Part 60—
Figure A4G – Sample Continuing Qualification Evaluation Requirements Page
INFORMATION

Recurrent Evaluation Requirements ***Completed at conclusion of Initial Evaluation***	
Recurrent Evaluations to be conducted each _(fill in)__ months Allotting _____ hours of FTD time. Signed: _____ NSPM / Evaluation Team Leader	Recurrent evaluations are due as follows: _(month)__ and __(month)_ and __(month)_ (enter or strike out, as appropriate) _____ Date

Revision: Based on (enter reasoning):	
Recurrent Evaluations are to be conducted each _(fill in)__ months. Allotting _____ hours. Signed: _____ NSPM Evaluation Team Leader	Recurrent evaluations are due as follows: _(month)__ and __(month)_ and __(month)_ (enter or strike out, as appropriate) _____ Date

Revision: Based on (enter reasoning):	
Recurrent Evaluations are to be conducted each _(fill in)__ months. Allotting _____ hours. Signed: _____ NSPM Evaluation Team Leader	Recurrent evaluations are due as follows: _(month)__ and __(month)_ and __(month)_ (enter or strike out, as appropriate) _____ Date

(Repeat as Necessary)

Attachment 4 to Appendix A to Part 60—
Figure A4H –Sample MQTG Index of Effective FSTD Directives
INFORMATION

Index of Effective FSTD Directives
Filed in this Section

Notification Number	Received From: (TPAA/NSPM)	Date of Notification	Date of Modification Completion

Continue as Necessary....

ATTACHMENT 5 TO APPENDIX A TO PART 60—SIMULATOR QUALIFICATION REQUIREMENTS FOR WINDSHEAR TRAINING PROGRAM USE

1. APPLICABILITY

BEGIN QPS REQUIREMENTS

This attachment applies to all simulators, regardless of qualification level, that are used to satisfy the training requirements of an FAA-approved low-altitude windshear flight training program, or any FAA-approved training program that addresses windshear encounters.

END QPS REQUIREMENTS

2. STATEMENT OF COMPLIANCE AND CAPABILITY (SOC)

BEGIN QPS REQUIREMENTS

a. The sponsor must submit an SOC confirming that the aerodynamic model is based on flight test data supplied by the airplane manufacturer or other approved data provider. The SOC must also confirm that any change to environmental wind parameters, including variances in those parameters for windshear conditions, once inserted for computation, result in the correct simulated performance. This statement must also include examples of environmental wind parameters currently evaluated in the simulator (such as crosswind takeoffs, crosswind approaches, and crosswind landings).

b. For simulators without windshear warning, caution, or guidance hardware in the original equipment, the SOC must also state that the simulation of the added hardware and/or software, including associated cockpit displays and annunciations, replicates the system(s) installed in the airplane. The statement must be accompanied by a block diagram depicting the input and output signal flow, and comparing the signal flow to the equipment installed in the airplane.

END QPS REQUIREMENTS

3. MODELS

BEGIN QPS REQUIREMENTS

The windshear models installed in the simulator software used for the qualification evaluation must do the following:

a. Provide cues necessary for recognizing windshear onset and potential performance degradation requiring a pilot to initiate recovery procedures. The cues must include all of the following, as may be appropriate for the appropriate portion of the flight envelope:

(1) Rapid airspeed change of at least ±15 knots (kts).
(2) Stagnation of airspeed during the takeoff roll.
(3) Rapid vertical speed change of at least ±500 feet per minute (fpm).
(4) Rapid pitch change of at least ±5°.
b. Be adjustable in intensity (or other parameter to achieve an intensity effect) to at least two (2) levels so that upon encountering the windshear the pilot may identify its presence and apply the recommended procedures for escape from such a windshear.
(1) If the intensity is lesser, the performance capability of the simulated airplane in the windshear permits the pilot to maintain a satisfactory flightpath; and
(2) If the intensity is greater, the performance capability of the simulated airplane in the windshear does not permit the pilot to maintain a satisfactory flightpath (crash).
NOTE: The means used to accomplish the ''nonsurvivable'' scenario of paragraph 3.b.(2) of this attachment, that involve operational elements of the simulated airplane, must reflect the dispatch limitations of the airplane.
c. Be available for use in the FAA-approved windshear flight training program.

END QPS REQUIREMENTS

4. DEMONSTRATIONS

BEGIN QPS REQUIREMENTS

a. The sponsor must identify one survivable takeoff windshear training model and one survivable approach windshear training model. The wind components of the survivable models must be presented in graphical format so that all components of the windshear are shown, including initiation point, variance in magnitude, and time or distance correlations. The simulator must be operated at the same gross weight, airplane configuration, and initial airspeed in all of the following situations:
(1) Takeoff—through calm air.
(2) Takeoff—through the first selected survivable windshear.
(3) Approach—through calm air.
(4) Approach—through the second selected survivable windshear.
b. In each of these four situations, at an ''initiation point'' (i.e., where windshear onset is or should be recognized), the recommended procedures for windshear recovery are applied and the results are recorded as specified in paragraph 5 of this attachment.
c. These recordings are made without inserting programmed random turbulence. Turbulence that results from the windshear model is to be expected, and no attempt may be made to neutralize turbulence from this source.
d. The definition of the models and the results of the demonstrations of all four (4) cases described in paragraph 4.a of this attachment, must be made a part of the MQTG.

END QPS REQUIREMENTS

5. RECORDING PARAMETERS

BEGIN QPS REQUIREMENTS

a. In each of the four MQTG cases, an electronic recording (time history) must be made of the following parameters:
(1) Indicated or calibrated airspeed.
(2) Indicated vertical speed.
(3) Pitch attitude.
(4) Indicated or radio altitude.
(5) Angle of attack.
(6) Elevator position.
(7) Engine data (thrust, N1, or throttle position).
(8) Wind magnitudes (simple windshear model assumed).
b. These recordings must be initiated at least 10 seconds prior to the initiation point, and continued until recovery is complete or ground contact is made.

END QPS REQUIREMENTS

6. EQUIPMENT INSTALLATION AND OPERATION

BEGIN QPS REQUIREMENTS

All windshear warning, caution, or guidance hardware installed in the simulator must operate as it operates in the airplane. For example, if a rapidly changing wind speed and/or direction would have caused a windshear warning in the airplane, the simulator must respond equivalently without instructor/evaluator intervention.

END QPS REQUIREMENTS

7. QUALIFICATION TEST GUIDE

BEGIN QPS REQUIREMENTS

a. All QTG material must be forwarded to the NSPM.
b. A simulator windshear evaluation will be scheduled in accordance with normal procedures. Recurrent evaluation schedules will be used to the maximum extent possible.
c. During the on-site evaluation, the evaluator will ask the operator to run the performance tests and record the results. The

results of these on-site tests will be compared to those results previously approved and placed in the QTG or MQTG, as appropriate.

d. QTGs for new (or MQTGs for upgraded) simulators must contain or reference the information described in paragraphs 2, 3, 4, and 5 of this attachment.

END QPS REQUIREMENTS

8. SUBJECTIVE EVALUATION

BEGIN INFORMATION

The NSPM will fly the simulator in at least two of the available windshear scenarios to subjectively evaluate simulator performance as it encounters the programmed windshear conditions.

a. One scenario will include parameters that enable the pilot to maintain a satisfactory flightpath.

b. One scenario will include parameters that will not enable the pilot to maintain a satisfactory flightpath (crash).

c. Other scenarios may be examined at the NSPM's discretion.

END INFORMATION

9. QUALIFICATION BASIS

BEGIN INFORMATION

The addition of windshear programming to a simulator in order to comply with the qualification for required windshear training does not change the original qualification basis of the simulator.

END INFORMATION

10. DEMONSTRATION REPEATABILITY

BEGIN INFORMATION

For the purposes of demonstration repeatability, it is recommended that the simulator be flown by means of the simulator's autodrive function (for those simulators that have autodrive capability) during the demonstrations.

END INFORMATION

APPENDIX B TO PART 60—QUALIFICATION PERFORMANCE STANDARDS FOR AIRPLANE FLIGHT TRAINING DEVICES

BEGIN INFORMATION

This appendix establishes the standards for Airplane Flight Training Device (FTD) evaluation and qualification at Level 4, Level 5, or Level 6. The Flight Standards Service, National Simulator Program Manager (NSPM), is responsible for the development, application, and implementation of the standards contained within this appendix. The procedures and criteria specified in this appendix will be used by the NSPM, or a person or persons assigned by the NSPM when conducting airplane FTD evaluations.

TABLE OF CONTENTS

1. Introduction
2. Applicability (§60.1) and Applicability of sponsor rules to persons who are not sponsors and who are engaged in certain unauthorized activities (§60.2)
3. Definitions (60.3)
4. Qualification Performance Standards (§60.4)
5. Quality Management System (§60.5)
6. Sponsor Qualification Requirements (§60.7)
7. Additional Responsibilities of the Sponsor (§60.9)
8. FSTD Use (§60.11)
9. FSTD Objective Data Requirements (§60.13)
10. Special Equipment and Personnel Requirements for Qualification of the FTD (§60.14)
11. Initial (and Upgrade) Qualification Requirements (§60.15)
12. Additional Qualifications for Currently Qualified FTDs (§60.16)
13. Previously Qualified FTDs (§60.17)
14. Inspection, Continuing Qualification Evaluation, and Maintenance Requirements (§60.19)
15. Logging FTD Discrepancies (§60.20)
16. Interim Qualification of FTDs for New Airplane Types or Models (§60.21)
17. Modifications to FTDs (§60.23)
18. Operations With Missing, Malfunctioning, or Inoperative Components (§60.25)
19. Automatic Loss of Qualification and Procedures for Restoration of Qualification (§60.27)
20. Other Losses of Qualification and Procedures for Restoration of Qualification (§60.29)
21. Record Keeping and Reporting (§60.31)
22. Applications, Logbooks, Reports, and Records: Fraud, Falsification, or Incorrect Statements (§60.33)
23. [Reserved]

24. Levels of FTD
25. FSTD Qualification on the Basis of a Bilateral Aviation Safety Agreement (BASA) (§ 60.37)
Attachment 1 to Appendix B to Part 60—General FTD Requirements
Attachment 2 to Appendix B to Part 60—Flight Training Device (FTD) Objective Tests
Attachment 3 to Appendix B to Part 60—Flight Training Device (FTD) Subjective Evaluation
Attachment 4 to Appendix B to Part 60—Sample Documents

END INFORMATION

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1. INTRODUCTION

BEGIN INFORMATION

a. This appendix contains background information as well as regulatory and informative material as described later in this section. To assist the reader in determining what areas are required and what areas are permissive, the text in this appendix is divided into two sections: ''QPS Requirements'' and ''Information.'' The QPS Requirements sections contain details regarding compliance with the part 60 rule language. These details are regulatory, but are found only in this appendix. The Information sections contain material that is advisory in nature, and designed to give the user general information about the regulation.

b. Related Reading References.

(1) 14 CFR part 60.
(2) 14 CFR part 61.
(3) 14 CFR part 63.
(4) 14 CFR part 119.
(5) 14 CFR part 121.
(6) 14 CFR part 125.
(7) 14 CFR part 135.
(8) 14 CFR part 141.
(9) 14 CFR part 142.
(10) Advisory Circular (AC) 120–28C, Criteria for Approval of Category III Landing Weather Minima.
(11) AC 120–29, Criteria for Approving Category I and Category II Landing Minima for part 121 operators.
(12) AC 120–35B, Line Operational Simulations: Line-Oriented Flight Training, Special Purpose Operational Training, Line Operational Evaluation.
(13) AC 120–41, Criteria for Operational Approval of Airborne Wind Shear Alerting and Flight Guidance Systems.
(14) AC 120–57A, Surface Movement Guidance and Control System (SMGS).
(15) AC 150/5300–13, Airport Design.
(16) AC 150/5340–1G, Standards for Airport Markings.
(17) AC 150/5340–4C, Installation Details for Runway Centerline Touchdown Zone Lighting Systems.
(18) AC 150/5340–19, Taxiway Centerline Lighting System.
(19) AC 150/5340–24, Runway and Taxiway Edge Lighting System.
(20) AC 150/5345–28D, Precision Approach Path Indicator (PAPI) Systems.
(21) International Air Transport Association document, ''Flight Simulator Design and Performance Data Requirements,'' as amended.
(22) AC 25–7, as amended, Flight Test Guide for Certification of Transport Category Airplanes.
(23) AC 23–8A, as amended, Flight Test Guide for Certification of Part 23 Airplanes.
(24) International Civil Aviation Organization (ICAO) Manual of Criteria for the Qualification of Flight Simulators, as amended.
(25) Airplane Flight Simulator Evaluation Handbook, Volume I, as amended and Volume II, as amended, The Royal Aeronautical Society, London, UK.
(26) FAA Publication FAA–S–8081 series (Practical Test Standards for Airline Transport Pilot Certificate, Type Ratings, Commercial Pilot, and Instrument Ratings).
(27) The FAA Aeronautical Information Manual (AIM). An electronic version of the AIM is on the internet at *http://www.faa.gov/atpubs*.

END INFORMATION

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2. APPLICABILITY (§§ 60.1 & 60.2)

There is no additional regulatory or informational material that applies to § 60.1, Applicability, or to § 60.2, Applicability of sponsor rules to person who are not sponsors and who are engaged in certain unauthorized activities.

3. DEFINITIONS (§ 60.3)

BEGIN INFORMATION

See appendix F of this part for a list of definitions and abbreviations from part 1, part 60, and the QPS appendices of part 60.

END INFORMATION

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4. QUALIFICATION PERFORMANCE STANDARDS (§ 60.4)

There is no additional regulatory or informational material that applies to § 60.4, Qualification Performance Standards.

5. QUALITY MANAGEMENT SYSTEM (§ 60.5)

BEGIN INFORMATION

Additional regulatory material and informational material regarding Quality Management Systems for FTDs may be found in appendix E of this part.

END INFORMATION

6. SPONSOR QUALIFICATION REQUIREMENTS (§60.7)

BEGIN INFORMATION

a. The intent of the language in §60.7(b) is to have a specific FTD, identified by the sponsor, used at least once in an FAA-approved flight training program for the airplane simulated during the 12-month period described. The identification of the specific FTD may change from one 12-month period to the next 12-month period as long as that sponsor sponsors and uses at least one FTD at least once during the prescribed period. There is no minimum number of hours or minimum FTD periods required.

b. The following examples describe acceptable operational practices:

(1) Example One.

(a) A sponsor is sponsoring a single, specific FTD for its own use, in its own facility or elsewhere—this single FTD forms the basis for the sponsorship. The sponsor uses that FTD at least once in each 12-month period in that sponsor's FAA-approved flight training program for the airplane simulated. This 12-month period is established according to the following schedule:

(i) If the FTD was qualified prior to October 30, 2007 the 12-month period begins on the date of the first continuing qualification evaluation conducted in accordance with §60.19 after October 30, 2007 and continues for each subsequent 12-month period;

(ii) A device qualified on or after October 30, 2007 will be required to undergo an initial or upgrade evaluation in accordance with §60.15. Once the initial or upgrade evaluation is complete, the first continuing qualification evaluation will be conducted within 6 months. The 12 month continuing qualification evaluation cycle begins on that date and continues for each subsequent 12-month period.

(b) There is no minimum number of hours of FTD use required.

(c) The identification of the specific FTD may change from one 12-month period to the next 12-month period as long as that sponsor sponsors and uses at least one FTD at least once during the prescribed period.

(2) Example Two.

(a) A sponsor sponsors an additional number of FTDs, in its facility or elsewhere. Each additionally sponsored FTD must be—

(i) Used by the sponsor in the sponsor's FAA-approved flight training program for the airplane simulated (as described in §60.7(d)(1));

OR

(ii) Used by another FAA certificate holder in that other certificate holder's FAA-approved flight training program for the airplane simulated (as described in §60.7(d)(1)). This 12-month period is established in the same manner as in example one.

OR

(iii) Provided a statement each year from a qualified pilot, (after having flown the airplane, not the subject FTD or another FTD, during the preceding 12-month period) stating that the subject FTD's performance and handling qualities represent the airplane (as described in §60.7(d)(2)). This statement is provided at least once in each 12-month period established in the same manner as in example one.

(b) There is no minimum number of hours of FTD use required.

(3) Example Three.

(a) A sponsor in New York (in this example, a Part 142 certificate holder) establishes ''satellite'' training centers in Chicago and Moscow.

(b) The satellite function means that the Chicago and Moscow centers must operate under the New York center's certificate (in accordance with all of the New York center's practices, procedures, and policies; *e.g.*, instructor and/or technician training/checking requirements, recordkeeping, QMS program).

(c) All of the FTDs in the Chicago and Moscow centers could be dry-leased (*i.e.*, the certificate holder does not have and use FAA-approved flight training programs for the FTDs in the Chicago and Moscow centers) because—

(i) Each FTD in the Chicago center and each FTD in the Moscow center is used at least once each 12-month period by another FAA certificate holder in that other certificate holder's FAA-approved flight training program for the airplane (as described in §60.7(d)(1));

OR

(ii) A statement is obtained from a qualified pilot (having flown the airplane, not the subject FTD or another FTD during the preceding 12-month period) stating that the performance and handling qualities of each FTD in the Chicago and Moscow centers represents the airplane (as described in §60.7(d)(2)).

END INFORMATION

7. ADDITIONAL RESPONSIBILITIES OF THE SPONSOR (§60.9)

BEGIN INFORMATION

The phrase ''as soon as practicable'' in §60.9(a) means without unnecessarily disrupting or delaying beyond a reasonable time the training, evaluation, or experience being conducted in the FSTD.

END INFORMATION

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8. FSTD USE (§60.11)

There is no additional regulatory or informational material that applies to §60.11, FSTD use.

9. FTD OBJECTIVE DATA REQUIREMENTS (§60.13)

BEGIN QPS REQUIREMENTS

a. Flight test data used to validate FTD performance and handling qualities must have been gathered in accordance with a flight test program containing the following:

(1) A flight test plan consisting of:

(a) The maneuvers and procedures required for aircraft certification and simulation programming and validation.

(b) For each maneuver or procedure—

(i) The procedures and control input the flight test pilot and/or engineer used.

(ii) The atmospheric and environmental conditions.

(iii) The initial flight conditions.

(iv) The airplane configuration, including weight and center of gravity.

(v) The data to be gathered.

(vi) All other information necessary to recreate the flight test conditions in the FTD.

(2) Appropriately qualified flight test personnel.

(3) An understanding of the accuracy of the data to be gathered using appropriate alternative data sources, procedures, and instrumentation that is traceable to a recognized standard as described in Attachment 2, Table B2F.

(4) Appropriate and sufficient data acquisition equipment or system(s), including appropriate data reduction and analysis methods and techniques, as would be acceptable to the FAA's Aircraft Certification Service.

b. The data, regardless of source, must be presented:

(1) In a format that supports the FTD validation process;

(2) In a manner that is clearly readable and annotated correctly and completely;

(3) With resolution sufficient to determine compliance with the tolerances set forth in Attachment 2, Table B2A appendix.

(4) With any necessary guidance information provided; and

(5) Without alteration, adjustments, or bias; however the data may be re-scaled, digitized, or otherwise manipulated to fit the desired presentation.

c. After completion of any additional flight test, a flight test report must be submitted in support of the validation data. The report must contain sufficient data and rationale to support qualification of the FTD at the level requested.

d. As required by §60.13(f), the sponsor must notify the NSPM when it becomes aware that an addition to or a revision of the flight related data or airplane systems related data is available if this data is used to program and operate a qualified FTD. The data referred to in this sub-section are those data that are used to validate the performance, handling qualities, or other characteristics of the aircraft, including data related to any relevant changes occurring after the type certification is issued. This notification must be made within 10 working days.

END QPS REQUIREMENTS

BEGIN INFORMATION

e. The FTD sponsor is encouraged to maintain a liaison with the manufacturer of the aircraft being simulated (or with the holder of the aircraft type certificate for the aircraft being simulated if the manufacturer is no longer in business), and if appropriate, with the person having supplied the aircraft data package for the FTD in order to facilitate the notification described in this paragraph.

f. It is the intent of the NSPM that for new aircraft entering service, at a point well in advance of preparation of the Qualification Test Guide (QTG), the sponsor should submit to the NSPM for approval, a descriptive document (a validation data roadmap) containing the plan for acquiring the validation data, including data sources. This document should clearly identify sources of data for all required tests, a description of the validity of these data for a specific engine type and thrust rating configuration, and the revision levels of all avionics affecting the performance or flying qualities of the aircraft. Additionally, this document should provide other information such as the rationale or explanation for cases where data or data parameters are missing, instances where engineering simulation data are used, or where flight test methods require further explanations. It should also provide a brief narrative describing the cause and effect of any deviation from data requirements. The aircraft manufacturer may provide this document.

g. There is no requirement for any flight test data supplier to submit a flight test plan or program prior to gathering flight

test data. However, the NSPM notes that inexperienced data gatherers often provide data that is irrelevant, improperly marked, lacking adequate justification for selection. Other problems include inadequate information regarding initial conditions or test maneuvers. The NSPM has been forced to refuse these data submissions as validation data for an FTD evaluation. It is for this reason that the NSPM recommends that any data supplier not previously experienced in this area review the data necessary for programming and for validating the performance of the FTD and discuss the flight test plan anticipated for acquiring such data with the NSPM well in advance of commencing the flight tests.

h. In those cases where the objective test results authorize a ''snapshot test'' or a ''series of snapshot tests'' results in lieu of a time-history result, Attachment 2 requires the sponsor or other data provider to ensure that a steady state condition exists at the instant of time captured by the ''snapshot.'' This is often verified by showing that a steady state condition existed from some period of time during which the snap shot is taken. The time period most frequently used is 5 seconds prior through 2 seconds following the instant of time captured by the snap shot. This paragraph is primarily addressing the source data and the method by which the data provider ensures that the steady state condition for the snap shot is representative.

i. The NSPM will consider, on a case-by-case basis, whether or not to approve supplemental validation data derived from flight data recording systems such as a Quick Access Recorder or Flight Data Recorder.

END INFORMATION

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10. SPECIAL EQUIPMENT AND PERSONNEL REQUIREMENTS FOR QUALIFICATION OF THE FTD (§60.14)

BEGIN INFORMATION

a. In the event that the NSPM determines that special equipment or specifically qualified persons will be required to conduct an evaluation, the NSPM will make every attempt to notify the sponsor at least one (1) week, but in no case less than 72 hours, in advance of the evaluation. Examples of special equipment include flight control measurement devices, accelerometers, or oscilloscopes. Examples of specially qualified personnel include individuals specifically qualified to install or use any special equipment when its use is required.

b. Examples of a special evaluation include an evaluation conducted after an FTD is moved; at the request of the TPAA; or as a result of comments received from FTD users that raise questions regarding the continued qualification or use of the FTD.

END INFORMATION

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11. INITIAL (AND UPGRADE) QUALIFICATION REQUIREMENTS (§60.15)

BEGIN QPS REQUIREMENT

a. In order to be qualified at a particular qualification level, the FTD must:

(1) Meet the general requirements listed in Attachment 1;

(2) Meet the objective testing requirements listed in Attachment 2 (Level 4 FTDs do not require objective tests); and

(3) Satisfactorily accomplish the subjective tests listed in Attachment 3.

b. The request described in §60.15(a) must include all of the following:

(1) A statement that the FTD meets all of the applicable provisions of this part and all applicable provisions of the QPS.

(2) A confirmation that the sponsor will forward to the NSPM the statement described in §60.15(b) in such time as to be received no later than 5 business days prior to the scheduled evaluation and may be forwarded to the NSPM via traditional or electronic means.

(3) Except for a Level 4 FTD, a qualification test guide (QTG), acceptable to the NSPM, that includes all of the following:

(a) Objective data obtained from aircraft testing or another approved source.

(b) Correlating objective test results obtained from the performance of the FTD as prescribed in the applicable QPS.

(c) The result of FTD subjective tests prescribed in the applicable QPS.

(d) A description of the equipment necessary to perform the evaluation for initial qualification and the continuing qualification evaluations.

c. The QTG described in paragraph a(3) of this section, must provide the documented proof of compliance with the FTD objective tests in Attachment 2,Table B2A of this appendix.

d. The QTG is prepared and submitted by the sponsor, or the sponsor's agent on behalf of the sponsor, to the NSPM for review and approval, and must include, for each objective test:

(1) Parameters, tolerances, and flight conditions;

(2) Pertinent and complete instructions for conducting automatic and manual tests;

(3) A means of comparing the FTD test results to the objective data;

(4) Any other information as necessary to assist in the evaluation of the test results;

(5) Other information appropriate to the qualification level of the FTD.

e. The QTG described in paragraphs (a)(3) and (b) of this section, must include the following:

(1) A QTG cover page with sponsor and FAA approval signature blocks (see Attachment 4, Figure B4C, for a sample QTG cover page).

(2) A continuing qualification evaluation requirements page. This page will be used by the NSPM to establish and record the frequency with which continuing qualification evaluations must be conducted and any subsequent changes that may be determined by the NSPM in accordance with §60.19. See Attachment 4, Figure B4G, for a sample Continuing Qualification Evaluation Requirements page.

(3) An FTD information page that provides the information listed in this paragraph, if applicable (see Attachment 4, Figure B4B, for a sample FTD information page). For convertible FTDs, the sponsor must submit a separate page for each configuration of the FTD.

(a) The sponsor's FTD identification number or code.

(b) The airplane model and series being simulated.

(c) The aerodynamic data revision number or reference.

(d) The engine model(s) and its data revision number or reference.

(e) The flight control data revision number or reference.

(f) The flight management system identification and revision level.

(g) The FTD model and manufacturer.

(h) The date of FTD manufacture.

(i) The FTD computer identification.

(j) The visual system model and manufacturer, including display type.

(k) The motion system type and manufacturer, including degrees of freedom.

(4) A Table of Contents.

(5) A log of revisions and a list of effective pages.

(6) List of all relevant data references.

(7) A glossary of terms and symbols used (including sign conventions and units).

(8) Statements of compliance and capability (SOCs) with certain requirements. SOCs must provide references to the sources of information that show the capability of the FTD to comply with the requirement, a rationale explaining how the referenced material is used, mathematical equations and parameter values used, and the conclusions reached; *i.e.*, that the FTD complies with the requirement. Refer to the ''General FTD Requirements'' column, Table B1A, in Attachment 1, or in the ''Alternative Data Sources, Procedures, and Instrumentation'' column, Table B2F, in Attachment 2, to see when SOCs are required.

(9) Recording procedures or equipment required to accomplish the objective tests.

(10) The following information for each objective test designated in Attachment 2, as applicable to the qualification level sought:

(a) Name of the test.

(b) Objective of the test.

(c) Initial conditions.

(d) Manual test procedures.

(e) Automatic test procedures (if applicable).

(f) Method for evaluating FTD objective test results.

(g) List of all relevant parameters driven or constrained during the automatic test(s).

(h) List of all relevant parameters driven or constrained during the manual test(s).

(i) Tolerances for relevant parameters.

(j) Source of Validation Data (document and page number).

(k) Copy of the Validation Data (if located in a separate binder, a cross reference for the identification and page number for pertinent data location must be provided).

(l) FTD Objective Test Results as obtained by the sponsor. Each test result must reflect the date completed and must be clearly labeled as a product of the device being tested.

f. A convertible FTD is addressed as a separate FTD for each model and series airplane to which it will be converted and for the FAA qualification level sought. The NSPM will conduct an evaluation for each configuration. If a sponsor seeks qualification for two or more models of an airplane type using a convertible FTD, the sponsor must provide a QTG for each airplane model, or a supplemented QTG for each airplane model. The NSPM will conduct evaluations for each airplane model.

g. The form and manner of presentation of objective test results in the QTG must include the following:

(1) The sponsor's FTD test results must be recorded in a manner acceptable to the NSPM, that allows easy comparison of the FTD test results to the validation data (*e.g.*, use of a multi-channel recorder, line printer, cross plotting, overlays, transparencies).

(2) FTD results must be labeled using terminology common to airplane parameters as opposed to computer software identifications.

(3) Validation data documents included in a QTG may be photographically reduced only if such reduction will not alter the graphic scaling or cause difficulties in scale interpretation or resolution.

(4) Scaling on graphical presentations must provide the resolution necessary to evaluate the parameters shown in Attachment 2, Table B2A of this appendix.

(5) Tests involving time histories, data sheets (or transparencies thereof) and FTD test results must be clearly marked with appropriate reference points to ensure an accurate comparison between FTD and airplane

with respect to time. Time histories recorded via a line printer are to be clearly identified for cross-plotting on the airplane data. Overplots must not obscure the reference data.

h. The sponsor may elect to complete the QTG objective and subjective tests at the manufacturer's facility or at the sponsor's training facility. If the tests are conducted at the manufacturer's facility, the sponsor must repeat at least one-third of the tests at the sponsor's training facility in order to substantiate FTD performance. The QTG must be clearly annotated to indicate when and where each test was accomplished. Tests conducted at the manufacturer's facility and at the sponsor's training facility must be conducted after the FTD is assembled with systems and sub-systems functional and operating in an interactive manner. The test results must be submitted to the NSPM.

i. The sponsor must maintain a copy of the MQTG at the FTD location.

j. All FTDs for which the initial qualification is conducted after October 30, 2013 must have an electronic MQTG (eMQTG) including all objective data obtained from airplane testing, or another approved source (reformatted or digitized), together with correlating objective test results obtained from the performance of the FTD (reformatted or digitized) as prescribed in this appendix. The eMQTG must also contain the general FTD performance or demonstration results (reformatted or digitized) prescribed in this appendix, and a description of the equipment necessary to perform the initial qualification evaluation and the continuing qualification evaluations. The eMQTG must include the original validation data used to validate FTD performance and handling qualities in either the original digitized format from the data supplier or an electronic scan of the original time-history plots that were provided by the data supplier. A copy of the eMQTG must be provided to the NSPM.

k. All other FTDs (not covered in subparagraph ''j'') must have an electronic copy of the MQTG by and after October 30, 2013. A copy of the eMQTG must be provided to the NSPM. This may be provided by an electronic scan presented in a Portable Document File (PDF), or similar format acceptable to the NSPM.

END QPS REQUIREMENTS

BEGIN INFORMATION

l. Only those FTDs that are sponsored by a certificate holder as defined in appendix F will be evaluated by the NSPM. However, other FTD evaluations may be conducted on a case-by-case basis as the Administrator deems appropriate, but only in accordance with applicable agreements.

m. The NSPM will conduct an evaluation for each configuration, and each FTD must be evaluated as completely as possible. To ensure a thorough and uniform evaluation, each FTD is subjected to the general FTD requirements in Attachment 1, the objective tests listed in Attachment 2, and the subjective tests listed in Attachment 3 of this appendix. The evaluations described herein will include, but not necessarily be limited to the following:

(1) Airplane responses, including longitudinal and lateral-directional control responses (see Attachment 2 of this appendix);

(2) Performance in authorized portions of the simulated airplane's operating envelope, to include tasks evaluated by the NSPM in the areas of surface operations, takeoff, climb, cruise, descent, approach and landing, as well as abnormal and emergency operations (see Attachment 2 of this appendix);

(3) Control checks (see Attachment 1 and Attachment 2 of this appendix);

(4) Cockpit configuration (see Attachment 1 of this appendix);

(5) Pilot, flight engineer, and instructor station functions checks (see Attachment 1 and Attachment 3 of this appendix);

(6) Airplane systems and sub-systems (as appropriate) as compared to the airplane simulated (see attachment 1 and attachment 3 of this appendix);

(7) FTD systems and sub-systems, including force cueing (motion), visual, and aural (sound) systems, as appropriate (see Attachment 1 and Attachment 2 of this appendix); and

(8) Certain additional requirements, depending upon the qualification level sought, including equipment or circumstances that may become hazardous to the occupants. The sponsor may be subject to Occupational Safety and Health Administration requirements.

n. The NSPM administers the objective and subjective tests, which includes an examination of functions. The tests include a qualitative assessment of the FTD by an NSP pilot. The NSP evaluation team leader may assign other qualified personnel to assist in accomplishing the functions examination and/or the objective and subjective tests performed during an evaluation when required.

(1) Objective tests provide a basis for measuring and evaluating FTD performance and determining compliance with the requirements of this part.

(2) Subjective tests provide a basis for:

(a) Evaluating the capability of the FTD to perform over a typical utilization period;

(b) Determining that the FTD satisfactorily simulates each required task;

(c) Verifying correct operation of the FTD controls, instruments, and systems; and

(d) Demonstrating compliance with the requirements of this part.

o. The tolerances for the test parameters listed in Attachment 2 of this appendix reflect the range of tolerances acceptable to the NSPM for FTD validation and are not to be confused with design tolerances specified for FTD manufacture. In making decisions regarding tests and test results, the NSPM relies on the use of operational and engineering judgment in the application of data (including consideration of the way in which the flight test was flown and way the data was gathered and applied) data presentations, and the applicable tolerances for each test.

p. In addition to the scheduled continuing qualification evaluation, each FTD is subject to evaluations conducted by the NSPM at any time without prior notification to the sponsor. Such evaluations would be accomplished in a normal manner (i.e., requiring exclusive use of the FTD for the conduct of objective and subjective tests and an examination of functions) if the FTD is not being used for flight crewmember training, testing, or checking. However, if the FTD were being used, the evaluation would be conducted in a non-exclusive manner. This non-exclusive evaluation will be conducted by the FTD evaluator accompanying the check airman, instructor, Aircrew Program Designee (APD), or FAA inspector aboard the FTD along with the student(s) and observing the operation of the FTD during the training, testing, or checking activities.

q. Problems with objective test results are handled as follows:

(1) If a problem with an objective test result is detected by the NSP evaluation team during an evaluation, the test may be repeated or the QTG may be amended.

(2) If it is determined that the results of an objective test do not support the qualification level requested but do support a lower level, the NSPM may qualify the FTD at a lower level. For example, if a Level 6 evaluation is requested, but the FTD fails to meet the spiral stability test tolerances, it could be qualified at Level 5.

r. After an FTD is successfully evaluated, the NSPM issues a statement of qualification (SOQ) to the sponsor, The NSPM recommends the FTD to the TPAA, who will approve the FTD for use in a flight training program. The SOQ will be issued at the satisfactory conclusion of the initial or continuing qualification. However, it is the sponsor's responsibility to obtain TPAA approval prior to using the FTD in an FAA-approved flight training program.

s. Under normal circumstances, the NSPM establishes a date for the initial or upgrade evaluation within ten (10) working days after determining that a complete QTG is acceptable. Unusual circumstances may warrant establishing an evaluation date before this determination is made. A sponsor may schedule an evaluation date as early as 6 months in advance. However, there may be a delay of 45 days or more in rescheduling and completing the evaluation if the sponsor is unable to meet the scheduled date. See Attachment 4, Figure B4A, Sample Request for Initial, Upgrade, or Reinstatement Evaluation.

t. The numbering system used for objective test results in the QTG should closely follow the numbering system set out in Attachment 2, FTD Objective Tests, Table B2A.

u. Contact the NSPM or visit the NSPM Web site for additional information regarding the preferred qualifications of pilots used to meet the requirements of §60.15(d).

v. Examples of the exclusions for which the FTD might not have been subjectively tested by the sponsor or the NSPM and for which qualification might not be sought or granted, as described in §60.15(g)(6), include engine out maneuvers or circling approaches.

END INFORMATION

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12. ADDITIONAL QUALIFICATIONS FOR CURRENTLY QUALIFIED FTDS (§60.16)

There is no additional regulatory or informational material that applies to §60.16, Additional Qualifications for a Currently Qualified FTD.

13. PREVIOUSLY QUALIFIED FTDS (§60.17)

BEGIN QPS REQUIREMENTS

a. In instances where a sponsor plans to remove an FTD from active status for a period of less than two years, the following procedures apply:

(1) The NSPM must be notified in writing and the notification must include an estimate of the period that the FTD will be inactive;

(2) Continuing Qualification evaluations will not be scheduled during the inactive period;

(3) The NSPM will remove the FTD from the list of qualified FSTDs on a mutually established date not later than the date on which the first missed continuing qualification evaluation would have been scheduled;

(4) Before the FTD is restored to qualified status, it must be evaluated by the NSPM. The evaluation content and the time required to accomplish the evaluation is based on the number of continuing qualification evaluations and sponsor-conducted quarterly inspections missed during the period of inactivity.

(5) The sponsor must notify the NSPM of any changes to the original scheduled time out of service;

b. FTDs qualified prior to October 30, 2007, are not required to meet the general FTD requirements, the objective test requirements,

and the subjective test requirements of Attachments 1, 2, and 3, respectively, of this appendix.

c. [Reserved]

END QPS REQUIREMENTS

BEGIN INFORMATION

d. Other certificate holders or persons desiring to use an FTD may contract with FTD sponsors to use FTDs previously qualified at a particular level for an airplane type and approved for use within an FAA-approved flight training program. Such FTDs are not required to undergo an additional qualification process, except as described in §60.16.

e. Each FTD user must obtain approval from the appropriate TPAA to use any FTD in an FAA-approved flight training program.

f. The intent of the requirement listed in §60.17(b), for each FTD to have a Statement of Qualification within 6 years, is to have the availability of that statement (including the configuration list and the limitations to authorizations) to provide a complete picture of the FTD inventory regulated by the FAA. The issuance of the statement will not require any additional evaluation or require any adjustment to the evaluation basis for the FTD.

g. Downgrading of an FTD is a permanent change in qualification level and will necessitate the issuance of a revised Statement of Qualification to reflect the revised qualification level, as appropriate. If a temporary restriction is placed on an FTD because of a missing, malfunctioning, or inoperative component or on-going repairs, the restriction is not a permanent change in qualification level. Instead, the restriction is temporary and is removed when the reason for the restriction has been resolved.

h. It is not the intent of the NSPM to discourage the improvement of existing simulation (*e.g.*, the ''updating'' of a control loading system, or the replacement of the IOS with a more capable unit) by requiring the ''updated'' device to meet the qualification standards current at the time of the update. Depending on the extent of the update, the NSPM may require that the updated device be evaluated and may require that an evaluation include all or a portion of the elements of an initial evaluation. However, the standards against which the device would be evaluated are those that are found in the MQTG for that device.

i. The NSPM will determine the evaluation criteria for an FTD that has been removed from active status for a prolonged period. The criteria will be based on the number of continuing qualification evaluations and quarterly inspections missed during the period of inactivity. For example, if the FTD were out of service for a 1 year period, it would be necessary to complete the entire QTG, since all of the quarterly evaluations would have been missed. The NSPM will also consider how the FTD was stored, whether parts were removed from the FTD and whether the FTD was disassembled.

j. The FTD will normally be requalified using the FAA-approved MQTG and the criteria that was in effect prior to its removal from qualification. However, inactive periods of 2 years or more will require re-qualification under the standards in effect and current at the time of requalification.

END INFORMATION

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14. INSPECTION, CONTINUING EVALUATION QUALIFICATION REQUIREMENTS (§60.19)

BEGIN QPS REQUIREMENT

a. The sponsor must conduct a minimum of four evenly spaced inspections throughout the year. The objective test sequence and content of each inspection in this sequence must be developed by the sponsor and must be acceptable to the NSPM.

b. The description of the functional preflight inspection must be contained in the sponsor's QMS.

c. Record ''functional preflight'' in the FTD discrepancy log book or other acceptable location, including any item found to be missing, malfunctioning, or inoperative.

END QPS REQUIREMENTS

BEGIN INFORMATION

d. The sponsor's test sequence and the content of each quarterly inspection required in §60.19(a)(1) should include a balance and a mix from the objective test requirement areas listed as follows:

(1) Performance.
(2) Handling qualities.
(3) Motion system (where appropriate).
(4) Visual system (where appropriate).
(5) Sound system (where appropriate).
(6) Other FTD systems.

e. If the NSP evaluator plans to accomplish specific tests during a normal continuing qualification evaluation that requires the use of special equipment or technicians, the sponsor will be notified as far in advance of the evaluation as practical; but not less than 72 hours. Examples of such tests include latencies, control sweeps, or motion or visual system tests.

f. The continuing qualification evaluations described in §60.19(b) will normally require 4 hours of FTD time. However, flexibility is necessary to address abnormal situations or situations involving aircraft with additional

levels of complexity (*e.g.*, computer controlled aircraft). The sponsor should anticipate that some tests may require additional time. The continuing qualification evaluations will consist of the following:

(1) Review of the results of the quarterly inspections conducted by the sponsor since the last scheduled continuing qualification evaluation.

(2) A selection of approximately 8 to 15 objective tests from the MQTG that provide an adequate opportunity to evaluate the performance of the FTD. The tests chosen will be performed either automatically or manually and should be able to be conducted within approximately one-third (⅓) of the allotted FTD time.

(3) A subjective evaluation of the FTD to perform a representative sampling of the tasks set out in attachment 3 of this appendix. This portion of the evaluation should take approximately two-thirds (⅔) of the allotted FTD time.

(4) An examination of the functions of the FTD may include the motion system, visual system, sound system as applicable, instructor operating station, and the normal functions and simulated malfunctions of the airplane systems. This examination is normally accomplished simultaneously with the subjective evaluation requirements.

g. The requirement established in §60.19(b)(4) regarding the frequency of NSPM-conducted continuing qualification evaluations for each FTD is typically 12 months. However, the establishment and satisfactory implementation of an approved QMS for a sponsor will provide a basis for adjusting the frequency of evaluations to exceed 12-month intervals.

END INFORMATION

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15. LOGGING FTD DISCREPANCIES (§60.20)

There is no additional regulatory or informational material that applies to §60.20. Logging FTD Discrepancies.

16. INTERIM QUALIFICATION OF FTDS FOR NEW AIRPLANE TYPES OR MODELS (§60.21)

BEGIN INFORMATION

There is no additional regulatory or informational material that applies to §60.21, Interim Qualification of FTDs for New Airplane Types or Models.

END INFORMATION

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17. MODIFICATIONS TO FTDS (§60.23)

BEGIN QPS REQUIREMENTS

a. The notification described in §60.23(c)(2) must include a complete description of the planned modification, with a description of the operational and engineering effect the proposed modification will have on the operation of the FTD and the results that are expected with the modification incorporated.

b. Prior to using the modified FTD:

(1) All the applicable objective tests completed with the modification incorporated, including any necessary updates to the MQTG (*e.g.*, accomplishment of FSTD Directives) must be acceptable to the NSPM; and

(2) The sponsor must provide the NSPM with a statement signed by the MR that the factors listed in §60.15(b) are addressed by the appropriate personnel as described in that section.

END QPS REQUIREMENTS

BEGIN INFORMATION

c. FSTD Directives are considered modification of an FTD. See Attachment 4 for a sample index of effective FSTD Directives.

END INFORMATION

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18. OPERATION WITH MISSING, MALFUNCTIONING, OR INOPERATIVE COMPONENTS (§60.25)

BEGIN INFORMATION

a. The sponsor's responsibility with respect to §60.25(a) is satisfied when the sponsor fairly and accurately advises the user of the current status of an FTD, including any missing, malfunctioning, or inoperative (MMI) component(s).

b. If the 29th or 30th day of the 30-day period described in §60.25(b) is on a Saturday, a Sunday, or a holiday, the FAA will extend the deadline until the next business day.

c. In accordance with the authorization described in §60.25(b), the sponsor may develop a discrepancy prioritizing system to accomplish repairs based on the level of impact on the capability of the FTD. Repairs having a larger impact on the FTD's ability to provide the required training, evaluation, or flight experience will have a higher priority for repair or replacement.

END INFORMATION

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19. AUTOMATIC LOSS OF QUALIFICATION AND PROCEDURES FOR RESTORATION OF QUALIFICATION (§ 60.27)

BEGIN INFORMATION

If the sponsor provides a plan for how the FTD will be maintained during its out-of-service period (*e.g.*, periodic exercise of mechanical, hydraulic, and electrical systems; routine replacement of hydraulic fluid; control of the environmental factors in which the FTD is to be maintained.) there is a greater likelihood that the NSPM will be able to determine the amount of testing that required for requalification.

END INFORMATION

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20. OTHER LOSSES OF QUALIFICATION AND PROCEDURES FOR RESTORATION OF QUALIFICATION (§ 60.29)

BEGIN INFORMATION

If the sponsor provides a plan for how the FTD will be maintained during its out-of-service period (*e.g.*, periodic exercise of mechanical, hydraulic, and electrical systems; routine replacement of hydraulic fluid; control of the environmental factors in which the FTD is to be maintained.) there is a greater likelihood that the NSPM will be able to determine the amount of testing that required for requalification.

END INFORMATION

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21. RECORDKEEPING AND REPORTING (§ 60.31)

BEGIN QPS REQUIREMENTS

a. FTD modifications can include hardware or software changes. For FTD modifications involving software programming changes, the record required by § 60.31(a)(2) must consist of the name of the aircraft system software, aerodynamic model, or engine model change, the date of the change, a summary of the change, and the reason for the change.

b. If a coded form for recordkeeping is used, it must provide for the preservation and retrieval of information with appropriate security or controls to prevent the inappropriate alteration of such records after the fact.

END QPS REQUIREMENTS

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22. APPLICATIONS, LOGBOOKS, REPORTS, AND RECORDS: FRAUD, FALSIFICATION, OR INCORRECT STATEMENTS (§ 60.33)

There are no additional QPS requirements or informational material that apply to § 60.33, Applications, Logbooks, Reports, and Records: Fraud, Falsification, or Incorrect Statements.

23. [RESERVED]

24. LEVELS OF FTD

BEGIN INFORMATION

a. The following is a general description of each level of FTD. Detailed standards and tests for the various levels of FTDs are fully defined in Attachments 1 through 3 of this appendix.

(1) *Level 4.* A device that may have an open airplane-specific flight deck area, or an enclosed airplane-specific cockpit and at least one operating system with air/ground logic (no aerodynamic programming required).

(2) *Level 5.* A device that may have an open airplane-specific flight deck area, or an enclosed airplane-specific cockpit and a generic aerodynamic program with at least one operating system and control loading that is representative of the simulated airplane only at an approach speed and configuration.

(3) *Level 6.* A device that has an enclosed airplane-specific cockpit and aerodynamic program with all applicable airplane systems operating and control loading that is representative of the simulated airplane throughout its ground and flight envelope and significant sound representation.

END INFORMATION

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25. FSTD QUALIFICATION ON THE BASIS OF A BILATERAL AVIATION SAFETY AGREEMENT (BASA) (§ 60.37)

BEGIN INFORMATION

There are no additional QPS requirements or informational material that apply to § 60.37, FSTD Qualification on the Basis of a Bilateral Aviation Safety Agreement (BASA).

END INFORMATION

ATTACHMENT 1 TO APPENDIX B TO PART 60—GENERAL FTD REQUIREMENTS

BEGIN QPS REQUIREMENTS

1. REQUIREMENTS

a. Certain requirements included in this appendix must be supported with a Statement of Compliance and Capability (SOC), which may include objective and subjective tests. The SOC will confirm that the requirement was satisfied, and describe how the requirement was met. The requirements for SOCs and tests are indicated in the ''General FTD Requirements'' column in Table B1A of this appendix.

b. Table B1A describes the requirements for the indicated level of FTD. Many devices include operational systems or functions that exceed the requirements outlined in this section. In any event, all systems will be tested and evaluated in accordance with this appendix to ensure proper operation.

END QPS REQUIREMENTS

BEGIN INFORMATION

2. DISCUSSION

a. This attachment describes the general requirements for qualifying Level 4 through Level 6 FTDs. The sponsor should also consult the objectives tests in Attachment 2 and the examination of functions and subjective tests listed in Attachment 3 to determine the complete requirements for a specific level FTD.

b. The material contained in this attachment is divided into the following categories:

(1) General Cockpit Configuration.
(2) Programming.
(3) Equipment Operation.
(4) Equipment and facilities for instructor/evaluator functions.
(5) Motion System.
(6) Visual System.
(7) Sound System.

c. Table B1A provides the standards for the General FTD Requirements.

END INFORMATION

TABLE B1A—MINIMUM FTD REQUIREMENTS

<<<QPS requirements>>>		FTD level			<<Information>> Notes
No.	General FTD requirements	4	5	6	
1. General Cockpit Configuration					
1.a	The FTD must have a cockpit that is a replica of the airplane simulated with controls, equipment, observable cockpit indicators, circuit breakers. and bulkheads properly located, functionally accurate and replicating the airplane. The direction of movement of controls and switches must be identifical to that in the airplane. Pilot seat(s) must afford the capability for the occupant to be able to achieve the design ''eye position''.			X	For FTD purposes, the cockpit consists of all that space forward of a cross section of the fuselage at the most extreme aft setting of the pilots' seats including additional, required flight crewmember duty stations and those required bulkheads aft of the pilot seats. For clarification, bulkheads containing only item such as leanding gear pin storage compartments, fire axes or extinguishers, spare light bulbs, aircraft documents pouches are not considered essential and may be omitted.
1.b	The FTS must have equipment (e.g., instruments, panels, systems, circuit breakers, and controls) simulated sufficiently for the authorized training/checking events to be accomplished. The installed equipment must be located in a spatially correct location and may be in a cockpit or an open flight deck area. Actuation of equipment must replicate the appropriate function in the airplane.	X	X		
2. Programming					

TABLE B1A—MINIMUM FTD REQUIREMENTS—Continued

<<<QPS requirements>>>		FTD level			<<Information>> Notes
No.	General FTD requirements	4	5	6	
2.a	The FTD must provide the proper effect of aerodynamic changes for the combinations of drag and thrust normally encountered in flight. This must include the effect of change in airplane attitude, thrust, drag, altitude, temperature, and configuration. Level 6 additionally requires the effects of changes in gross weight and center of gravity. Level 5 requires only generic aerodynamic programming.		X	X	
2.b	The FTD must have the computer (analog or digital) capability (i.e., capacity, accuracy, resolution, and dynamic response) needed to meet the qualification level sought.	X	X	X	
2.c	Relative responses of the cockpit instruments must be measured by latency tests, or transport delay tests, and may not exceed 300 milliseconds. The instruments must respond to abrupt input at the pilot's position within the allotted time, but not before the time when the airplane would respond under the same conditions. • Latency: The FTD instrument and, if applicable, the motion system and the visual system response must not be prior to that time when the airplane responds and may respond up to 300 milliseconds after that time under the same conditions. • Transport Delay: As an alternative to the Latency requirement, a transport delay objective test may be used to demonstrate that the FTD system does not exceed the specified limit. The sponsor must measure all the delay encountered by a step signal migrating from the pilot's control through all the simulation software modules in the correct order, using a handshaking protocol, finally through the normal output interfaces to the instrument display and, if applicable, the motion system, and the visual system.		X	X	The intent is to verify that the FTD provides instrument cues that are, within the stated time delays, like the airplane responses. For airplane response, acceleration in the appropriate, corresponding rotational axis is preferred. Additional information regarding Latency and Transport Delay testing may be found in appendix A, Attachment 2, paragraph 14.
3. Equipment Operations					
3.a	All relevant instrument indications involved in the simulation of the airplane must automatically respond to control movement or external disturbances to the simulated airplane; e.g., turbulence or winds.		X	X	
3.b	Navigation equipment must be installed and operate within the tolerances applicable for the airplane. Levels 6 must also include communication equipment (inter-phone and air/ground) like that in the airplane and, if appropriate to the operation being conducted, an oxygen mask microphone system. Level 5 need have only that navigation equipment necessary to fly an instrument approach.		X	X	

TABLE B1A—MINIMUM FTD REQUIREMENTS—Continued

<<<QPS requirements>>>		FTD level			<<Information>> Notes
No.	General FTD requirements	4	5	6	
3.c	Installed systems must simulate the applicable airplane system operation, both on the ground and in flight. Installed systems must be operative to the extent that applicable normal, abnormal, and emergency operating procedures included in the sponsor's training programs can be accomplished. Level 6 must simulate all applicable airplane flight, navigation, and systems operation. Level 5 must have at least functional flight and navigational controls, displays, and instrumentation. Level 4 must have at least one airplane system installed and functional.	X	X	X	
3.d	The lighting environment for panels and instruments must be sufficient for the operation being conducted.			X	
3.e	The FTD must provide control forces and control travel that correspond to the airplane being simulated. Control forces must react in the same manner as in the airplane under the same flight conditions.		X		
3.f	The FTD must provide control forces and control travel of sufficient precision to manually fly an instrument approach.		X		
4. Instructor or Evaluator Facilities					
4.a	In addition to the flight crewmember stations, suitable seating arrangements for an instructor/check airman and FAA Inspector must be available. These seats must provide adequate view of crewmember's panel(s).	X	X	X	These seats need not be a replica of an aircraft seat and may be as simple as an office chair placed in an appropriate position.
4.b	The FTD must have instructor controls that permit activation of normal, abnormal, and emergency conditions as may be appropriate. Once activated, proper system operation must result from system management by the crew and not require input from the instructor controls.	X	X	X	
5. Motion System (not required)					
5.a.	The FTD may have a motion system, if desired, although it is not required. If a motion system is installed and additional training, testing, or checking credits are being sought on the basis of having a motion system, the motion system operation must not be distracting and must be coupled closely to provide integrated sensory cues. The motion system must also respond to abrupt input at the pilot's position within the allotted time, but not before the time when the airplane would respond under the same conditions. A Subjective Test is required.		X	X	The motion system standards set out in part 60, appendix A for at least Level A simulators is acceptable.
6. Visual System (not required)					
6.a.	The FTD may have a visual system, if desired, although it is not required. If a visual system is installed, it must not be distracting.	X	X	X	

TABLE B1A—MINIMUM FTD REQUIREMENTS—Continued

<<<QPS requirements>>>		FTD level			<<Information>> Notes
No.	General FTD requirements	4	5	6	
6.b.	If a visual system is installed and additional training, testing, or checking credits are being sought on the basis of having a visual system, the visual system must meet the following criteria:				
6.b.1	The visual system must respond to abrupt input at the pilot's position. An SOC is required. A Subjective Test is required.	X	X	X	
6.b.2	The visual system must be at least a single channel, non-collimated display?. An SOC is required. A Subjective Test is required.	X	X	X	
6.b.3	The visual system must provide at least a field of view of 18° vertical/24° horizontal for the pilot flying.. An SOC is required.	X	X	X	
6.b.4	The visual system must provide for a maximum parallax of 10° per pilot. An SOC is required.	X	X	X	
6.b.5	The visual scene content may not be distracting. An SOC is required. A Subjective Test is required.	X	X	X	
6.b.6	The minimum distance from the pilot's eye position to the surface of a direct view display may not be less than the distance to any front panel instrument. An SOC is required.	X	X	X	
6.b.7	The visual system must provide for a minimum resolution of 5 arc-minutes for both computed and displayed pixel size. An SOC is required.	X	X	X	
7. Sound System					
7.a	The FTD must simulate significant cockpit sounds resulting from pilot actions that correspond to those heard in the airplane.			X	

ATTACHMENT 2 TO APPENDIX B TO PART 60—FLIGHT TRAINING DEVICE (FTD) OBJECTIVE TESTS

BEGIN INFORMATION

1. For the purposes of this attachment, the flight conditions specified in the Flight Conditions Column of Table B2A, are defined as follows:

(1) *Ground*—on ground, independent of airplane configuration;

(2) *Take-off*—gear down with flaps/slats in any certified takeoff position;

(3) *First segment climb*—gear down with flaps/slats in any certified takeoff position (normally not above 50 ft AGL);

(4) *Second segment climb*—gear up with flaps/slats in any certified takeoff position (normally between 50 ft and 400 ft AGL);

(5) *Clean*—flaps/slats retracted and gear up;

(6) *Cruise*—clean configuration at cruise altitude and airspeed;

(7) *Approach*—gear up or down with flaps/slats at any normal approach position as recommended by the airplane manufacturer; and

(8) *Landing*—gear down with flaps/slats in any certified landing position.

2. The format for numbering the objective tests in appendix A, Attachment 2, Table A2A, and the objective tests in appendix B, Attachment 2, Table B2A, is identical. However, each test required for FFSs is not necessarily required for FTDs. Also, each test required for FTDs is not necessarily required

for FFSs. Therefore, when a test number (or series of numbers) is not required, the term ''Reserved'' is used in the table at that location. Following this numbering format provides a degree of commonality between the two tables and substantially reduces the potential for confusion when referring to objective test numbers for either FFSs or FTDs.

3. The QPS Requirements section imposes a duty on the sponsor or other data provider to ensure that a steady state condition exists at the instant of time captured by the ''snapshot'' for cases where the objective test results authorize a ''snapshot test'' or a ''series of snapshot tests'' results in lieu of a time-history. This is often verified by showing that a steady state condition existed from some period prior to, through some period following, the snap shot. The time period most frequently used is from 5 seconds prior through 2 seconds following the instant of time captured by the snap shot. Other time periods may be acceptable as authorized by the NSPM.

4. The reader is encouraged to review the Airplane Flight Simulator Evaluation Handbook, Volumes I and II, published by the Royal Aeronautical Society, London, UK, and FAA Advisory Circulars (AC) 25–7, as may be amended, Flight Test Guide for Certification of Transport Category Airplanes, and (AC) 23–8, as may be amended, Flight Test Guide for Certification of Part 23 Airplanes, for references and examples regarding flight testing requirements and techniques.

5. If relevant winds are present in the objective data, the wind vector should be clearly noted as part of the data presentation, expressed in conventional terminology, and related to the runway being used for the test.

6. A Level 4 FTD does not require objective tests and therefore, Level 4 is not addressed in the following table.

END INFORMATION

BEGIN QPS REQUIREMENTS

1. TEST REQUIREMENTS

a. The ground and flight tests required for qualification are listed in Table B2A Objective Evaluation. Computer generated FTD test results must be provided for each test except where an alternate test is specifically authorized by the NSPM. If a flight condition or operating condition is required for the test but does not apply to the airplane being simulated or to the qualification level sought, it may be disregarded (e.g., an engine out missed approach for a single-engine airplane; a maneuver using reverse thrust for an airplane without reverse thrust capability). Each test result is compared against the validation data described in §60.13, and in appendix B. The results must be produced on an appropriate recording device acceptable to the NSPM and must include FTD number, date, time, conditions, tolerances, and appropriate dependent variables portrayed in comparison to the validation data. Time histories are required unless otherwise indicated in Table B2A. All results must be labeled using the tolerances and units given.

b. Table B2A in this attachment sets out the test results required, including the parameters, tolerances, and flight conditions for FTD validation. Tolerances are provided for the listed tests because mathematical modeling and acquisition and development of reference data are often inexact. All tolerances listed in the following tables are applied to FTD performance. When two tolerance values are given for a parameter, the less restrictive may be used unless otherwise indicated.

c. Certain tests included in this attachment must be supported with a Statement of Compliance and Capability (SOC). In Table B2A, requirements for SOCs are indicated in the ''Test Details'' column.

d. When operational or engineering judgment is used in making assessments for flight test data applications for FTD validity, such judgment must not be limited to a single parameter. For example, data that exhibit rapid variations of the measured parameters may require interpolations or a ''best fit'' data section. All relevant parameters related to a given maneuver or flight condition must be provided to allow overall interpretation. When it is difficult or impossible to match FTD to airplane data throughout a time history, differences must be justified by providing a comparison of other related variables for the condition being assessed.

e. It is not acceptable to program the FTD so that the mathematical modeling is correct only at the validation test points. Unless noted otherwise, tests must represent airplane performance and handling qualities at operating weights and centers of gravity (CG) typical of normal operation. If a test is supported by aircraft data at one extreme weight or CG, another test supported by aircraft data at mid-conditions or as close as possible to the other extreme is necessary. Certain tests that are relevant only at one extreme CG or weight condition need not be repeated at the other extreme. The results of the tests for Level 6 are expected to be indicative of the device's performance and handling qualities throughout all of the following:

(1) The airplane weight and CG envelope;

(2) The operational envelope; and

(3) Varying atmospheric ambient and environmental conditions—including the extremes authorized for the respective airplane or set of airplanes.

f. When comparing the parameters listed to those of the airplane, sufficient data must

also be provided to verify the correct flight condition and airplane configuration changes. For example, to show that control force is within the parameters for a static stability test, data to show the correct airspeed, power, thrust or torque, airplane configuration, altitude, and other appropriate datum identification parameters must also be given. If comparing short period dynamics, normal acceleration may be used to establish a match to the airplane, but airspeed, altitude, control input, airplane configuration, and other appropriate data must also be given. If comparing landing gear change dynamics, pitch, airspeed, and altitude may be used to establish a match to the airplane, but landing gear position must also be provided. All airspeed values must be properly annotated (*e.g.*, indicated versus calibrated). In addition, the same variables must be used for comparison (*e.g.*, compare inches to inches rather than inches to centimeters).

g. The QTG provided by the sponsor must clearly describe how the FTD will be set up and operated for each test. Each FTD subsystem may be tested independently, but overall integrated testing of the FTD must be accomplished to assure that the total FTD system meets the prescribed standards. A manual test procedure with explicit and detailed steps for completing each test must also be provided.

h. In those cases where the objective test results authorize a ''snapshot test'' or a ''series of snapshot test'' results in lieu of a time-history result, the sponsor or other data provider must ensure that a steady state condition exists at the instant of time captured by the ''snapshot.''

i. For previously qualified FTDs, the tests and tolerances of this attachment may be used in subsequent continuing qualification evaluations for any given test if the sponsor has submitted a proposed MQTG revision to the NSPM and has received NSPM approval.

j. FTDs are evaluated and qualified with an engine model simulating the airplane data supplier's flight test engine. For qualification of alternative engine models (either variations of the flight test engines or other manufacturer's engines) additional tests with the alternative engine models may be required. This Attachment contains guidelines for alternative engines.

k. Testing Computer Controlled Airplane (CCA) simulators, or other highly augmented airplane simulators, flight test data is required for the Normal (N) and/or Non-normal (NN) control states, as indicated in this Attachment. Where test results are independent of control state, Normal or Non-normal control data may be used. All tests in Table A2A require test results in the Normal control state unless specifically noted otherwise in the Test Details section following the CCA designation. The NSPM will determine what tests are appropriate for airplane simulation data. When making this determination, the NSPM may require other levels of control state degradation for specific airplane tests. Where Non-normal control states are required, test data must be provided for one or more Non-normal control states, and must include the least augmented state. Where applicable, flight test data must record Normal and Non-normal states for:

(1) Pilot controller deflections or electronically generated inputs, including location of input; and

(2) Flight control surface positions unless test results are not affected by, or are independent of, surface positions.

l. Tests of handling qualities must include validation of augmentation devices. FTDs for highly augmented airplanes will be validated both in the unaugmented configuration (or failure state with the maximum permitted degradation in handling qualities) and the augmented configuration. Where various levels of handling qualities result from failure states, validation of the effect of the failure is necessary. Requirements for testing will be mutually agreed to between the sponsor and the NSPM on a case-by-case basis.

m. Some tests will not be required for airplanes using airplane hardware in the FTD cockpit (*e.g.*, ''side stick controller''). These exceptions are noted in Section 2 ''Handling Qualities'' in Table B2A of this attachment. However, in these cases, the sponsor must provide a statement that the airplane hardware meets the appropriate manufacturer's specifications and the sponsor must have supporting information to that fact available for NSPM review.

END QPS REQUIREMENTS

TABLE B2A—FLIGHT TRAINING DEVICE (FTD) OBJECTIVE TESTS

<<< QPS Requirements >>>							<< Information >>
Test		Tolerances	Flight conditions	Test details	FTD level		Notes
Number	Title				5	6	
1. Performance							
1.a	(Reserved).						
1.b	Takeoff.						
1.b.1	Ground Acceleration Time	±5% time or ±1 sec	Takeoff	Record acceleration time for a minimum of 80% of the segment from brake release to V_R. Preliminary aircraft certification data may be used.		X	This test is required only if RTO training credit is sought.
1.b.2. through 1.b.6.	(Reserved)						
1.b.7	Rejected Takeoff	±3% time or ±1 second	Dry Runway	Record time for at least 80% of the segment from initiation of the Rejected Takeoff to full stop.		X	
1.b.8	(Reserved)						
1.c	Climb						
1.c.1	Normal Climb all engines operating.	±3 kt airspeed, ±5% or ±100 ft/min (0.5 m/sec) climb rate.	Clean	Flight test data or airplane performance manual data may be used. Record at nominal climb speed and at nominal altitude. May be a snapshot test result.	X	X	
1.c.2. through 1.c.4.	(Reserved)						
1.d	(Reserved)						
1.e	(Reserved)						

1.f	Engines						
1.f.1	Acceleration	±10% T_t, ±1 sec for Level 5	Approach or Landing	Record engine power (N_1, N_2, EPR, Torque, Manifold Pressure) from idle to maximum takeoff power for a rapid (slam) throttle movement.	X	X	T_t is the total time from initial throttle movement to reaching 90% of go around power.
1.f.2	Deceleration	±10% T_t, or ±1 sec for Level 5	Ground	Record engine power (N_1, N_2, EPR, Torque, Manifold Pressure) from maximum takeoff power to idle for a rapid (slam) throttle movement.	X	X	T_t is the total time from initial throttle movement to reaching 90% decay of maximum takeoff power.
2. Handling Qualities							
	(3) For FTDs requiring Static tests at the controls (i.e., column, wheel, rudder pedal), special test fixtures will not be required during initial or upgrade evaluations if the sponsor's QTG/MQTG shows both test fixture results*and* the results of an alternative approach, such as computer plots produced concurrently, that show satisfactory agreement. Repeat of the alternative method during the initial or upgrade evaluation would then satisfy this test requirement						Testing of position versus force is not applicable if forces are generated solely by use of airplane hardware in the FTD.
2.a	(3) Static Control Tests						
2.a.1.a	Pitch Controller Position vs. Force and Surface Position Calibration.	±2 lb (0.9 daN) breakout, ±10% or ±5 lb (2.2 daN) force, ±2° elevator.	Ground	Record results for an uninterrupted control sweep to the stops.		X	
2.a.1.b	Pitch Controller Position vs. Force.	±2 lb (0.9 daN) breakout, ±10% or ±5 lb (2.2 daN) force.	Ground	Record results for an uninterrupted control sweep to the stops.	X		Applicable only on continuing qualification evaluations. The intent is to design the control feel for Level 5 to be able to manually fly an instrument approach; and not to compare results to flight test or other such data.
2.a.2.a	Roll Controller Position vs. Force and Surface Position Calibration.	±2 lb (0.9 daN) breakout, ±10% or ±3 lb (1.3 daN) force, ±2° aileron, ±3° spoiler angle.	Ground	Record results for an uninterrupted control sweep to the stops.		X	

TABLE B2A—FLIGHT TRAINING DEVICE (FTD) OBJECTIVE TESTS—Continued

<<< QPS Requirements >>>							<< Information >>
Test		Tolerances	Flight conditions	Test details	FTD level		Notes
Number	Title				5	6	
2.a.2.b	Roll Controller Position vs. Force.	±2 lb (0.9 daN) breakout, ±10% or ±3 lb (1.3 daN) force.	Ground	Record results for an uninterrupted control sweep to the stops.	X		Applicable only on continuing qualification evaluations. The intent is to design the control feel for Level 5 to be able to manually fly an instrument approach; and not to compare results to flight test or other such data.
2.a.3.a	Rudder Pedal Position vs. Force and Surface Position Calibration.	±5 lb (2.2 daN) breakout, ±10% or ±5 lb (2.2 daN) force, ±2° rudder angle.	Ground	Record results for an uninterrupted control sweep to the stops.		X	
2.a.3.b	Rudder Pedal Position vs. Force.	±5 lb (2.2 daN) breakout, ±10% or ±5 lb (2.2 daN) force.	Ground	Record results for an uninterrupted control sweep to the stops.	X		Applicable only on continuing qualification evaluations. The intent is to design the control feel for Level 5 to be able to manually fly an instrument approach; and not to compare results to flight test or other such data.
2.a.4	Nosewheel Steering Controller Force.	±2 lb (0.9 daN) breakout, ±10% or ±3 lb (1.3 daN) force.	Ground			X	
2.a.5	Rudder Pedal Steering Calibration.	±2° nosewheel angle	Ground			X	
2.a.6	Pitch Trim Indicator vs. Surface Position Calibration.	±0.5° of computed trim surface angle	Ground			X	The purpose of the test is to compare the FTD against design data or equivalent.
2.a.7	(Reserved).						

2.a.8	Alignment of Cockpit Throttle Lever vs. Selected Engine Parameter.	±5° of throttle lever angle ±0.8 in (2 cm) for power control without angular travel.	Ground	Requires simultaneous recording for all engines. The tolerances apply against airplane data and between engines. In the case of propeller powered airplanes, if a propeller lever is present, it must also be checked.		X	
2.a.9	Brake Pedal Position vs. Force.	±5 lb (2.2 daN) or 10% force	Ground	Two data points are required: zero and maximum deflection. Computer output results may be used to show compliance.	X	X	Test not required unless RTO credit is sought.
2.b	(Reserved)						
2.c	Longitudinal Control Tests						
	Power setting is that required for level flight unless otherwise specified						
2.c.1	Power Change Force	±5 lb (2.2 daN) or, ±20% force	Cruise or Approach	May be a series of snapshot test results. Power change dynamics test as described in test 2.c.1 of Table A2A of this part will be accepted.	X	X	
2.c.2	Flap/Slat Change Force	±5 lb (2.2 daN) or, ±20% force	Takeoff through initial flap retraction, and approach to landing.	May be a series of snapshot test results. Flap/Slat change dynamics test as described in test 2.c.2 of Table A2A of this part will be accepted.	X	X	
2.c.3	(Reserved)						
2.c.4	Gear Change Force	±5 lb (2.2 daN) or, ±20% force	Takeoff (retraction) and Approach (extension).	May be a series of snapshot test results. Gear change dynamics test as described in test 2.c.4 of Table A2A of this part will be accepted.	X	X	

TABLE B2A—FLIGHT TRAINING DEVICE (FTD) OBJECTIVE TESTS—Continued

<<< QPS Requirements >>>							<< Information >>
Test		Tolerances	Flight conditions	Test details	FTD level		Notes
Number	Title				5	6	
2.c.5	Longitudinal Trim	±0.5° trim surface angle ±1° elevator ±1° pitch angle ±5% net thrust or equivalent.	Cruise, Approach, and Landing.	May be a series of snapshot tests. Level 5 may use equivalent stick and trim controllers in lieu of elevator and trim surface.	X	X	
2.c.6	Longitudinal Maneuvering Stability (Stick Force/g).	±5 lb (±2.2 daN) or ±10% pitch controller force.	Cruise, Approach and Landing.	May be a series of snapshot test results.		X	
2.c.7	Longitudinal Static Stability	±5 lb (±2.2 daN) or ±10% pitch controller force.	Approach	May be a series of snapshot test results. Level 5 must exhibit positive static stability, but need not comply with the numerical tolerance.	X	X	
2.c.8	Stall Warning (actuation of stall warning device).	±3 kts. airspeed, ±2° bank	Second Segment Climb, and Approach or Landing.	Record the stall warning signal.	X	X	The stall maneuver may be entered with thrust at or near idle power and wings level (1g).
2.c.9.a	Phugoid Dynamics	±10% period, ±10% of time to ½ or double amplitude or ±.02 of damping ratio.	Cruise	The test must include whichever is less of the following: Three full cycles (six overshoots after the input is completed), or the number of cycles sufficient to determine time to ½ or double amplitude.		X	
2.c.9.b	Phugoid Dynamics	±10% period, Representative damping	Cruise	The test must include whichever is less of the following: Three full cycles (six overshoots after the input is completed), or the number of cycles sufficient to determine representative damping.	X		

2.c.10	Short Period Dynamics	±1.5° pitch angle or ±2°/sec pitch rate, ±0.10g acceleration.	Cruise	.....	X		
2.d	(3) Lateral Directional Tests						
	(3) Power setting is that required for level flight unless otherwise specified.						
2.d.1	(Reserved).	.....	.....	.....	.....	.....	
2.d.2	Roll Response (Rate)	±10% or ±2°/sec roll rate	Cruise, and Approach or Landing.	.....	X	X	Results should be recorded for normal roll controller deflection (about one-third of maximum roll controller travel). May be combined with step input of flight deck roll controller test (2.d.3.).
2.d.3	Roll Response to Cockpit Roll Controller Step Input.	±10% or ±2° bank angle	Approach or Landing	.....		X	May be combined with roll response (rate) test (2.d.2.).
2.d.4.a	Spiral Stability	Correct trend and ±3° or ±10% bank angle in 20 seconds.	Cruise	.....		X	Airplane data averaged from multiple tests in same direction may be used.
2.d.4.b	Spiral Stability	Correct trend	Cruise	.....	X		Airplane data averaged from multiple tests in same direction may be used.
2.d.5	(Reserved)	.....	.....	.....	.....	.....	
2.d.6.a	Rudder Response	±2°/sec or ±10% yaw rate.	Approach or Landing	Not required if rudder input and response is shown in Dutch Roll Test (test 2.d.7).		X	A rudder step input of 20%–30% rudder pedal throw may be used.
2.d.6.b	Rudder Response	Roll rate ±2°/sec, bank angle ±3°	Approach or Landing	May be roll response to a given rudder deflection.	X		

TABLE B2A—FLIGHT TRAINING DEVICE (FTD) OBJECTIVE TESTS—Continued

<<< QPS Requirements >>>							<< Information >>
Test		Tolerances	Flight conditions	Test details	FTD level		Notes
Number	Title				5	6	
2.d.7	Dutch, Roll, (Yaw Damper OFF).	±0.5 sec or ±10% of period, ±10% of time to ½ or double amplitude or ±.02 of damping ratio.	Cruise, and Approach or Landing.	Record results for at least 6 complete cycles with stability augmentation OFF, or the number of cycles sufficient to determine time to ½ or double amplitude.		X	
2.d.8	Steady State Sideslip	For given rudder position ±2° bank angle, ±1° sideslip angle, ±10% or ±2° aileron, ±10% or ±5° spoiler or equivalent roll, controller position or force.	Approach or Landing	May be a series of snapshot test results. Propeller driven airplanes must test in each direction.	X	X	Sideslip angle is matched for repeatability on continuing qualification evaluations.
2.e. through 2.h	(Reserved)						
3	(Reserved)						
4	(Reserved)						
5	(Reserved)						
6. FTD System Response Time							
6a.	Latency.						
		300 ms (or less) after airplane response.	Take-off cruise, and approach or landing.	One test is required in each axis (pitch, roll and yaw) for each of the three conditions (take-off, cruise, and approach or landing).	X	X	
	Transport Delay. If Transport Delay is chosen to demonstrate response time than Latency, it is expected that when reviewing those existing tests where latency can be identified (e.g., short period, roll response, rudder response) the sponsor and the NSPM will apply additional scrutiny to ensure proper FTD response.						
		300 ms (or less) after controller movement.	N/A	A separate test is required in each axis (pitch, roll, and yaw).	X	X	

3. FOR ADDITIONAL INFORMATION ON THE FOLLOWING TOPICS, PLEASE REFER TO APPENDIX A, ATTACHMENT 2, AND THE INDICATED PARAGRAPH WITHIN THAT ATTACHMENT

- Control Dynamics, paragraph 3.
- Motion System, paragraph 5.
- Sound System, paragraph 6.
- Engineering Simulator Validation Data, paragraph 8.
- Approval Guidelines for Engineering Simulator Validation Data, paragraph 9.
- Validation Test Tolerances, paragraph 10.
- Validation Data Road Map, paragraph 11.
- Acceptance Guidelines for Alternative Engines Data, paragraph 12.
- Acceptance Guidelines for Alternative Avionics, paragraph 13.
- Transport Delay Testing, paragraph 14.
- Continuing Qualification Evaluation Validation Data Presentation, paragraph 15.

4. ALTERNATIVE OBJECTIVE DATA FOR FTD LEVEL 5.

BEGIN QPS REQUIREMENTS

a. This paragraph (including the following tables) is relevant only to FTD Level 5. It is provided because this level is required to simulate the performance and handling characteristics of a set of airplanes with similar characteristics, such as normal airspeed/altitude operating envelope and the same number and type of propulsion systems (engines).

b. Tables B2B through B2E reflect FTD performance standards that are acceptable to the FAA. A sponsor must demonstrate that a device performs within these parameters, as applicable. If a device does not meet the established performance parameters for some or for all of the applicable tests listed in Tables B2B through B2E, the sponsor may use NSP accepted flight test data for comparison purposes for those tests.

c. Sponsors using the data from Tables B2B through B2E must comply with the following:

(1) Submit a complete QTG, including results from all of the objective tests appropriate for the level of qualification sought as set out in Table B2A. The QTG must highlight those results that demonstrate the performance of the FTD is within the allowable performance ranges indicated in Tables B2B through B2E, as appropriate.

(2) The QTG test results must include all relevant information concerning the conditions under which the test was conducted; *e.g.*, gross weight, center of gravity, airspeed, power setting, altitude (climbing, descending, or level), temperature, configuration, and any other parameter that impacts the conduct of the test.

(3) The test results become the validation data against which the initial and all subsequent recurrent evaluations are compared. These subsequent evaluations will use the tolerances listed in Table B2A.

(4) Subjective testing of the device must be performed to determine that the device performs and handles like an airplane within the appropriate set of airplanes.

TABLE B2B. — ALTERNATIVE DATA SOURCE FOR FTD LEVEL 5 SMALL, SINGLE ENGINE (RECIPROCATING) AIRPLANE

<<< QPS requirement >>>		
Applicable test		Authorized performance range
No.	Title and procedure	
1. Performance		
1.c	Climb.	
1.c.1	Normal climb with nominal gross weight, at best rate-of-climb airspeed.	Climb rate = 500–1200 fpm (2.5–6 m/sec).
1.f	Engines.	
1.f.1	Acceleration; idle to takeoff power	2–4 Seconds.
1.f.2	Deceleration; takeoff power to idle	2–4 Seconds.
2. Handling Qualities		
2.c	Longitudinal Tests.	
2.c.1	Power change force	

TABLE B2B. — ALTERNATIVE DATA SOURCE FOR FTD LEVEL 5 SMALL, SINGLE ENGINE (RECIPROCATING) AIRPLANE—Continued

<<< QPS requirement >>>		
Applicable test		Authorized performance range
No.	Title and procedure	
	(a) Trim for straight and level flight at 80% of normal cruise airspeed with necessary power. Reduce power to flight idle. Do not change trim or configuration. After stabilization, record column force necessary to maintain original airspeed.	5–15 lbs (2.2–6.6 daN) of force (Pull).
	OR	
	(b) Trim for straight and level flight at 80% of normal cruise airspeed with necessary power. Add power to maximum setting. Do not change trim or configuration. After stabilized, record column force necessary to maintain original airspeed.	5–15 lbs (2.2–6.6 daN) of force (Push).
2.c.2	Flap/slat change force.	
	(a) Trim for straight and level flight with flaps fully retracted at a constant airspeed within the flaps- extended airspeed range. Do not adjust trim or power. Extend the flaps to 50% of full flap travel. After stabilized, record stick force necessary to maintain original airspeed.	5–15 lbs (2.2–6.6 daN) of force (Pull).
	OR	
	(b) Trim for straight and level flight with flaps extended to 50% of full flap travel, at a constant airspeed within the flaps-extended airspeed range. Do not adjust trim or power. Retract the flaps to zero. After stabilized, record stick force necessary to maintain original airspeed.	5–15 lbs (2.2–6.6 daN) of force (Push).
2.c.4	Gear change force	
	(a) Trim for straight and level flight with landing gear retracted at a constant airspeed within the landing gear-extended airspeed range. Do not adjust trim or power. Extend the landing gear. After stabilized, record stick force necessary to maintain original airspeed.	2–12 lbs (0.88–5.3 daN) of force (Pull).
	OR	
	(b) Trim for straight and level flight with landing gear extended, at a constant airspeed within the landing gear-extended airspeed range. Do not adjust trim or power. Retract the landing gear. After stabilized, record stick force necessary to maintain original airspeed.	2–12 lbs (0.88–5.3 daN) of force (Push).
2.c.5	Longitudinal trim	Must be able to trim longitudinal stick force to "zero" in each of the following configurations: cruise; approach; and landing.
2.c.7	Longitudinal static stability	Must exhibit positive static stability.
2.c.8	Stall warning (actuation of stall warning device) with nominal gross weight; wings level; and a deceleration rate of approximately one (1) knot per second.	
	(a) Landing configuration	40–60 knots; ± 5° of bank.
	(b) Clean configuration	Landing configuration speed + 10–20%.
2.c.9.b	Phugoid dynamics	Must have a phugoid with a period of 30–60 seconds. May not reach ½ or double amplitude in less than 2 cycles.

TABLE B2B. — ALTERNATIVE DATA SOURCE FOR FTD LEVEL 5 SMALL, SINGLE ENGINE (RECIPROCATING) AIRPLANE—Continued

<<< QPS requirement >>>		
Applicable test		Authorized performance range
No.	Title and procedure	
2.d	Lateral Directional Tests.	
2.d.2	Roll response ..... Roll rate must be measured through at least 30 degrees of roll. Aileron control must be deflected ½ (50 percent) of maximum travel.	Must have a roll rate of 6–40 degrees/second.
2.d.4.b	Spiral stability ..... Cruise configuration and normal cruise airspeed. Establish a 20–30 degree bank. When stabilized, neutralize the aileron control and release. Must be completed in both directions of turn.	Initial bank angle (± 5 degrees) after 20 seconds.
2.d.6.b	Rudder response ..... Use 50 percent of maximum rudder deflection. (Applicable to approach or landing configuration.).	6–12 degrees/second yaw rate.
2.d.7	Dutch roll, yaw damper off ..... (Applicable to cruise and approach configurations.).	A period of 2–5 seconds; and ½–2 cycles.
2.d.8	Steady state sideslip ..... Use 50 percent rudder deflection. (Applicable to approach and landing degrees of configurations.).	2–10 degrees of bank; 4–10 degrees of sideslip; and 2–10 degrees of aileron.
6	FTD System Response Time.	
6.a	Cockpit instrument systems response to an abrupt pilot controller input. One test is required in each axis (pitch, roll, yaw).	300 milliseconds or less.

TABLE B2C—ALTERNATIVE DATA SOURCE FOR FTD LEVEL 5 SMALL, MULTI-ENGINE (RECIPROCATING) AIRPLANE

<<< QPS requirement >>>		
Applicable test		Authorized performance range
Number	Title and procedure	
1. Performance		
1.c	Climb	
1.c.1	Normal climb with nominal gross weight, at best rate-of-climb airspeed.	Climb airspeed = 95–115 knots. Climb rate = 500–1500 fpm (2.5–7.5 m/sec).
1.f.	Engines	
1.f.1	Acceleration; idle to takeoff power	2–5 Seconds
1.f.2	Deceleration; takeoff power to idle	2–5 Seconds
2. Handling Qualities		
2.c Longitudinal Tests		
2.c.1	Power change force	
	a) Trim for straight and level flight at 80% of normal cruise airspeed with necessary power. Reduce power to flight idle. Do not change trim or configuration. After stabilized, record column force necessary to maintain original airspeed.	10–25 lbs (2.2–6.6 daN) of force (Pull).
	OR	

TABLE B2C—ALTERNATIVE DATA SOURCE FOR FTD LEVEL 5 SMALL, MULTI-ENGINE (RECIPROCATING) AIRPLANE—Continued

<<< QPS requirement >>>		
Applicable test		Authorized performance range
Number	Title and procedure	
	b) Trim for straight and level flight at 80% of normal cruise airspeed with necessary power. Add power to maximum setting. Do not change trim or configuration. After stabilized, record column force necessary to maintain original airspeed.	5–15 lbs (2.2–6.6 daN) of force (Push).
2.c.2	Flap/slat change force	
	a) Trim for straight and level flight with flaps fully retracted at a constant airspeed within the flaps-extended airspeed range. Do not adjust trim or power. Extend the flaps to 50% of full flap travel. After stabilized, record stick force necessary to maintain original airspeed.	5–15 lbs (2.2–6.6 daN) of force (Pull).
	OR	
	b) Trim for straight and level flight with flaps extended to 50% of full flap travel, at a constant airspeed within the flaps-extended airspeed range. Do not adjust trim or power. Retract the flaps to zero. After stabilized, record stick force necessary to maintain original airspeed.	5–15 lbs (2.2–6.6 daN) of force (Push).
2.c.4	Gear change force	
	a) Trim for straight and level flight with landing gear retracted at a constant airspeed within the landing gear-extended airspeed range. Do not adjust trim or power. Extend the landing gear. After stabilized, record stick force necessary to maintain original airspeed.	2–12 lbs (0.88–5.3 daN) of force (Pull).
	OR	
	b) Trim for straight and level flight with landing gear extended, at a constant airspeed within the landing gear-extended airspeed range. Do not adjust trim or power. Retract the landing gear. After stabilized, record stick force necessary to maintain original airspeed.	2–12 lbs (0.88–5.3 daN) of force (Push).
2.c.4	Longitudinal trim	Must be able to trim longitudinal stick force to ''zero'' in each of the following configurations: cruise; approach; and landing.
2.c.7	Longitudinal static stability	Must exhibit positive static stability.
2.c.8	Stall warning (actuation of stall warning device) with nominal gross weight; wings level; and a deceleration rate of approximately one (1) knot per second.	
	a) Landing configuration:	60–90 knots; ± 5° of bank.
	b) Clean configuration:	Landing configuration speed + 10–20%.
2.c.9.b	Phugoid dynamics	Must have a phugoid with a period of 30–60 seconds. May not reach ½ or double amplitude in less than 2 cycles.
2.d	Lateral Directional Tests	
2.d.2	Roll response ..... Roll rate must be measured through at least 30 degrees of roll.. Aileron control must be deflected ½ (50 percent) of maximum travel.	Must have a roll rate of 6–40 degrees/second.

TABLE B2C—ALTERNATIVE DATA SOURCE FOR FTD LEVEL 5 SMALL, MULTI-ENGINE (RECIPROCATING) AIRPLANE—Continued

<<< QPS requirement >>>		
Applicable test		Authorized performance range
Number	Title and procedure	
2.d.4.b	Spiral stability ..... Cruise configuration and normal cruise airspeed. Establish a 20–30 degree bank. When stabilized, neutralize the aileron control and release. Must be completed in both directions of turn.	Initial bank angle (± 5 degrees) after 20 seconds.
2.d.6.b	Rudder response ..... Use 50 percent of maximum rudder deflection. (Applicable to approach or landing configuration.).	6–12 degrees/second yaw rate.
2.d.7	Dutch roll, yaw damper off (Applicable to cruise and approach configurations.).	A period of 2–5 seconds; and ½-2 cycles.
2.d.8	Steady state sideslip ..... Use 50 percent rudder deflection. (Applicable to approach and landing configurations.).	2–10 degrees of bank; 4–10 degrees of sideslip; and 2–10 degrees of aileron.
6. FTD System Response Time		
6.a	Cockpit instrument systems response to an abrupt pilot controller input. One test is required in each axis (pitch, roll, yaw).	300 milliseconds or less.

TABLE B2D—ALTERNATIVE DATA SOURCE FOR FTD LEVEL 5 SMALL, SINGLE ENGINE (TURBO-PROPELLER) AIRPLANE

<<< QPS requirement >>>		
Applicable test		Authorized performance range
Number	Title and procedure	
1. Performance		
1.c	Climb	
1.c.1	Normal climb with nominal gross weight, at best rate-of-climb airspeed.	Climb airspeed = 95–115 knots, Climb rate = 800–1800 fpm (4–9 m/sec).
1.f	Engines	
1.f.1	Acceleration; idle to takeoff power	4–8 Seconds
1.f.2	Deceleration; takeoff power to idle	3–7 Seconds
2. Handling Qualities		
2.c Longitudinal Tests		
2.c.1	Power change force	
	a) Trim for straight and level flight at 80% of normal cruise airspeed with necessary power. Reduce power to flight idle. Do not change trim or configuration. After stabilized, record column force necessary to maintain original airspeed.	8 lbs (3.5 daN) of Push force—8 lbs (3.5 daN) of Pull force
	OR	
	b) Trim for straight and level flight at 80% of normal cruise airspeed with necessary power. Add power to maximum setting. Do not change trim or configuration. After stabilized, record column force necessary to maintain original airspeed.	12–22 lbs (5.3–9.7 daN) of force (Push)

TABLE B2D—ALTERNATIVE DATA SOURCE FOR FTD LEVEL 5 SMALL, SINGLE ENGINE (TURBO-PROPELLER) AIRPLANE—Continued

<<< QPS requirement >>>		
Applicable test		Authorized performance range
Number	Title and procedure	
2.c.2	Flap/slat change force	
	a) Trim for straight and level flight with flaps fully retracted at a constant airspeed within the flaps-extended airspeed range. Do not adjust trim or power. Extend the flaps to 50% of full flap travel. After stabilized, record stick force necessary to maintain original airspeed.	5–15 lbs (2.2–6.6 daN) of force (Pull).
	OR	
	b) Trim for straight and level flight with flaps extended to 50% of full flap travel, at a constant airspeed within the flaps-extended airspeed range. Do not adjust trim or power. Retract the flaps to zero. After stabilized, record stick force necessary to maintain original airspeed.	5–15 lbs (2.2–6.6 daN) of force (Push)
2.c.4	Gear change force	
	a) Trim for straight and level flight with landing gear retracted at a constant airspeed within the landing gear-extended airspeed range. Do not adjust trim or power. Extend the landing gear. After stabilized, record stick force necessary to maintain original airspeed.	2–12 lbs (0.88–5.3 daN) of force (Pull)
	OR	
	b) Trim for straight and level flight with landing gear extended, at a constant airspeed within the landing gear-extended airspeed range. Do not adjust trim or power. Retract the landing gear. After stabilized, record stick force necessary to maintain original airspeed.	2–12 lbs (0.88– 5.3 daN) of force (Push)
2.b.5	Longitudinal trim	Must be able to trim longitudinal stick force to ''zero'' in each of the following configurations: cruise; approach; and landing.
2.c.7	Longitudinal static stability	Must exhibit positive static stability.
2.c.8	Stall warning (actuation of stall warning device) with nominal gross weight; wings level; and a deceleration rate of approximately one (1) knot per second.	
	a) Landing configuration:	60–90 knots; ±5° of bank.
	b) Clean configuration:	Landing configuration speed + 10–20%.
2.c.8.b	Phugoid dynamics	Must have a phugoid with a period of 30–60 seconds. May not reach ½ or double amplitude in less than 2 cycles.
2.d	Lateral Directional Tests	
2.d.2	Roll response ..... Roll rate must be measured through at least 30 degrees of roll. Aileron control must be deflected ½ (50 percent) of maximum travel.	Must have a roll rate of 6–40 degrees/second.
2.d.4.b	Spiral stability ..... Cruise configuration and normal cruise airspeed. Establish a 20–30 degree bank. When stabilized, neutralize the aileron control and release. Must be completed in both directions of turn.	Initial bank angle (± 5 degrees) after 20 seconds.
2.d.6.b	Rudder response	6–12 degrees/second yaw rate.

TABLE B2D—ALTERNATIVE DATA SOURCE FOR FTD LEVEL 5 SMALL, SINGLE ENGINE (TURBO-PROPELLER) AIRPLANE—Continued

<<< QPS requirement >>>		
Applicable test		Authorized performance range
Number	Title and procedure	
	Use 50 percent of maximum rudder deflection. (Applicable to approach or landing configuration.).	
2.d.7	Dutch roll, yaw damper off ..... (Applicable to cruise and approach configurations.).	A period of 2–5 seconds; and 1.2–3 cycles.
2.d.8	Steady state sideslip ..... Use 50 percent rudder deflection. (Applicable to approach and landing degrees of configurations.).	2–10 degrees of bank; 4–10 degrees of sideslip; and 2–10 degrees of aileron.
6. FTD System Response Time		
6.a	Cockpit instrument systems response to an abrupt pilot controller input. One test is required in each axis (pitch, roll, yaw).	300 milliseconds or less.

TABLE B2E—ALTERNATIVE DATA SOURCE FOR FTD LEVEL 5 MULTI-ENGINE (TURBO-PROPELLER) AIRPLANE

<<< QPS requirement >>>		
Applicable test		Authorized performance range
No.	Title and procedure	
1. Performance		
1.c	Climb	
1.b.1	Normal climb with nominal gross weight, at best rate-of-climb airspeed	Climb airspeed= 120–140 knots. Climb rate= 1000–3000 fpm (5–15 m/sec).
1.f	Engines	
1.f.1	Acceleration; idle to takeoff power	2–6 Seconds.
1.f.2	Deceleration; takeoff power to idle	1–5 Seconds.
2. Handling Qualities		
2.c Longitudinal Tests		
2.c.1	Power change force	
	a) Trim for straight and level flight at 80% of normal cruise airspeed with necessary power. Reduce power to flight idle. Do not change trim or configuration. After stabilized, record column force necessary to maintain original airspeed	8 lbs (3.5 daN) of Push force to 8 lbs (3.5 daN) of Pull force.
	OR	
	b) Trim for straight and level flight at 80% of normal cruise airspeed with necessary power. Add power to maximum setting. Do not change trim or configuration. After stabilized, record column force necessary to maintain original airspeed	12–22 lbs (5.3–9.7 daN) of force (Push).
2.c.2	Flap/slat change force	

TABLE B2E—ALTERNATIVE DATA SOURCE FOR FTD LEVEL 5 MULTI-ENGINE (TURBO-PROPELLER) AIRPLANE—Continued

<<< QPS requirement >>>		
Applicable test		Authorized performance range
No.	Title and procedure	
	a) Trim for straight and level flight with flaps fully retracted at a constant airspeed within the flaps-extended airspeed range. Do not adjust trim or power. Extend the flaps to 50% of full flap travel. After stabilized, record stick force necessary to maintain original airspeed	5–15 lbs (2.2–6.6 daN) of force (Pull).
	OR	
	b) Trim for straight and level flight with flaps extended to 50% of full flap travel, at a constant airspeed within the flaps-extended airspeed range. Do not adjust trim or power. Retract the flaps to zero. After stabilized, record stick force necessary to maintain original airspeed	5–15 lbs (2.2–6.6 daN) of force (Push).
2.c.4	Gear change force	
	a) Trim for straight and level flight with landing gear retracted at a constant airspeed within the landing gear-extended airspeed range. Do not adjust trim or power. Extend the landing gear. After stabilized, record stick force necessary to maintain original airspeed	2–12 lbs (0.88–5.3 daN) of force (Pull).
	OR	
	b) Trim for straight and level flight with landing gear extended, at a constant airspeed within the landing gear-extended airspeed range. Do not adjust trim or power. Retract the landing gear. After stabilized, record stick force necessary to maintain original airspeed	2–12 lbs (0.88–5.3 daN) of force (Push).
2.b.5	Longitudinal trim	Must be able to trim longitudinal stick force to ''zero'' in each of the following configurations; cruise; approach; and landing.
2.c.7	Longitudinal static stability	Must exhibit positive static stability.
2.c.8	Stall warning (actuation of stall warning device) with nominal gross weight; wings level; and a deceleration rate of approximately one (1) knot per second	
	a) Landing configuration	80–100 knots; ± 5° of bank.
	b) Clean configuration	Landing configuration speed + 10–20%
2.c.8.b	Phugoid dynamics	Must have a phugoid with a period of 30–60 seconds. May not reach ½ or double amplitude in less than 2 cycles.
2.d Lateral Directional Test		
2.d.2	Roll response ..... Roll rate must be measured through at least 30 degrees of roll. Aileron control must be deflected approximately ½ (50 percent) of maximum travel	Must have a roll rate of 6–40 degrees/second.
2.d.4.b	Spiral stability ..... Cruise configuration and normal cruise airspeed. Establish a 20–30 degree bank. When stabilized, neutralize the aileron control and release. Must be completed in both directions of turn	Initial bank angle (±5 degrees) after 20 seconds.

TABLE B2E—ALTERNATIVE DATA SOURCE FOR FTD LEVEL 5 MULTI-ENGINE (TURBO-PROPELLER) AIRPLANE—Continued

<<< QPS requirement >>>		
Applicable test		Authorized performance range
No.	Title and procedure	
2.d.6.b	Rudder response ..... Use 50 percent of maximum rudder deflection (Applicable to approach or landing configuration.)	6–12 degrees/second yaw rate.
2.d.7	Dutch roll, yaw damper off (Applicable to cruise and approach configurations.)	A period of 2–5 seconds; and ½–3 cycles.
2.d.8	Steady state sideslip ..... Use 50 percent rudder deflection ..... (Applicable to approach and landing configurations.)	2–10 degrees of bank; 4–10 degrees of sideslip; and 2–10 degrees of aileron.
6. FTD System Response Time		
6.a	Cockpit instrument systems response to an abrupt pilot controller input. One test is required in each axis (pitch, roll, yaw)	300 milliseconds or less.

END QPS REQUIREMENTS

5. ALTERNATIVE DATA SOURCES, PROCEDURES, AND INSTRUMENTATION: LEVEL 6 FTD ONLY.

BEGIN INFORMATION

a. In recent years, considerable progress has been made by highly experienced aircraft and FTD manufacturers in improvement of aerodynamic modeling techniques. In conjunction with increased accessibility to very high powered computer technology, these techniques have become quite sophisticated. Additionally, those who have demonstrated success in combining these modeling techniques with minimal flight testing have incorporated the use of highly mature flight controls models and have had extensive experience in comparing the output of their effort with actual flight test data—and they have been able to do so on an iterative basis over a period of years.

b. It has become standard practice for experienced FTD manufacturers to use such techniques as a means of establishing data bases for new FTD configurations while awaiting the availability of actual flight test data; and then comparing this new data with the newly available flight test data. The results of such comparisons have, as reported by some recognized and experienced simulation experts, become increasingly consistent and indicate that these techniques, applied with appropriate experience, are becoming dependably accurate for the development of aerodynamic models for use in Level 6 FTDs.

c. In reviewing this history, the NSPM has concluded that, with proper care, those who are experienced in the development of aerodynamic models for FTD application can successfully use these modeling techniques to acceptably alter the method by which flight test data may be acquired and, when applied to Level 6 FTDs, does not compromise the quality of that simulation.

a. The information in the table that follows (Table of Alternative Data Sources, Procedures, and Information: Level 6 FTD Only) is presented to describe an acceptable alternative to data sources for Level 6 FTD modeling and validation, and an acceptable alternative to the procedures and instrumentation found in the flight test methods traditionally accepted for gathering modeling and validation data.

(1) Alternative data sources that may be used for part or all of a data requirement are the Airplane Maintenance Manual, the Airplane Flight Manual (AFM), Airplane Design Data, the Type Inspection Report (TIR), Certification Data or acceptable supplemental flight test data.

(2) The NSPM recommends that use of the alternative instrumentation noted in the following Table be coordinated with the NSPM prior to employment in a flight test or data gathering effort.

b. The NSPM position regarding the use of these alternative data sources, procedures, and instrumentation is based on three primary preconditions and presumptions regarding the objective data and FTD aerodynamic program modeling.

(1) Data gathered through the alternative means does not require angle of attack (AOA) measurements or control surface position measurements for any flight test. AOA can be sufficiently derived if the flight test program insures the collection of acceptable level, unaccelerated, trimmed flight data. Angle of attack may be validated by conducting the three basic ''fly-by'' trim tests. The FTD time history tests should begin in

level, unaccelerated, and trimmed flight, and the results should be compared with the flight test pitch angle.

(2) A simulation controls system model should be rigorously defined and fully mature. It should also include accurate gearing and cable stretch characteristics (where applicable) that are determined from actual aircraft measurements. Such a model does not require control surface position measurements in the flight test objective data for Level 6 FTD applications.

c. This table is *not* applicable to Computer Controlled Aircraft FTDs.

d. Utilization of these alternate data sources, procedures, and instrumentation does not relieve the sponsor from compliance with the balance of the information contained in this document relative to Level 6 FTDs.

e. The term ''inertial measurement system'' allows the use of a functional global positioning system (GPS).

END INFORMATION

TABLE B2F—ALTERNATIVE DATA SOURCES, PROCEDURES, AND INSTRUMENTATION LEVEL 6 FTD INFORMATION

Objective test reference number and title	Alternative data sources, procedures, and instrumentation	Notes and reminders
1.b.1 ..... Performance Takeoff Ground acceleration time.	Data may be acquired through a synchronized video recording of a stop watch and the calibrated airplane airspeed indicator. Hand-record the flight conditions and airplane configuration.	This test is required only if RTO is sought.
1.b.7 ..... Performance Takeoff Rejected takeoff.	Data may be acquired through a synchronized video recording of a stop watch and the calibrated airplane airspeed indicator. Hand-record the flight conditions and airplane configuration.	This test is required only if RTO is sought.
1.c.1 ..... Performance Climb Normal climb all engines operating.	Data may be acquired with a synchronized video of calibrated airplane instruments and engine power throughout the climb range.	
1.f.1 ..... Performance Engines Acceleration.	Data may be acquired with a synchronized video recording of engine instruments and throttle position.	
1.f.2 ..... Performance Engines Deceleration.	Data may be acquired with a synchronized video recording of engine instruments and throttle position.	
2.a.1.a ..... Handling qualities Static control tests Pitch controller position vs. force and surface position calibration.	Surface position data may be acquired from flight data recorder (FDR) sensor or, if no FDR sensor, at selected, significant column positions (encompassing significant column position data points), acceptable to the NSPM, using a control surface protractor on the ground (for airplanes with reversible control systems, this function should be accomplished with winds less than 5 kt). Force data may be acquired by using a hand held force gauge at the same column position data points.	
2.a.2.a ..... Handling qualities Static control tests Wheel position vs. force and surface position calibration.	Surface position data may be acquired from flight data recorder (FDR) sensor or, if no FDR sensor, at selected, significant column positions (encompassing significant column position data points), acceptable to the NSPM, using a control surface protractor on the ground (for airplanes with reversible control systems, this function should be accomplished with winds less than 5 kt). Force data may be acquired by using a hand held force gauge at the same column position data points.	

TABLE B2F—ALTERNATIVE DATA SOURCES, PROCEDURES, AND INSTRUMENTATION LEVEL 6 FTD INFORMATION—Continued

Objective test reference number and title	Alternative data sources, procedures, and instrumentation	Notes and reminders
2.a.3.a ..... Handling qualities Static control tests Rudder pedal position vs. force and surface position calibration.	Surface position data may be acquired from flight data recorder (FDR) sensor or, if no FDR sensor, at selected, significant column positions (encompassing significant column position data points), acceptable to the NSPM, using a control surface protractor on the ground (for airplanes with reversible control systems, this function should be accomplished with winds less than 5 kt). Force data may be acquired by using a hand held force gauge at the same column position data points.	
2.a.4 ..... Handling qualities Static control tests Nosewheel steering force.	Breakout data may be acquired with a hand held force gauge. The remainder of the force to the stops may be calculated if the force gauge and a protractor are used to measure force after breakout for at least 25% of the total displacement capability.	
2.a.5 ..... Handling qualities Static control tests Rudder pedal steering calibration.	Data may be acquired through the use of force pads on the rudder pedals and a pedal position measurement device, together with design data for nose wheel position.	
2.a.6 ..... Handling qualities Static control tests Pitch trim indicator vs. surface position calibration.	Data may be acquired through calculations.	
2.a.8 ..... Handling qualities Static control tests Alignment of power lever angle vs. selected engine parameter (e.g., EPR, N_1, Torque).	Data may be acquired through the use of a temporary throttle quadrant scale to document throttle position. Use a synchronized video to record steady state instrument readings or hand-record steady state engine performance readings.	
2.a.9 ..... Handling qualities Static control tests Brake pedal position vs. force.	Use of design or predicted data is acceptable. Data may be acquired by measuring deflection at ''zero'' and at ''maximum.''.	
2.c.1 ..... Handling qualities. Longitudinal control tests Power change force.	Data may be acquired by using an inertial measurement system and a synchronized video of the calibrated airplane instruments, throttle position, and the force/position measurements of cockpit controls.	Power change dynamics test is acceptable using the same data acquisition methodology.
2.c.2 ..... Handling qualities Longitudinal control tests Flap/slat change force.	Data may be acquired by using an inertial measurement system and a synchronized video of calibrated airplane instruments, flap/slat position, and the force/position measurements of cockpit controls.	Flap/slat change dynamics test is acceptable using the same data acquisition methodology.
2.c.4 ..... Handling qualities Longitudinal control tests Gear change force.	Data may be acquired by using an inertial measurement system and a synchronized video of the calibrated airplane instruments, gear position, and the force/position measurements of cockpit controls.	Gear change dynamics test is acceptable using the same data acquisition methodology.
2.c.5 ..... Handling qualities Longitudinal control tests Longitudinal trim.	Data may be acquired through use of an inertial measurement system and a synchronized video of the cockpit controls position (previously calibrated to show related surface position) and the engine instrument readings.	
2.c.6 ..... Handling qualities Longitudinal control tests Longitudinal maneuvering stability (stick force/g).	Data may be acquired through the use of an inertial measurement system and a synchronized video of the calibrated airplane instruments; a temporary, high resolution bank angle scale affixed to the attitude indicator; and a wheel and column force measurement indication.	

TABLE B2F—ALTERNATIVE DATA SOURCES, PROCEDURES, AND INSTRUMENTATION LEVEL 6 FTD INFORMATION—Continued

Objective test reference number and title	Alternative data sources, procedures, and instrumentation	Notes and reminders
2.c.7 ..... Handling qualities Longitudinal control tests Longitudinal static stability.	Data may be acquired through the use of a synchronized video of the airplane flight instruments and a hand held force gauge.	
2.c.8 ..... Handling qualities Longitudinal control tests Stall Warning (activation of stall warning device).	Data may be acquired through a synchronized video recording of a stop watch and the calibrated airplane airspeed indicator. Hand-record the flight conditions and airplane configuration.	Airspeeds may be cross checked with those in the TIR and AFM.
2.c.9.a ..... Handling qualities Longitudinal control tests Phugoid dynamics.	Data may be acquired by using an inertial measurement system and a synchronized video of the calibrated airplane instruments and the force/position measurements of cockpit controls.	
2.c.10 ..... Handling qualities Longitudinal control tests Short period dynamics.	Data may be acquired by using an inertial measurement system and a synchronized video of the calibrated airplane instruments and the force/position measurements of cockpit controls.	
2.c.11 ..... Handling qualities Longitudinal control tests Gear and flap/slat operating times.	May use design data, production flight test schedule, or maintenance specification, together with an SOC.	
2.d.2 ..... Handling qualities Lateral directional tests Roll response (rate).	Data may be acquired by using an inertial measurement system and a synchronized video of the calibrated airplane instruments and the force/position measurements of cockpit lateral controls.	
2.d.3 ..... Handling qualities Lateral directional tests (a) Roll overshoot OR (b) Roll response to cockpit roll controller step input.	Data may be acquired by using an inertial measurement system and a synchronized video of the calibrated airplane instruments and the force/position measurements of cockpit lateral controls.	
2.d.4 ..... Handling qualities Lateral directional tests Spiral stability.	Data may be acquired by using an inertial measurement system and a synchronized video of the calibrated airplane instruments; the force/position measurements of cockpit controls; and a stop watch.	
2.d.6.a ..... Handling qualities Lateral directional tests Rudder response.	Data may be acquired by using an inertial measurement system and a synchronized video of the calibrated airplane instruments; the force/position measurements of rudder pedals.	
2.d.7 ..... Handling qualities Lateral directional tests Dutch roll, (yaw damper OFF).	Data may be acquired by using an inertial measurement system and a synchronized video of the calibrated airplane instruments and the force/position measurements of cockpit controls.	
2.d.8 ..... Handling qualities Lateral directional tests Steady state sideslip.	Data may be acquired by using an inertial measurement system and a synchronized video of the calibrated airplane instruments and the force/position measurements of cockpit controls.	

ATTACHMENT 3 TO APPENDIX B TO PART 60—FLIGHT TRAINING DEVICE (FTD) SUBJECTIVE EVALUATION

1. DISCUSSION

BEGIN INFORMATION

a. The subjective tests provide a basis for evaluating the capability of the FTD to perform over a typical utilization period. The items listed in the Table of Functions and

Subjective Tests are used to determine whether the FTD competently simulates each required maneuver, procedure, or task; and verifying correct operation of the FTD controls, instruments, and systems. The tasks do not limit or exceed the authorizations for use of a given level of FTD as described on the Statement of Qualification or as may be approved by the TPAA. All items in the following paragraphs are subject to examination.

b. All simulated airplane systems functions will be assessed for normal and, where appropriate, alternate operations. Simulated airplane systems are listed separately under ''Any Flight Phase'' to ensure appropriate attention to systems checks. Operational navigation systems (including inertial navigation systems, global positioning systems, or other long-range systems) and the associated electronic display systems will be evaluated if installed. The NSP pilot will include in his report to the TPAA, the effect of the system operation and any system limitation.

e. At the request of the TPAA, the NSP Pilot may assess the FTD for a special aspect of a sponsor's training program during the functions and subjective portion of an evaluation. Such an assessment may include a portion of a Line Oriented Flight Training (LOFT) scenario or special emphasis items in the sponsor's training program. Unless directly related to a requirement for the qualification level, the results of such an evaluation would not affect the qualification of the FTD.

END INFORMATION

TABLE B3A—TABLE OF FUNCTIONS AND SUBJECTIVE TESTS LEVEL 6 FTD

<<< QPS requirement >>>	No.
	Tasks in this table are subject to evaluation if appropriate for the airplane system or systems simulated as indicated in the SOQ Configuration List as defined in appendix B, Attachment 2 of this part.
1. Preflight	
	Accomplish a functions check of all installed switches, indicators, systems, and equipment at all crewmembers' and instructors' stations, and determine that the cockpit (or flight deck area) design and functions replicate the appropriate airplane.
2. Surface Operations (pre-takeoff)	
2.a	Engine start:
2.a.1	Normal start.
2.a.2	Alternative procedures start.
2.a.3	Abnormal procedures start/shut down.
2.b	Pushback/Powerback (powerback requires visual system).
3. Takeoff (requires appropriate visual system as set out in Table B1A, item 6.b.; appendix B, Attachment 1.)	
3.a	Instrument takeoff:
3.a.1	Engine checks (e.g., engine parameter relationships, propeller/mixture controls).
3.a.2	Acceleration characteristics.
3.a.3	Nosewheel/rudder steering.
3.a.4	Landing gear, wing flap, leading edge device operation.
3.b	Rejected takeoff:
3.b.1	Deceleration characteristics.
3.b.2	Brakes/engine reverser/ground spoiler operation.
3.b.3	Nosewheel/rudder steering.
4. In-Flight Operations	
4.a	Normal climb.
4.b	Cruise:

TABLE B3A—TABLE OF FUNCTIONS AND SUBJECTIVE TESTS LEVEL 6 FTD—Continued

<<< QPS requirement >>>	No.
4.b.1	Demonstration of performance characteristics (speed vs. power).
4.b.2	Normal turns.
4.b.3	Demonstration of high altitude handling.
4.b.4	Demonstration of high airspeed handling/overspeed warning.
4.b.5	Demonstration of Mach effects on control and trim.
4.b.6	Steep turns.
4.b.10	In-Flight engine shutdown (procedures only).
4.b.11	In-Flight engine restart (procedures only).
4.b.13	Specific flight characteristics.
4.b.14	Response to loss of flight control power.
4.b.15	Response to other flight control system failure modes.
4.b.19	Operations during icing conditions.
4.b.20	Effects of airframe/engine icing.
4.c	Other flight phase:
4.c.1	Approach to stalls in the following configurations:
4.c.1.a	Cruise.
4.c.1.b	Takeoff or approach.
4.c.1.c	Landing.
4.c.2	High angle of attack maneuvers in the following configurations:
4.c.2.a	Cruise.
4.c.2.b	Takeoff or approach.
4.c.2.c	Landing.
4.c.3	Slow flight.
4.c.4	Holding.
5.a.1	Non-precision Instrument Approaches:
5.a.1.a.1 ...	With use of autopilot and autothrottle, as applicable.
5.a.1.a.2 ...	Without use of autopilot and autothrottle, as applicable.
5.a.1.b.1 ...	With 10 knot tail wind.
5.a.1.b.2 ...	With 10 knot crosswind.
5.a.2	Precision Instrument Approaches:
5.a.2.a.1 ...	With use of autopilot, autothrottle, and autoland, as applicable.
5.a.2.a.2 ...	Without use of autopilot, autothrottle, and autoland, as applicable.
5.a.2.b.1 ...	With 10 knot tail wind.
5.a.2.b.2 ...	With 10 knot crosswind.
6. Missed Approach	
6.a	Manually controlled.

TABLE B3A—TABLE OF FUNCTIONS AND SUBJECTIVE TESTS LEVEL 6 FTD—Continued

<<< QPS requirement >>>	No.
6.b	Automatically controlled (if applicable).
7. Any Flight Phase, as appropriate	
7.a	Normal system operation (installed systems).
7.b	Abnormal/Emergency system operation (installed systems).
7.c	Flap operation.
7.d	Landing gear operation.
7.e	Engine Shutdown and Parking.
7.e.1	Systems operation.
7.e.2	Parking brake operation.
8. Instructor Operating Station (IOS), as appropriate	
	Functions in this section are subject to evaluation only if appropriate for the airplane and/or installed on the specific FTD involved.
8.a	Power Switch(es).
8.b	Airplane conditions.
8.b.1	Gross weight, center of gravity, and fuel loading and allocation.
8.b.2	Airplane systems status.
8.b.3	Ground crew functions (e.g., external power, push back).
8.c	Airports.
8.c.1	Selection.
8.c.2	Runway selection.
8.c.3	Preset positions (e.g., ramp, over FAF).
8.d	Environmental controls.
8.d.1	Temperature.
8.d.2	Climate conditions (e.g., ice, rain).
8.d.3	Wind speed and direction.
8.e	Airplane system malfunctions.
8.e.1	Insertion/deletion.
8.e.2	Problem clear.
8.f	Locks, Freezes, and Repositioning.
8.f.1	Problem (all) freeze/release.
8.f.2	Position (geographic) freeze/release.
8.f.3	Repositioning (locations, freezes, and releases).
8.f.4	Ground speed control.
8.f.5	Remote IOS, if installed.
9. Sound Controls. On/off/adjustment	

TABLE B3A—TABLE OF FUNCTIONS AND SUBJECTIVE TESTS LEVEL 6 FTD—Continued

<<< QPS requirement >>>	No.
10. Control Loading System (as applicable) On/off/ emergency stop	
11. Observer Stations	
11.a	Position.
11.b	Adjustments.

END QPS REQUIREMENTS

TABLE B3B—TABLE OF FUNCTIONS AND SUBJECTIVE TESTS—LEVEL 5 FTD

<<< QPS Requirements >>>	
No.	Operations tasks
	Tasks in this table are subject to evaluation if appropriate for the airplane system or systems simulated as indicated in the SOQ Configuration List as defined in appendix B, Attachment 2 of this part.
1. Preflight	
	Accomplish a functions check of all installed switches, indicators, systems, and equipment at all crewmembers' and instructors' stations, and determine that the cockpit (or flight deck area) design and functions replicate the appropriate airplane.
2. Surface Operations (pre-takeoff)	
2.a	Engine start (if installed):
2.a.1	Normal start.
2.a.2	Alternative procedures start.
2.a.3	Abnormal/Emergency procedures start / shut down.
3. In-Flight Operations	
3.a	Normal climb.
3.b	Cruise:
3.b.1	Performance characteristics (speed vs. power).
3.b.2	Normal turns.
3.c	Normal descent.
4. Approaches	
4.a.	Coupled instrument approach maneuvers (as applicable for the systems installed).
5. Any Flight Phase	
5.a	Normal system operation (Installed systems).
5.b	Abnormal/Emergency system operation (installed systems).
5.c	Flap operation.
5.d	Landing gear operation.
5.e	Engine Shutdown and Parking (if installed).
5.e.1	Systems operation.
5.e.2	Parking brake operation.
6. Instructor Operating Station (IOS)	

TABLE B3B—TABLE OF FUNCTIONS AND SUBJECTIVE TESTS—LEVEL 5 FTD—Continued

<<< QPS Requirements >>>	
No.	Operations tasks
6.a	Power Switch(es).
6.b	Preset positions—ground, air.
6.c	Airplane system malfunctions (Installed systems).
6.c.1	Insertion/deletion.
6.c.2	Problem clear.

TABLE B3C—TABLE OF FUNCTIONS AND SUBJECTIVE TESTS—LEVEL 4 FTD

<<< QPS Requirements >>>	
No.	Operations tasks
	Tasks in this table are subject to evaluation if appropriate for the airplane system or systems simulated as indicated in the SOQ Configuration List as defined in appendix B, Attachment 2 of this part.
1	Level 4 FTDs are required to have at least one system. However, the NSP will accomplish a functions check of all installed systems, switches, indicators, and equipment at all crewmembers' and instructors' stations, and determine that the cockpit (or flight deck area) design and functions replicate the appropriate airplane.

ATTACHMENT 4 TO APPENDIX B TO PART 60—SAMPLE DOCUMENTS

BEGIN INFORMATION

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Title of Sample

Figure B4A—Sample Letter, Request for Initial, Upgrade, or Reinstatement Evaluation
Figure B4B—Attachment: FSTD Information Form
Figure B4C—Sample Qualification Test Guide Cover Page
Figure B4D—Sample Statement of Qualification—Certificate
Figure B4E—Sample Statement of Qualification—Configuration List
Figure B4F—Sample Statement of Qualification—List of Qualified Tasks
Figure B4G—Sample Continuing Qualification Evaluation Requirements Page
Figure B4H—Sample MQTG Index of Effective FSTD Directives

Attachment 4 to Appendix B to Part 60—
Figure B4A – Sample Letter , Request for Initial, Upgrade, or Reinstatement Evaluation..
INFORMATION

Date _____

Edward D. Cook, Ph.D.
Manager, National Simulator Program
Federal Aviation Administration
100 Hartsfield Centre Parkway
Suite 400
Atlanta, GA 30354

Dear Dr. Cook:

RE: Request for Initial/Upgrade Evaluation Date

This is to advise you of our intent to request an (initial or upgrade) evaluation of our (FSTD Manufacturer), (Aircraft Type/Level) Flight Simulation Training Device (FSTD), (FAA ID Number, if previously qualified), located in (City, State) at the (Facility) on (Proposed Evaluation Date). (The proposed evaluation date shall not be more than 180 days following the date of this letter.) The FSTD will be sponsored by (Name of Training Center/Air Carrier), FAA Designator (4 Letter Code). The FSTD will be sponsored under the following options: (Select One)

☐ The FSTD will be used within the sponsor's FAA approved training program and placed on the sponsor's Training/Operations Specifications; or

☐ The FSTD will be used for dry lease only in accordance with Paragraph 3b, FSTD Guidance Bulletin 03-08.

We agree to provide the formal request for the evaluation (*Ref: Appendix 4, AC 120-40B*) to your staff as follows: (check one)

☐ For QTG tests run at the factory, not later, than 45 days prior to the proposed evaluation date with the additional "l/3 on-site" tests provided not later than 14 days prior to the proposed evaluation date.

☐ For QTG tests run on-site, not later than 30 days prior to the proposed evaluation date.

We understand that the formal request will contain the following documents:

4. Sponsor's Letter of Request (*Company Compliance Letter*).
5. Principal Operations Inspector (POI) or Training Center Program Manager's (TCPM) endorsement.
6. Complete QTG.

If we are unable to meet the above requirements, we understand this may result in a significant delay, perhaps 45 days or more, in rescheduling and completing the evaluation.

(The sponsor should add additional comments as necessary).

Please contact (Name Telephone and Fax Number of Sponsor's Contact) to confirm the date for this initial evaluation. We understand a member of your National Simulator Program staff will respond to this request within 14 days.

A copy of this letter of intent has been provided to (Name), the Principal Operations Inspector (POI) and/or Training Center Program Manager (TCPM).

Sincerely,

Attachment: FSTD Information and Characteristics Form
cc: POI/TCPM

ATTACHMENT 4 TO APPENDIX A TO PART 60—
Figure B4B – Sample Letter , Request for Initial, Upgrade, or Reinstatement Evaluation
Attachment: FSTD Information Form
INFORMATION

Date: ____					
Section 1. FSTD Information and Characteristics					
Sponsor Name:	____		**FSTD Location:**		
Address:	____ ____		**Physical Address:**	____ ____	
City:	____		**City:**	____	
State:	____		**State:**	____	
Country:	____		**Country:**	____	
ZIP:	____		**ZIP:**	____	
Manager	____				
Sponsor ID No: *(Four Letter FAA Designator)*	____		**Nearest Airport:** *(Airport Designator)*	____	
Type of Evaluation Requested:			☐ **Initial** ☐ **Upgrade** ☐ **Recurrent** ☐ **Special** ☐ **Reinstatement**		
Qualification Basis: ____	☐ **A**	☐ **B**	☐ **Interim C**	☐ **C**	☐ **D**
	☐ **6**	☐ **7**	☐ **Provisional Status**		
Initial Qualification: (If Applicable)	**Date:** ____ **Level** ____		**Manufacturer's Identification/Serial No:**	____	
Upgrade Qualification: (If Applicable)	**Date:** ____ **Level** ____ MM/DD/YYYY		☐ **eQTG**		
Other Technical Information:					
FAA FSTD ID No: (If Applicable)	____		**FSTD Manufacturer:**	____	
Convertible FSTD:	☐**Yes**:		**Date of Manufacture**:	____ MM/DD/YYYY	
Related FAA ID No. (If Applicable)	____ ____ ____		**Sponsor FSTD ID No:** ____		
Aircraft model/series: ____			**Source of aerodynamic model:** ____		
Engine model(s) and data revision: ____			**Source of aerodynamic coefficient data:** ____		
FMS identification and revision level: ____			**Aerodynamic data revision number:** ____		
Visual system manufacturer/model: ____			**Visual system display:** ____		
Flight control data revision: ____			**FSTD computer(s) identification:** ____		
Motion system manufacturer/type: ____					
National Aviation Authority (NAA): (If Applicable)	____			____	

ATTACHMENT 4 TO APPENDIX A TO PART 60—
Figure B4B – Sample Letter , Request for Initial, Upgrade, or Reinstatement Evaluation
Attachment: FSTD Information Form
INFORMATION

Visual System Manufacturer and Type:	____	**Motion System Manufacturer and Type:**	____
Aircraft Make/Model/Series:	____	**FSTD Seats Available:**	____

Aircraft Equipment	**ENGINE TYPE(S):** ____	**Flight Instrumentation:** ☐ EFIS ☐ HUD ☐ HGS ☐ EFVS ☐ TCAS ☐ GPWS ☐ Plain View ☐ GPS ☐ FMS Type: ____ ☐ WX Radar ☐ Other: ____	Engine Instrumentation: ☐ EICAS ☐ FADEC ☐ Other:

Airport Models:	3.6.1 ____ *Airport Designator*	3.6.2____ *Airport Designator*	3.6.3 ____ *Airport Designator*
Circle to Land:	3. 7.1 ____ *Airport Designator*	3. 7.2____ *Approach*	3. 7.3 ____ *Landing Runway*
Visual Ground Segment	3.8.1 ____ *Airport Designator*	3.8 .2____ *Approach*	3. 8.3 ____ *Landing Runway*

Section 2. Supplementary Information

FAA Training Program Approval Authority:		☐ POI ☐ TCPM ☐ Other: ____	
Name:	____	**Office:**	____
Tel:	____	**Fax:**	____
Email:	____		

FSTD Scheduling Person:			
Name:	____		
Address 1:	____	**Address 2**	____
City:	____	**State:**	____
ZIP:	____	**Email:**	____
Tel:	____	**Fax:**	____

FSTD Technical Contact:			
Name:	____		
Address 1:	____	**Address 2**	____
City:	____	**State:**	____
ZIP:	____	**Email:**	____
Tel:	____	**Fax:**	____

Section 3. Training, Testing and Checking Considerations

Area/Function/Maneuver	Requested	Remarks
Private Pilot - Training / Checks: (142)	☐	____
Commercial Pilot - Training /Checks:(142)	☐	____
Multi-Engine Rating - Training / Checks (142)	☐	____
Instrument Rating -Training / Checks (142)	☐	____
Type Rating - Training / Checks (135/121/142)	☐	____
Proficiency Checks (135/121/142)	☐	____

ATTACHMENT 4 TO APPENDIX A TO PART 60—
Figure B4B – Sample Letter , Request for Initial, Upgrade, or Reinstatement Evaluation
Attachment: FSTD Information Form
INFORMATION

Section 3. Training, Testing and Checking Considerations		
Area/Function/Maneuver	**Requested**	**Remarks**
Private Pilot - Training / Checks: (142)	☐	____
Commercial Pilot - Training /Checks:(142)	☐	____
Multi-Engine Rating - Training / Checks (142)	☐	____
Instrument Rating -Training / Checks (142)	☐	____
Type Rating - Training / Checks (135/121/142)	☐	____
Proficiency Checks (135/121/142)	☐	____
CAT I: (RVR 2400/1800 ft. DH200 ft)	☐	____
CAT II: (RVR 1200 ft. DH 100 ft)	☐	____
CAT III * (lowest minimum) _____ RVR _____ ft. ** State CAT III (≤ 700 ft.), CAT IIIb (≤ 150 ft.), or CAT IIIc (0 ft.)*	☐	____
Circling Approach	☐	____
Windshear Training: (FSTD GB 03-05)	☐	____
Windshear Training IAW 121.409d (121 Turbojets Only) (FSTD GB 03-05)	☐	____
Generic Unusual Attitudes and Recoveries within the Normal Flight Envelope (FSTD GB 04-03)	☐	____
Specific Unusual Attitudes Recoveries (HBAT 95-10) (FSTD GB 04-03)	☐	____
Auto-coupled Approach/Auto Go Around	☐	____
Auto-land / Roll Out Guidance	☐	____
TCAS/ACAS I / II	☐	____
WX-Radar	☐	____
HUD (FSTD GB 03-02)	☐	____
HGS (FSTD GB 03-02)	☐	
EFVS (FSTD GB 03-03)	☐	
Future Air Navigation Systems (HBAT 98-16A)	☐	____
GPWS / EGPWS	☐	____
ETOPS Capability	☐	____
GPS	☐	____
SMGCS	☐	____
Helicopter Slope Landings	☐	____
Helicopter External Load Operations	☐	____
Helicopter Pinnacle Approach to Landings	☐	____
Helicopter Night Vision Maneuvers	☐	____
Helicopter Category A Takeoffs	☐	____

ATTACHMENT 4 TO APPENDIX B TO PART 60—
Figure B4C – Sample Qualification Test Guide Cover Page
INFORMATION

SPONSOR NAME

SPONSOR ADDRESS

FAA QUALIFICATION TEST GUIDE

(SPECIFIC AIRPLANE MODEL)
for example
Stratos BA797-320A

(Type of FTD)

(FTD Identification Including Manufacturer, Serial Number, Visual System Used)

(FTD Level)

(Qualification Performance Standard Used)

(FTD Location)

FAA Initial Evaluation

Date: _____

_____ Date: _____
(Sponsor)

_____ Date: _____
Manager, National
Simulator Program, FAA

ATTACHMENT 4 TO APPENDIX B TO PART 60—
Figure B4D – Sample Statement of Qualification - Certificate

INFORMATION

Federal Aviation Administration
National Simulator Program

Statement of Qualification

This is to certify that representatives of the National Simulator Program Completed an evaluation of the

Go-Fast Airlines
Farnsworth Z-100 Flight Training Device
FAA Identification Number 998

And found it to meet the standards set forth in
AC 120-45A

The Master Qualification Test Guide and the attached Configuration List and Restrictions List Provide the Qualification Basis for this device to operate at

Level 6

Until December 31, 2008

Unless sooner rescinded or extended by the National Simulator Program Manager

November 15, *2007* — (date)

I. B. Checkin, Jr. — (for the NSPM)

ATTACHMENT 4 TO APPENDIX B TO PART 60—
Figure B4E – Sample Statement of Qualification; Configuration List
INFORMATION

STATEMENT of QUALIFICATION
CONFIGURATION LIST

Date: ____					
Section 1. FSTD Information and Characteristics					
Sponsor Name:	____		**FSTD Location:**		
Address:	____ ____		**Physical Address:**	____ ____	
City:	____		**City:**	____	
State:	____		**State:**	____	
Country:	____		**Country:**	____	
ZIP:	____		**ZIP:**	____	
Manager	____				
Sponsor ID No: *(Four Letter FAA Designator)*	____		**Nearest Airport:** *(Airport Designator)*	____	
Type of Evaluation Requested:			☐ **Initial** ☐ **Upgrade** ☐ **Recurrent** ☐ **Special** ☐ **Reinstatement**		
Qualification Basis: ____	☐ **A**	☐ **B**	☐ **Interim C**	☐ **C**	☐ **D**
	☐ **6**	☐ **7**	☐ **Provisional Status**		
Initial Qualification: (If Applicable)	**Date:** ____ **Level** ____		**Manufacturer's Identification/Serial No:**	____	
Upgrade Qualification: (If Applicable)	**Date:** ____ **Level** ____ MM/DD/YYYY		☐ **eQTG**		
Other Technical Information:					
FAA FSTD ID No: (If Applicable)	____		**FSTD Manufacturer:**	____	
Convertible FSTD:	☐**Yes:**		**Date of Manufacture:**	____ MM/DD/YYYY	
Related FAA ID No. (If Applicable)	____ ____ ____		**Sponsor FSTD ID No:** ____		
Aircraft model/series: ____			**Source of aerodynamic model:** ____		
Engine model(s) and data revision: ____			**Source of aerodynamic coefficient data:** ____		
FMS identification and revision level: ____			**Aerodynamic data revision number:** ____		
Visual system manufacturer/model: ____			**Visual system display:** ____		
Flight control data revision: ____			**FSTD computer(s) identification:** ____		
Motion system manufacturer/type: ____					
National Aviation Authority (NAA): (If Applicable)	____			____	

ATTACHMENT 4 TO APPENDIX B TO PART 60—
Figure B4E – Sample Statement of Qualification; Configuration List
INFORMATION

Visual System Manufacturer and Type:	____	**Motion System Manufacturer and Type:**	____
Aircraft Make/Model/Series:	____	**FSTD Seats Available:**	____

Aircraft Equipment	**ENGINE TYPE(S):** ____	**Flight Instrumentation:** ☐ EFIS ☐ HUD ☐ HGS ☐ EFVS ☐ TCAS ☐ GPWS ☐ Plain View ☐ GPS ☐ FMS Type: ____ ☐ WX Radar ☐ Other: ____	Engine Instrumentation: ☐ EICAS ☐ FADEC ☐ Other: ____

Airport Models:	3.6.1 ____ *Airport Designator*	3.6.2____ *Airport Designator*	3.6.3 ____ *Airport Designator*
Circle to Land:	3. 7.1 ____ *Airport Designator*	3. 7.2____ *Approach*	3. 7.3 ____ *Landing Runway*
Visual Ground Segment	3.8.1 ____ *Airport Designator*	3.8 .2____ *Approach*	3. 8.3 ____ *Landing Runway*

Section 2. Supplementary Information

FAA Training Program Approval Authority:		☐ **POI** ☐ **TCPM** ☐ **Other:** ____	
Name:	____	**Office:**	____
Tel:	____	**Fax:**	____
Email:	____		

FSTD Scheduling Person:			
Name:	____		
Address 1:	____	**Address 2**	____
City:	____	**State:**	____
ZIP:	____	**Email:**	____
Tel:	____	**Fax:**	____

FSTD Technical Contact:			
Name:	____		
Address 1:	____	**Address 2**	____
City:	____	**State:**	____
ZIP:	____	**Email:**	____
Tel:	____	**Fax:**	____

Section 3. Training, Testing and Checking Considerations

Area/Function/Maneuver	Requested	Remarks
Private Pilot - Training / Checks: (142)	☐	____
Commercial Pilot - Training /Checks:(142)	☐	____
Multi-Engine Rating - Training / Checks (142)	☐	____
Instrument Rating -Training / Checks (142)	☐	____
Type Rating - Training / Checks (135/121/142)	☐	____
Proficiency Checks (135/121/142)	☐	____
CAT I: (RVR 2400/1800 ft. DH200 ft)	☐	____

ATTACHMENT 4 TO APPENDIX B TO PART 60—
Figure B4E – Sample Statement of Qualification; Configuration List
INFORMATION

Commercial Pilot - Training /Checks:(142)	☐	____
Multi-Engine Rating - Training / Checks (142)	☐	____
Instrument Rating -Training / Checks (142)	☐	____
Type Rating - Training / Checks (135/121/142)	☐	____
Proficiency Checks (135/121/142)	☐	____
CAT I: (RVR 2400/1800 ft. DH200 ft)	☐	____
CAT II: (RVR 1200 ft. DH 100 ft)	☐	____
CAT III * (lowest minimum) _____ RVR _____ ft. ** State CAT III (≤ 700 ft.), CAT IIIb (≤ 150 ft.), or CAT IIIc (0 ft.)*	☐	____
Circling Approach	☐	____
Windshear Training: (FSTD GB 03-05)	☐	____
Windshear Training IAW 121.409d (121 Turbojets Only) (FSTD GB 03-05)	☐	____
Generic Unusual Attitudes and Recoveries within the Normal Flight Envelope (FSTD GB 04-03)	☐	____
Specific Unusual Attitudes Recoveries (HBAT 95-10) (FSTD GB 04-03)	☐	____
Auto-coupled Approach/Auto Go Around	☐	____
Auto-land / Roll Out Guidance	☐	____
TCAS/ACAS I / II	☐	____
WX-Radar	☐	____
HUD (FSTD GB 03-02)	☐	____
HGS (FSTD GB 03-02)	☐	
EFVS (FSTD GB 03-03)	☐	
Future Air Navigation Systems (HBAT 98-16A)	☐	____
GPWS / EGPWS	☐	____
ETOPS Capability	☐	____
GPS	☐	____
SMGCS	☐	____
Helicopter Slope Landings	☐	____
Helicopter External Load Operations	☐	____
Helicopter Pinnacle Approach to Landings	☐	____
Helicopter Night Vision Maneuvers	☐	____
Helicopter Category A Takeoffs	☐	____

ATTACHMENT 4 TO APPENDIX B TO PART 60—
Figure B4F – Sample Statement of Qualification;– List of Qualified Tasks
INFORMATION

STATEMENT of QUALIFICATION
List of Qualified Tasks

Go Fast Airline Training -- Farnsworth Z-100 -- Level D -- FAA ID# 999

The FSTD is qualified to perform all of the tasks listed in **Appendix 1, Table B1B** for its assigned level of qualification *except* for the following listed tasks.

Qualified for all tasks in Table B1B, for which the sponsor has requested qualification,

except for the following:

4.e.	Circling Approach
6. (a)	Emergency Descent (maximum rate)
6. (b)	Inflight Fire and Smoke Removal
6. (c)	Rapid Decompression
6. (d)	Emergency Evacuation

Additional tasks for which this FSTD is qualified (i.e., in addition to the list in Table B1B):

NONE

Attachment 4 to Appendix B to Part 60—
Figure B4G – Sample Continuing Qualification Evaluation Requirements Page Information

Recurrent Evaluation Requirements ***Completed at conclusion of Initial Evaluation***	
Recurrent Evaluations to be conducted each _(fill in)__ months Allotting _____ hours of FTD time. Signed: _____ NSPM / Evaluation Team Leader	Recurrent evaluations are due as follows: _(month)__ and __(month)_ and __(month)_ (enter or strike out, as appropriate) _____ Date

Revision: Based on (enter reasoning):	
Recurrent Evaluations are to be conducted each _(fill in)__ months. Allotting _____ hours. Signed: _____ NSPM Evaluation Team Leader	Recurrent evaluations are due as follows: _(month)__ and __(month)_ and __(month)_ (enter or strike out, as appropriate) _____ Date

Revision: Based on (enter reasoning):	
Recurrent Evaluations are to be conducted each _(fill in)__ months. Allotting _____ hours. Signed: _____ NSPM Evaluation Team Leader	Recurrent evaluations are due as follows: _(month)__ and __(month)_ and __(month)_ (enter or strike out, as appropriate) _____ Date

(Repeat as Necessary)

Attachment 4 to Appendix B to Part 60—
Figure B4H – Sample MQTG Index of Effective FSTD Directives

Index of Effective FSTD Directives
Filed in this Section

Notification Number	Received From: (TPAA/NSPM)	Date of Notification	Date of Modification Completion

Continue as Necessary....

APPENDIX C TO PART 60—QUALIFICATION PERFORMANCE STANDARDS FOR HELICOPTER FULL FLIGHT SIMULATORS

BEGIN INFORMATION

This appendix establishes the standards for Helicopter Full Flight Simulator (FFS) evaluation and qualification. The Flight Standards Service, National Simulator Program Manager (NSPM), is responsible for the development, application, and implementation of the standards contained within this appendix. The procedures and criteria specified in this appendix will be used by the NSPM, or a person assigned by the NSPM, when conducting helicopter FFS evaluations.

TABLE OF CONTENTS

1. Introduction.
2. Applicability (§60.1) and (§60.2).
3. Definitions (§60.3).
4. Qualification Performance Standards (§60.4).
5. Quality Management System (§60.5).
6. Sponsor Qualification Requirements (§60.7).
7. Additional Responsibilities of the Sponsor (§60.9).
8. FSTD Use (§60.11).
9. Simulator Objective Data Requirements (§60.13).
10. Special Equipment and Personnel Requirements for Qualification of the Simulator (§60.14).
11. Initial (and Upgrade) Qualification Requirements (§60.15).
12. Additional Qualifications for a Currently Qualified Simulator (§60.16).
13. Previously Qualified Simulators (§60.17).
14. Inspection, Continuing Qualification Evaluation, and Maintenance Requirements (§60.19).
15. Logging Simulator Discrepancies (§60.20).
16. Interim Qualification of Simulators for New Helicopter Types or Models (§60.21).
17. Modifications to Simulators (§60.23).
18. Operations with Missing, Malfunctioning, or Inoperative Components (§60.25).
19. Automatic Loss of Qualification and Procedures for Restoration of Qualification (§60.27).
20. Other Losses of Qualification and Procedures for Restoration of Qualification (§60.29).
21. Record Keeping and Reporting (§60.31).
22. Applications, Logbooks, Reports, and Records: Fraud, Falsification, or Incorrect Statements (§60.33).
23. [Reserved]
24. [Reserved]

25. FSTD Qualification on the Basis of a Bilateral Aviation Safety Agreement (BASA) (§60.37).

Attachment 1 to Appendix C to Part 60—General Simulator Requirements.

Attachment 2 to Appendix C to Part 60—Simulator Objective Tests.

Attachment 3 to Appendix C to Part 60—Simulator Subjective Evaluation.

Attachment 4 to Appendix C to Part 60—Sample Documents.

END INFORMATION

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1. INTRODUCTION

BEGIN INFORMATION

a. This appendix contains background information as well as regulatory and informative material as described later in this section. To assist the reader in determining what areas are required and what areas are permissive, the text in this appendix is divided into two sections: ''QPS Requirements'' and ''Information.'' The QPS Requirements sections contain details regarding compliance with the part 60 rule language. These details are regulatory, but are found only in this appendix. The Information sections contain material that is advisory in nature, and designed to give the user general information about the regulation.

b. Related Reading References.

(1) 14 CFR part 60.

(2) 14 CFR part 61.

(3) 14 CFR part 63.

(4) 14 CFR part 119.

(5) 14 CFR part 121.

(6) 14 CFR part 125.

(7) 14 CFR part 135.

(8) 14 CFR part 141.

(9) 14 CFR part 142.

(10) AC 120–35B, Line Operational Simulations: Line-Oriented Flight Training, Special Purpose Operational Training, Line Operational Evaluation.

(11) AC 120–57A, Surface Movement Guidance and Control System (SMGS).

(12) AC 150/5300–13, Airport Design.

(13) AC 150/5340–1G, Standards for Airport Markings.

(14) AC 150/5340–4C, Installation Details for Runway Centerline Touchdown Zone Lighting Systems.

(15) AC 150/5340–19, Taxiway Centerline Lighting System.

(16) AC 150/5340–24, Runway and Taxiway Edge Lighting System.

(17) AC 150/5345–28D, Precision Approach Path Indicator (PAPI) Systems.

(18) AC 150/5390–2B, Heliport Design.

(19) International Air Transport Association document, ''Flight Simulator Design and Performance Data Requirements,'' as amended.

(20) AC 29–2B, Flight Test Guide for Certification of Transport Category Rotorcraft.

(21) AC 27–1A, Flight Test Guide for Certification of Normal Category Rotorcraft.

(22) International Civil Aviation Organization (ICAO) Manual of Criteria for the Qualification of Flight Simulators, as amended.

(23) Airplane Flight Simulator Evaluation Handbook, Volume I, as amended and Volume II, as amended, The Royal Aeronautical Society, London, UK.

(24) FAA Publication FAA–S–8081 series (Practical Test Standards for Airline Transport Pilot Certificate, Type Ratings, Commercial Pilot, and Instrument Ratings).

(25) The FAA Aeronautical Information Manual (AIM). An electronic version of the AIM is on the internet at *http://www.faa.gov/atpubs*.

END INFORMATION

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2. APPLICABILITY (§§60.1 & 60.2)

BEGIN INFORMATION

There is no additional regulatory or informational material that applies to §60.1, Applicability, or to §60.2, Applicability of sponsor rules to person who are not sponsors and who are engaged in certain unauthorized activities.

END INFORMATION

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3. DEFINITIONS (§60.3)

BEGIN INFORMATION

See appendix F for a list of definitions and abbreviations from part 1 and part 60, including the appropriate appendices of part 60.

END INFORMATION

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4. QUALIFICATION PERFORMANCE STANDARDS (§60.4)

BEGIN INFORMATION

There is no additional regulatory or informational material that applies to §60.4, Qualification Performance Standards.

END INFORMATION

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5. QUALITY MANAGEMENT SYSTEM (§60.5)

BEGIN INFORMATION

See appendix E for additional regulatory and informational material regarding Quality Management Systems.

END INFORMATION

6. SPONSOR QUALIFICATION REQUIREMENTS (§ 60.7)

BEGIN INFORMATION

a. The intent of the language in § 60.7(b) is to have a specific FFS, identified by the sponsor, used at least once in an FAA-approved flight training program for the helicopter simulated during the 12-month period described. The identification of the specific FFS may change from one 12-month period to the next 12-month period as long as that sponsor sponsors and uses at least one FFS at least once during the prescribed period. There is no minimum number of hours or minimum FFS periods required.

b. The following examples describe acceptable operational practices:

(1) Example One.

(a) A sponsor is sponsoring a single, specific FFS for its own use, in its own facility or elsewhere—this single FFS forms the basis for the sponsorship. The sponsor uses that FFS at least once in each 12-month period in that sponsor's FAA-approved flight training program for the helicopter simulated. This 12-month period is established according to the following schedule:

(i) If the FFS was qualified prior to October 30, 2007 the 12-month period begins on the date of the first continuing qualification evaluation conducted in accordance with § 60.19 after October 30, 2007 and continues for each subsequent 12-month period;

(ii) A device qualified on or after October 30, 2007 will be required to undergo an initial or upgrade evaluation in accordance with § 60.15. Once the initial or upgrade evaluation is complete, the first continuing qualification evaluation will be conducted within 6 months. The 12 month continuing qualification evaluation cycle begins on that date and continues for each subsequent 12-month period.

(b) There is no minimum number of hours of FFS use required.

(c) The identification of the specific FFS may change from one 12-month period to the next 12-month period as long as that sponsor sponsors and uses at least one FFS at least once during the prescribed period.

(2) Example Two.

(a) A sponsor sponsors an additional number of FFSs, in its facility or elsewhere. Each additionally sponsored FFS must be—

(i) Used by the sponsor in the sponsor's FAA-approved flight training program for the helicopter simulated (as described in § 60.7(d)(1));

OR

(ii) Used by another FAA certificate holder in that other certificate holder's FAA-approved flight training program for the helicopter simulated (as described in § 60.7(d)(1)). This 12-month period is established in the same manner as in example one.

OR

(iii) Provided a statement each year from a qualified pilot (after having flown the helicopter, not the subject FFS or another FFS, during the preceding 12-month period) stating that the subject FFS's performance and handling qualities represent the helicopter (as described in § 60.7(d)(2)). This statement is provided at least once in each 12-month period established in the same manner as in example one.

(b) There is no minimum number of hours of FFS use required.

(3) Example Three.

(a) A sponsor in New York (in this example, a Part 142 certificate holder) establishes ''satellite'' training centers in Chicago and Moscow.

(b) The satellite function means that the Chicago and Moscow centers must operate under the New York center's certificate (in accordance with all of the New York center's practices, procedures, and policies; *e.g.*, instructor and/or technician training/checking requirements, record keeping, QMS program).

(c) All of the FFSs in the Chicago and Moscow centers could be dry-leased (*i.e.*, the certificate holder does not have and use FAA-approved flight training programs for the FFSs in the Chicago and Moscow centers) because —

(i) Each FFS in the Chicago center and each FFS in the Moscow center is used at least once each 12-month period by another FAA certificate holder in that other certificate holder's FAA-approved flight training program for the helicopter (as described in § 60.7(d)(1));

OR

(ii) A statement is obtained from a qualified pilot (having flown the helicopter, not the subject FFS or another FFS during the preceding 12-month period) stating that the performance and handling qualities of each FFS in the Chicago and Moscow centers represents the helicopter (as described in § 60.7(d)(2)).

END INFORMATION

7. ADDITIONAL RESPONSIBILITIES OF THE SPONSOR (§ 60.9)

BEGIN INFORMATION

The phrase ''as soon as practicable'' in §60.9(a) means without unnecessarily disrupting or delaying beyond a reasonable time the training, evaluation, or experience being conducted in the FSTD.

END INFORMATION

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8. FSTD USE (§60.11)

BEGIN INFORMATION

There is no additional regulatory or informational material that applies to §60.11, FSTD Use.

END INFORMATION

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9. SIMULATOR OBJECTIVE DATA REQUIREMENTS (§60.13)

BEGIN QPS REQUIREMENTS

a. Flight test data used to validate FFS performance and handling qualities must have been gathered in accordance with a flight test program containing the following:

(1) A flight test plan consisting of:

(a) The maneuvers and procedures required for aircraft certification and simulation programming and validation.

(b) For each maneuver or procedure—

(i) The procedures and control input the flight test pilot and/or engineer used.

(ii) The atmospheric and environmental conditions.

(iii) The initial flight conditions.

(iv) The helicopter configuration, including weight and center of gravity.

(v) The data to be gathered.

(vi) All other information necessary to recreate the flight test conditions in the FFS.

(2) Appropriately qualified flight test personnel.

(3) An understanding of the accuracy of the data to be gathered using appropriate alternative data sources, procedures, and instrumentation that is traceable to a recognized standard as described in Attachment 2, Table C2D.

(4) Appropriate and sufficient data acquisition equipment or system(s), including appropriate data reduction and analysis methods and techniques, as would be acceptable to the FAA's Aircraft Certification Service.

b. The data, regardless of source, must be presented:

(1) in a format that supports the FFS validation process;

(2) in a manner that is clearly readable and annotated correctly and completely;

(3) with resolution sufficient to determine compliance with the tolerances set forth in Attachment 2, Table C2A of this appendix.

(4) with any necessary instructions or other details provided, such as yaw damper or throttle position; and

(5) without alteration, adjustments, or bias; however the data may be re-scaled, digitized, or otherwise manipulated to fit the desired presentation.

c. After completion of any additional flight test, a flight test report must be submitted in support of the validation data. The report must contain sufficient data and rationale to support qualification of the FFS at the level requested.

d. As required by §60.13(f), the sponsor must notify the NSPM when it becomes aware that an addition to, an amendment to, or a revision of data that may relate to FFS performance or handling characteristics is available. The data referred to in this paragraph are those data that are used to validate the performance, handling qualities, or other characteristics of the aircraft, including data related to any relevant changes occurring after the type certificate was issued. This notification must be made within 10 working days.

END QPS REQUIREMENTS

BEGIN INFORMATION

e. The FFS sponsor is encouraged to maintain a liaison with the manufacturer of the aircraft being simulated (or with the holder of the aircraft type certificate for the aircraft being simulated if the manufacturer is no longer in business), and, if appropriate, with the person having supplied the aircraft data package for the FFS in order to facilitate the notification required by §60.13(f).

f. It is the intent of the NSPM that for new aircraft entering service, at a point well in advance of preparation of the Qualification Test Guide (QTG), the sponsor should submit to the NSPM for approval, a descriptive document (a validation data roadmap) containing the plan for acquiring the validation data, including data sources. This document should clearly identify sources of data for all required tests, a description of the validity of these data for a specific engine type and thrust rating configuration, and the revision levels of all avionics affecting the performance or flying qualities of the aircraft. Additionally, this document should provide other information, such as the rationale or explanation for cases where data or data parameters are missing, instances where engineering simulation data are used or where flight test methods require further explanations. It should also provide a brief narrative describing the cause and effect of any deviation

from data requirements. The aircraft manufacturer may provide this document.

g. There is no requirement for any flight test data supplier to submit a flight test plan or program prior to gathering flight test data. However, the NSPM notes that inexperienced data gatherers often provide data that is irrelevant, improperly marked, or lacking adequate justification for selection. Other problems include inadequate information regarding initial conditions or test maneuvers. The NSPM has been forced to refuse these data submissions as validation data for an FFS evaluation. It is for this reason that the NSPM recommends that any data supplier not previously experienced in this area review the data necessary for programming and for validating the performance of the FFS, and discuss the flight test plan anticipated for acquiring such data with the NSPM well in advance of commencing the flight tests.

h. In those cases where the objective test results authorize a ''snapshot test'' or a ''series of snapshot test'' results in lieu of a time-history result, Attachment 2 requires the sponsor or other data provider to ensure that a steady state condition exists at the instant of time captured by the ''snapshot.'' This is often verified by showing that a steady state condition existed from some period of time during which the snapshot is taken. The time period most frequently used is 5 seconds prior through 2 seconds following the instant of time captured by the snapshot. This paragraph is primarily addressing the source data and the method by which the data provider ensures that the steady state condition for the snapshot is representative.

i. The NSPM will consider, on a case-by-case basis, whether or not to approve supplemental validation data derived from flight data recording systems such as a Quick Access Recorder or Flight Data Recorder.

END INFORMATION

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10. SPECIAL EQUIPMENT AND PERSONNEL REQUIREMENTS FOR QUALIFICATION OF THE SIMULATOR (§60.14)

BEGIN INFORMATION

a. In the event that the NSPM determines that special equipment or specifically qualified persons will be required to conduct an evaluation, the NSPM will make every attempt to notify the sponsor at least one (1) week, but in no case less than 72 hours, in advance of the evaluation. Examples of special equipment include spot photometers, flight control measurement devices, and sound analyzers. Examples of specially qualified personnel include individuals specifically qualified to install or use any special equipment when its use is required.

b. Examples of a special evaluation include an evaluation conducted after an FFS is moved, at the request of the TPAA, or as a result of comments received from FFS that raise questions regarding the continued qualification or use of the FFS.

END INFORMATION

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11. INITIAL (AND UPGRADE) QUALIFICATION REQUIREMENTS (§60.15)

BEGIN QPS REQUIREMENTS

a. In order to be qualified at a particular qualification level, the FFS must:

(1) Meet the general requirements listed in Attachment 1;

(2) Meet the objective testing requirements listed in Attachment 2; and

(3) Satisfactorily accomplish the subjective tests listed in Attachment 3.

b. The request described in §60.15(a) must include all of the following:

(1) A statement that the FFS meets all of the applicable provisions of this part and all applicable provisions of the QPS.

(2) A confirmation that the sponsor will forward to the NSPM the statement described in §60.15(b) in such time as to be received no later than 5 business days prior to the scheduled evaluation and may be forwarded to the NSPM via traditional or electronic means.

(3) A qualification test guide (QTG), acceptable to the NSPM, that includes all of the following:

(i) Objective data obtained from aircraft testing or another approved source.

(ii) Correlating objective test results obtained from the performance of the FFS as prescribed in the applicable QPS.

(iii) The result of FFS subjective tests prescribed in the applicable QPS.

(iv) A description of the equipment necessary to perform the evaluation for initial qualification and the continuing qualification evaluations.

c. The QTG described in paragraph (a)(3) of this section, must provide the documented proof of compliance with the simulator objective tests in Attachment 2, Table C2A of this appendix.

d. The QTG is prepared and submitted by the sponsor, or the sponsor's agent on behalf of the sponsor, to the NSPM for review and approval, and must include, for each objective test:

(1) Parameters, tolerances, and flight conditions;

(2) Pertinent and complete instructions for the conduct of automatic and manual tests;

(3) A means of comparing the FFS test results to the objective data;

(4) Any other information as necessary, to assist in the evaluation of the test results;

(5) Other information appropriate to the qualification level of the FFS.

e. The QTG described in paragraphs (a)(3) and (b) of this section, must include the following:

(1) A QTG cover page with sponsor and FAA approval signature blocks (see Attachment 4, Figure C4C, for a sample QTG cover page).

(2) A continuing qualification evaluation schedule requirements page. This page will be used by the NSPM to establish and record the frequency with which continuing qualification evaluations must be conducted and any subsequent changes that may be determined by the NSPM in accordance with §60.19. See Attachment 4, Figure C4G, for a sample Continuing Qualification Evaluation Requirements page.

(3) An FFS information page that provides the information listed in this paragraph (see Attachment 4, Figure C4B, for a sample FFS information page). For convertible FFSs, the sponsor must submit a separate page for each configuration of the FFS.

(a) The sponsor's FFS identification number or code.

(b) The helicopter model and series being simulated.

(c) The aerodynamic data revision number or reference.

(d) The engine model(s) and its data revision number or reference.

(e) The flight control data revision number or reference.

(f) The flight management system identification and revision level.

(g) The FFS model and manufacturer.

(h) The date of FFS manufacture.

(i) The FFS computer identification.

(j) The visual system model and manufacturer, including display type.

(k) The motion system type and manufacturer, including degrees of freedom.

(4) A Table of Contents.

(5) A log of revisions and a list of effective pages.

(6) List of all relevant data references.

(7) A glossary of terms and symbols used (including sign conventions and units).

(8) Statements of compliance and capability (SOCs) with certain requirements. SOCs must provide references to the sources of information that show the capability of the FFS to comply with the requirements. SOCs must also provide a rationale explaining how the referenced material is used, the mathematical equations and parameter values used, and the conclusions reached. Refer to the ''Additional Details'' column in Attachment 1, Table C1A, ''Simulator Standards,'' or in the ''Test Details'' column in Attachment 2, Table C2A, ''Simulator Objective Tests,'' to see when SOCs are required.

(9) Recording procedures or equipment required to accomplish the objective tests.

(10) The following information for each objective test designated in Attachment 2, Table C2A, as applicable to the qualification level sought:

(a) Name of the test.

(b) Objective of the test.

(c) Initial conditions.

(d) Manual test procedures.

(e) Automatic test procedures (if applicable).

(f) Method for evaluating FFS objective test results.

(g) List of all relevant parameters driven or constrained during the automatically conducted test(s).

(h) List of all relevant parameters driven or constrained during the manually conducted test(s).

(i) Tolerances for relevant parameters.

(j) Source of Validation Data (document and page number).

(k) Copy of the Validation Data (if located in a separate binder, a cross reference for the identification and page number for pertinent data location must be provided).

(l) Simulator Objective Test Results as obtained by the sponsor. Each test result must reflect the date completed and must be clearly labeled as a product of the device being tested.

f. A convertible FFS is addressed as a separate FFS for each model and series helicopter to which it will be converted and for the FAA qualification level sought. If a sponsor seeks qualification for two or more models of a helicopter type using a convertible FFS, the sponsor must submit a QTG for each helicopter model, or a supplemented QTG for each helicopter model. The NSPM will conduct evaluations for each helicopter model.

g. Form and manner of presentation of objective test results in the QTG:

(1) The sponsor's FFS test results must be recorded in a manner acceptable to the NSPM, that allows easy comparison of the FFS test results to the validation data (*e.g.*, use of a multi-channel recorder, line printer, cross plotting, overlays, transparencies).

(2) FFS results must be labeled using terminology common to helicopter parameters as opposed to computer software identifications.

(3) Validation data documents included in a QTG may be photographically reduced only if such reduction will not alter the graphic scaling or cause difficulties in scale interpretation or resolution.

(4) Scaling on graphical presentations must provide the resolution necessary to evaluate the parameters shown in Attachment 2, Table C2A of this appendix.

(5) Tests involving time histories, data sheets (or transparencies thereof) and FFS test results must be clearly marked with appropriate reference points to ensure an accurate comparison between the FFS and the helicopter with respect to time. Time histories recorded via a line printer are to be clearly identified for cross plotting on the helicopter data. Over-plots must not obscure the reference data.

h. The sponsor may elect to complete the QTG objective and subjective tests at the manufacturer's facility or at the sponsor's training facility. If the tests are conducted at the manufacturer's facility, the sponsor must repeat at least one-third of the tests at the sponsor's training facility in order to substantiate FFS performance. The QTG must be clearly annotated to indicate when and where each test was accomplished. Tests conducted at the manufacturer's facility and at the sponsor's training facility must be conducted after the FFS is assembled with systems and sub-systems functional and operating in an interactive manner. The test results must be submitted to the NSPM.

i. The sponsor must maintain a copy of the MQTG at the FFS location.

j. All FFSs for which the initial qualification is conducted after October 30, 2013 must have an electronic MQTG (eMQTG) including all objective data obtained from helicopter testing, or another approved source (reformatted or digitized), together with correlating objective test results obtained from the performance of the FFS (reformatted or digitized) as prescribed in this appendix. The eMQTG must also contain the general FFS performance or demonstration results (reformatted or digitized) prescribed in this appendix, and a description of the equipment necessary to perform the initial qualification evaluation and the continuing qualification evaluations. The eMQTG must include the original validation data used to validate FFS performance and handling qualities in either the original digitized format from the data supplier or an electronic scan of the original time-history plots that were provided by the data supplier. A copy of the eMQTG must be provided to the NSPM.

k. All other FFSs not covered in subparagraph ''j'' must have an electronic copy of the MQTG by October 30, 2013. A copy of the eMQTG must be provided to the NSPM. This may be provided by an electronic scan presented in a Portable Document File (PDF), or similar format acceptable to the NSPM.

END QPS REQUIREMENTS

BEGIN INFORMATION

l. Only those FFSs that are sponsored by a certificate holder as defined in appendix F will be evaluated by the NSPM. However, other FFS evaluations may be conducted on a case-by-case basis as the Administrator deems appropriate, but only in accordance with applicable agreements.

m. The NSPM will conduct an evaluation for each configuration, and each FFS must be evaluated as completely as possible. To ensure a thorough and uniform evaluation, each FFS is subjected to the general simulator requirements in Attachment 1, the objective tests listed in Attachment 2, and the subjective tests listed in Attachment 3 of this appendix. The evaluations described herein will include, but not necessarily be limited to the following:

(1) Helicopter responses, including longitudinal and lateral-directional control responses (see Attachment 2 of this appendix);

(2) Performance in authorized portions of the simulated helicopter's operating envelope, to include tasks evaluated by the NSPM in the areas of surface operations, takeoff, climb, cruise, descent, approach, and landing as well as abnormal and emergency operations (see Attachment 2 of this appendix);

(3) Control checks (see Attachment 1 and Attachment 2 of this appendix);

(4) Cockpit configuration (see Attachment 1 of this appendix);

(5) Pilot, flight engineer, and instructor station functions checks (see Attachment 1 and Attachment 3 of this appendix);

(6) Helicopter systems and sub-systems (as appropriate) as compared to the helicopter simulated (see Attachment 1 and Attachment 3 of this appendix);

(7) FFS systems and sub-systems, including force cueing (motion), visual, and aural (sound) systems, as appropriate (see Attachment 1 and Attachment 2 of this appendix); and

(8) Certain additional requirements, depending upon the qualification level sought, including equipment or circumstances that may become hazardous to the occupants. The sponsor may be subject to Occupational Safety and Health Administration requirements.

n. The NSPM administers the objective and subjective tests, which includes an examination of functions. The tests include a qualitative assessment of the FFS by an NSP pilot. The NSP evaluation team leader may assign other qualified personnel to assist in accomplishing the functions examination and/or the objective and subjective tests performed during an evaluation when required.

(1) Objective tests provide a basis for measuring and evaluating FFS performance and determining compliance with the requirements of this part.

(2) Subjective tests provide a basis for:

(a) Evaluating the capability of the FFS to perform over a typical utilization period;

(b) Determining that the FFS satisfactorily simulates each required task;
(c) Verifying correct operation of the FFS controls, instruments, and systems; and
(d) Demonstrating compliance with the requirements of this part.

o. The tolerances for the test parameters listed in Attachment 2 of this appendix reflect the range of tolerances acceptable to the NSPM for FFS validation and are not to be confused with design tolerances specified for FFS manufacture. In making decisions regarding tests and test results, the NSPM relies on the use of operational and engineering judgment in the application of data (including consideration of the way in which the flight test was flown and way the data was gathered and applied) data presentations, and the applicable tolerances for each test.

p. In addition to the scheduled continuing qualification evaluation, each FFS is subject to evaluations conducted by the NSPM at any time without prior notification to the sponsor. Such evaluations would be accomplished in a normal manner (*i.e.*, requiring exclusive use of the FFS for the conduct of objective and subjective tests and an examination of functions) if the FFS is not being used for flight crewmember training, testing, or checking. However, if the FFS were being used, the evaluation would be conducted in a non-exclusive manner. This non-exclusive evaluation will be conducted by the FFS evaluator accompanying the check airman, instructor, Aircrew Program Designee (APD), or FAA inspector aboard the FFS along with the student(s) and observing the operation of the FFS during the training, testing, or checking activities.

q. Problems with objective test results are handled as follows:

(1) If a problem with an objective test result is detected by the NSP evaluation team during an evaluation, the test may be repeated or the QTG may be amended.

(2) If it is determined that the results of an objective test do not support the level requested but do support a lower level, the NSPM may qualify the FFS at that lower level. For example, if a Level D evaluation is requested and the FFS fails to meet sound test tolerances, it could be qualified at Level C.

r. After an FFS is successfully evaluated, the NSPM issues a statement of qualification (SOQ) to the sponsor. The NSPM recommends the FFS to the TPAA, who will approve the FFS for use in a flight training program. The SOQ will be issued at the satisfactory conclusion of the initial or continuing qualification. However, it is the sponsor's responsibility to obtain TPAA approval prior to using the FSTD in an FAA-approved flight training program.

s. Under normal circumstances, the NSPM establishes a date for the initial or upgrade evaluation within ten (10) working days after determining that a complete QTG is acceptable. Unusual circumstances may warrant establishing an evaluation date before this determination is made. A sponsor may schedule an evaluation date as early as 6 months in advance. However, there may be a delay of 45 days or more in rescheduling and completing the evaluation if the sponsor is unable to meet the scheduled date. See Attachment 4, Figure C4A, Sample Request for Initial, Upgrade, or Reinstatement Evaluation.

t. The numbering system used for objective test results in the QTG should closely follow the numbering system set out in Attachment 2, FFS Objective Tests, Table C2A.

u. Contact the NSPM or visit the NSPM Web site for additional information regarding the preferred qualifications of pilots used to meet the requirements of §60.15(d).

v. Examples of the exclusions for which the FFS might not have been subjectively tested by the sponsor or the NSPM and for which qualification might not be sought or granted, as described in §60.15(g)(6), include takeoffs and landing from slopes and pinnacles.

END INFORMATION

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12. ADDITIONAL QUALIFICATIONS FOR A CURRENTLY QUALIFIED SIMULATOR (§60.16)

There is no additional regulatory or informational material that applies to §60.16, Additional Qualifications for a Currently Qualified FFS.

13. PREVIOUSLY QUALIFIED SIMULATORS (§60.17)

BEGIN QPS REQUIREMENTS

a. In instances where a sponsor plans to remove a FFS from active status for a period of less than two years, the following procedures apply:

(1) The NSPM must be notified in writing and the notification must include an estimate of the period that the FFS will be inactive;

(2) Continuing Qualification evaluations will not be scheduled during the inactive period;

(3) The NSPM will remove the FFS from the list of qualified FSTDs on a mutually established date not later than the date on which the first missed continuing qualification evaluation would have been scheduled;

(4) Before the FFS is restored to qualified status, it must be evaluated by the NSPM. The evaluation content and the time required to accomplish the evaluation is based on the number of continuing qualification evaluations and sponsor-conducted quarterly

inspections missed during the period of inactivity.

(5) The sponsor must notify the NSPM of any changes to the original scheduled time out of service;

b. Simulators qualified prior to October 30, 2007, are not required to meet the general simulation requirements, the objective test requirements, and the subjective test requirements of attachments 1, 2, and 3, respectively, of this appendix.

c. [Reserved]

END QPS REQUIREMENTS

BEGIN INFORMATION

d. Other certificate holders or persons desiring to use an FFS may contract with FFS sponsors to use FFSs previously qualified at a particular level for a helicopter type and approved for use within an FAA-approved flight training program. Such FFSs are not required to undergo an additional qualification process, except as described in §60.16.

e. Each FFS user must obtain approval from the appropriate TPAA to use any FFS in an FAA-approved flight training program.

f. The intent of the requirement listed in §60.17(b), for each FFS to have a Statement of Qualification within 6 years, is to have the availability of that statement (including the configuration list and the limitations to authorizations) to provide a complete picture of the FFS inventory regulated by the FAA. The issuance of the statement will not require any additional evaluation or require any adjustment to the evaluation basis for the FFS.

g. Downgrading of an FFS is a permanent change in qualification level and will necessitate the issuance of a revised Statement of Qualification to reflect the revised qualification level, as appropriate. If a temporary restriction is placed on an FFS because of a missing, malfunctioning, or inoperative component or on-going repairs, the restriction is not a permanent change in qualification level. Instead, the restriction is temporary and is removed when the reason for the restriction has been resolved.

h. It is not the intent of the NSPM to discourage the improvement of existing simulation (*e.g.*, the ''updating'' of a visual system to a newer model, or the replacement of the IOS with a more capable unit) by requiring the ''updated'' device to meet the qualification standards current at the time of the update. Depending on the extent of the update, the NSPM may require that the updated device be evaluated and may require that an evaluation include all or a portion of the elements of an initial evaluation. However, the standards against which the device would be evaluated are those that are found in the MQTG for that device.

i. The NSPM will determine the evaluation criteria for an FSTD that has been removed from active status. The criteria will be based on the number of continuing qualification evaluations and quarterly inspections missed during the period of inactivity. For example, if the FFS were out of service for a 1 year period, it would be necessary to complete the entire QTG, since all of the quarterly evaluations would have been missed. The NSPM will also consider how the FFS was stored, whether parts were removed from the FFS and whether the FFS was disassembled.

j. The FFS will normally be requalified using the FAA-approved MQTG and the criteria that was in effect prior to its removal from qualification. However, inactive periods of 2 years or more will require requalification under the standards in effect and current at the time of requalification.

END INFORMATION

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14. INSPECTION, CONTINUING QUALIFICATION EVALUATION, AND MAINTENANCE REQUIREMENTS (§60.19)

BEGIN QPS REQUIREMENTS

a. The sponsor must conduct a minimum of four evenly spaced inspections throughout the year. The objective test sequence and content of each inspection must be developed by the sponsor and must be acceptable to the NSPM.

b. The description of the functional preflight inspection must be contained in the sponsor's QMS.

c. Record ''functional preflight'' in the FFS discrepancy log book or other acceptable location, including any item found to be missing, malfunctioning, or inoperative.

END QPS REQUIREMENTS

BEGIN INFORMATION

d. The sponsor's test sequence and the content of each quarterly inspection required in §60.19(a)(1) should include a balance and a mix from the objective test requirement areas listed as follows:

(1) Performance.

(2) Handling qualities.

(3) Motion system (where appropriate).

(4) Visual system (where appropriate).

(5) Sound system (where appropriate).

(6) Other FFS systems.

e. If the NSP evaluator plans to accomplish specific tests during a normal continuing qualification evaluation that requires the use of special equipment or technicians, the sponsor will be notified as far in advance of the evaluation as practical; but not less than 72 hours. Examples of such

tests include latencies, control dynamics, sounds and vibrations, motion, and/or some visual system tests.

f. The continuing qualification evaluations, described in §60.19(b), will normally require 4 hours of FFS time. However, flexibility is necessary to address abnormal situations or situations involving aircraft with additional levels of complexity (*e.g.*, computer controlled aircraft). The sponsor should anticipate that some tests may require additional time. The continuing qualification evaluations will consist of the following:

(1) Review of the results of the quarterly inspections conducted by the sponsor since the last scheduled continuing qualification evaluation.

(2) A selection of approximately 8 to 15 objective tests from the MQTG that provide an adequate opportunity to evaluate the performance of the FFS. The tests chosen will be performed either automatically or manually and should be able to be conducted within approximately one-third (1/3) of the allotted FFS time.

(3) A subjective evaluation of the FFS to perform a representative sampling of the tasks set out in attachment 3 of this appendix. This portion of the evaluation should take approximately two-thirds (2/3) of the allotted FFS time.

(4) An examination of the functions of the FFS may include the motion system, visual system, sound system, instructor operating station, and the normal functions and simulated malfunctions of the simulated helicopter systems. This examination is normally accomplished simultaneously with the subjective evaluation requirements.

g. The requirement established in §60.19(b)(4) regarding the frequency of NSPM-conducted continuing qualification evaluations for each FFS is typically 12 months. However, the establishment and satisfactory implementation of an approved QMS for a sponsor will provide a basis for adjusting the frequency of evaluations to exceed 12-month intervals.

END INFORMATION

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15. LOGGING SIMULATOR DISCREPANCIES (§60.20)

There is no additional regulatory or informational material that applies to §60.20. Logging FFS Discrepancies.

16. INTERIM QUALIFICATION OF SIMULATORS FOR NEW HELICOPTER TYPES OR MODELS (§60.21)

There is no additional regulatory or informational material that applies to §60.21, Interim Qualification of FFSs for New Helicopter Types or Models.

17. MODIFICATIONS TO SIMULATORS (§60.23)

BEGIN QPS REQUIREMENTS

a. The notification described in §60.23(c)(2) must include a complete description of the planned modification, with a description of the operational and engineering effect the proposed modification will have on the operation of the FFS and the results that are expected with the modification incorporated.

b. Prior to using the modified FFS:

(1) All the applicable objective tests completed with the modification incorporated, including any necessary updates to the MQTG (*e.g.*, accomplishment of FSTD Directives) must be acceptable to the NSPM; and

(2) The sponsor must provide the NSPM with a statement signed by the MR that the factors listed in §60.15(b) are addressed by the appropriate personnel as described in that section.

END QPS REQUIREMENTS

BEGIN INFORMATION

FSTD Directives are considered modifications of an FFS. See Attachment 4 for a sample index of effective FSTD Directives.

END INFORMATION

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18. OPERATION WITH MISSING, MALFUNCTIONING, OR INOPERATIVE COMPONENTS (§60.25)

BEGIN INFORMATION

a. The sponsor's responsibility with respect to §60.25(a) is satisfied when the sponsor fairly and accurately advises the user of the current status of an FFS, including any missing, malfunctioning, or inoperative (MMI) component(s).

b. If the 29th or 30th day of the 30-day period described in §60.25(b) is on a Saturday, a Sunday, or a holiday, the FAA will extend the deadline until the next business day.

c. In accordance with the authorization described in §60.25(b), the sponsor may develop a discrepancy prioritizing system to accomplish repairs based on the level of impact on the capability of the FFS. Repairs having a larger impact on FFS capability to provide the required training, evaluation, or flight experience will have a higher priority for repair or replacement.

END INFORMATION

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19. AUTOMATIC LOSS OF QUALIFICATION AND PROCEDURES FOR RESTORATION OF QUALIFICATION (§ 60.27)

BEGIN INFORMATION

If the sponsor provides a plan for how the FFS will be maintained during its out-of-service period (*e.g.*, periodic exercise of mechanical, hydraulic, and electrical systems; routine replacement of hydraulic fluid; control of the environmental factors in which the FFS is to be maintained) there is a greater likelihood that the NSPM will be able to determine the amount of testing required for requalification.

END INFORMATION

20. OTHER LOSSES OF QUALIFICATION AND PROCEDURES FOR RESTORATION OF QUALIFICATION (§ 60.29)

BEGIN INFORMATION

If the sponsor provides a plan for how the FFS will be maintained during its out-of-service period (*e.g.*, periodic exercise of mechanical, hydraulic, and electrical systems; routine replacement of hydraulic fluid; control of the environmental factors in which the FFS is to be maintained) there is a greater likelihood that the NSPM will be able to determine the amount of testing required for requalification.

END INFORMATION

21. RECORDKEEPING AND REPORTING (§ 60.31)

BEGIN QPS REQUIREMENTS

a. FSTD modifications can include hardware or software changes. For FSTD modifications involving software programming changes, the record required by § 60.31(a)(2) must consist of the name of the aircraft system software, aerodynamic model, or engine model change, the date of the change, a summary of the change, and the reason for the change.

b. If a coded form for record keeping is used, it must provide for the preservation and retrieval of information with appropriate security or controls to prevent the inappropriate alteration of such records after the fact.

END QPS REQUIREMENTS

22. APPLICATIONS, LOGBOOKS, REPORTS, AND RECORDS: FRAUD, FALSIFICATION, OR INCORRECT STATEMENTS (§ 60.33)

There are no additional QPS requirements or informational material that apply to § 60.33, Applications, Logbooks, Reports, and Records: Fraud, Falsification, or Incorrect Statements.

23. [RESERVED]

24. [RESERVED]

25. FSTD QUALIFICATION ON THE BASIS OF A BILATERAL AVIATION SAFETY AGREEMENT (BASA) (§ 60.37)

There are no additional QPS requirements or informational material that apply to § 60.37, FSTD Qualification on the Basis of a Bilateral Aviation Safety Agreement (BASA).

ATTACHMENT 1 TO APPENDIX C TO PART 60—GENERAL SIMULATOR REQUIREMENTS

BEGIN QPS REQUIREMENTS

1. REQUIREMENTS.

a. Certain requirements included in this appendix must be supported with a Statement of Compliance and Capability (SOC), which may include objective and subjective tests. The SOC will confirm that the requirement was satisfied, and describe how the requirement was met, such as gear modeling approach or coefficient of friction sources. The requirements for SOCs and tests are indicated in the ''General Simulator Requirements'' column in Table C1A of this appendix.

b. Table C1A describes the requirements for the indicated level of FFS. Many devices include operational systems or functions that exceed the requirements outlined in this section. However, all systems will be tested and evaluated in accordance with this appendix to ensure proper operation.

END QPS REQUIREMENTS

BEGIN INFORMATION

2. DISCUSSION.

a. This attachment describes the general simulator requirements for qualifying a helicopter FFS. The sponsor should also consult the objective tests in Attachment 2 and the examination of functions and subjective tests listed in Attachment 3 to determine the complete requirements for a specific level simulator.

b. The material contained in this attachment is divided into the following categories:

(1) General cockpit configuration.
(2) Simulator programming.
(3) Equipment operation.
(4) Equipment and facilities for instructor/evaluator functions.
(5) Motion system.
(6) Visual system.
(7) Sound system.

c. Table C1A provides the standards for the General Simulator Requirements.

END INFORMATION

TABLE C1A— MINIMUM SIMULATOR REQUIREMENTS

QPS requirements		Simulator levels				Information Notes
No.	General simulator requirements	A	B	C	D	
1. General Cockpit Configuration						
1.a	The simulator must have a cockpit that is a replica of the helicopter simulated with controls, equipment, observable cockpit indicators, circuit breakers, and bulkheads properly located, functionally accurate and replicating the helicopter. The direction of movement of controls and switches must be identical to that in the helicopter. Pilot seats must afford the capability for the occupant to be able to achieve the design ''eye position'' established for the helicopter being simulated. Equipment for the operation of the cockpit windows must be included, but the actual windows need not be operable. Fire axes, extinguishers, spare light bulbs, etc., must be available in the FFS but may be relocated to a suitable location as near as practical to the original position. Fire axes, landing gear pins, and any similar purpose instruments need only be represented in silhouette. An SOC is required.		X	X	X	For simulator purposes, the cockpit consists of all that space forward of a cross section of the fuselage at the most extreme aft setting of the pilots' seats including addiitonal, required flight crewmember duty stations and those required bulkheads aft of the pilot seats. For clarification, bulkheads containing only items such as landing gear pin storage compartments, fire axes or extinguishers, spare light bulbs, aircraft documents pouches etc., are not considered essential and may be omitted.
1.b.	Those circuit breakers that affect procedures and/or result in observable cockpit indications must be properly located and functionally accurate. An SOC is required.		X	X	X	
2. Programming						
2.a.	A flight dynamics model that accounts for various combinations of drag and thrust normally encountered in flight must correspond to actual flight conditions, including the effect of change in helicopter attitude, thrust, drag, altitude, temperature, gross weight, moments of inertia, center of gravity location, and configuration. An SOC is required.		X	X	X	
2.b.	The simulator must have the computer capacity, accuracy, resolution, and dynamic response needed to meet the qualification level sought. An SOC is required.		X	X	X	
2.c	Ground handling and aerodynamic programming must include the following:					
2.c.1 ..	Ground effect ..... Level B does not require hover programming. An SOC is required.		X	X	X	Applicable areas include flare and touchdown from a running landing as well as for in-ground-effect (IGE) hover. A reasonable simulation of ground effect includes modeling of lift, drag, pitching moment, trim, and power while in ground effect.

TABLE C1A— MINIMUM SIMULATOR REQUIREMENTS—Continued

QPS requirements		Simulator levels				Information Notes
No.	General simulator requirements	A	B	C	D	
2.c.2 ..	Ground reaction ..... Level B does not require hover programming. An SOC is required.		X	X	X	Reaction of the helicopter upon contact with the landing surface during landing, (e.g., strut deflection, tire or skid friction, side forces) and may differ with changes in gross weight, airspeed, rate of descent on touchdown, and slide slip.
2.c.3 ..	Ground handling characteristics. Control inputs required during operations in crosswind, during braking and deceleration, and for turning radius.		X	X	X	
2.d	The simulator must provide for manual and automatic testing of simulator hardware and software programming to determine compliance with simulator objective tests as prescribed in Attachment 2. An SOC is required.			X	X	This may include an automated system, which could be used for conducting at least a portion of the QTG tests. Automatic ''flagging'' of out-of-tolerance situations is encouraged.
2.e	Relative responses of the motion system, visual system, and cockpit instruments, measured by latency tests or transport delay tests. Motion onset should occur before the start of the visual scene change (the start of the scan of the first video field containing different information) but must occur before the end of the scan of that video field. Instrument response may not occur prior to motion onset. Test results must be within the following limits:					The intent is to verify that the simulator provides instrument, motion, and visual cues that are like the helicopter responses within the stated time delays. For helicopter response, acceleration in the appropriate corresponding rotational axis is preferred.
2.e.1 ..	Response must be within 150 milliseconds of the helicopter response. Objective Tests are required. See Attachment 2 for Transport Delay and Latency Tests.		X			
2.e.2 ..	Response must be within 100 milliseconds of the helicopter response. Objective Tests are required. See Attachment 2 for Transport Delay and Latency Tests.			X	X	
2.f	The simulator must accurately reproduce the following runway conditions: (1) Dry; (2) Wet; (3) Icy; (4) Patchy Wet (5) Patchy Icy An SOC is required. Objective tests are required for dry, wet, and icy runway conditions. Subjective tests are required for patchy wet, patchy icy, and wet on rubber residue in touchdown zone conditions.			X	X	
2.g.	The simulator must simulate: (1) Brake and tire failure dynamics (including anti-skid failure). (2) Decreased brake efficiency due to high brake temperatures, if applicable. An SOC is required.			X	X	Simulator pitch, side loading, and directional control characteristics should be representative of the helicopter.

TABLE C1A— MINIMUM SIMULATOR REQUIREMENTS—Continued

QPS requirements		Simulator levels				Information Notes
No.	General simulator requirements	A	B	C	D	
2.h	The modeling in the simulator must include: (1) Ground effect, (2) Effects of airframe icing (if applicable), (3) Aerodynamic interference effects between the rotor wake and fuselage, (4) Influence of the rotor on control and stabilization systems, and (5) Representations of nonlinearities due to sideslip. An SOC is required and must include references to computations of aeroelastic representations and of nonlinearities due to sideslip. An SOC and a demonstration of icing effects (if applicable) are required.			X	X	See Attachment 2 for further information on ground effect.
2.i	The simulator must provide for realistic mass properties, including gross weight, center of gravity, and moments of inertia as a function of payload and fuel loading. An SOC is required and must include a range of tabulated target values to enable a subjective test of the mass properties model to be conducted from the instructor's station.		X	X	X	
3. Equipment Operation						
3.a.	All relevant instrument indications involved in the simulation of the helicopter must automatically respond to control movement or external disturbances to the simulated helicopter; e.g., turbulence or windshear. Numerical values must be presented in the appropriate units. A subjective test is required.		X	X	X	
3.b	Communications, navigation, caution, and warning equipment must be installed and operate within the tolerances applicable for the helicopter being simulated. A subjective test is required.		X	X	X	See Attachment 3 for further information regarding long-range navigation equipment.
3.c	Simulated airplane systems must operate as the helicopter systems would operate under normal, abnormal, and emergency operating conditions on the ground and in flight. A subjective test is required.		X	X	X	
3.d	The simulator must provide pilot controls with control forces and control travel that correspond to the simulated helicopter. The simulator must also react in the same manner as in the helicopter under the same flight conditions. An objective test is required.		X	X	X	
4. Instructor / Evaluator Facilities						
4.a	In addition to the flight crewmember stations, the simulator must have at least two suitable seats for the instructor/check airman and FAA inspector. These seats must provide adequate vision to the pilot's panel and forward windows. All seats other than flight crew seats need not represent those found in the helicopter but must be adequately secured to the floor and equipped with similar positive restraint devices. A subjective test is required.		X	X	X	The NSPM will consider alternatives to this standard for additional seats based on unique cockpit configurations.

TABLE C1A— MINIMUM SIMULATOR REQUIREMENTS—Continued

QPS requirements		Simulator levels				Information Notes
No.	General simulator requirements	A	B	C	D	
4.b	The simulator must have controls that enable the instructor/evaluator to control all required system variables and insert all abnormal or emergency conditions into the simulated helicopter systems as described in the sponsor's FAA-approved training program, or as described in the relevant operating manual as appropriate. A subjective test is required.		X	X	X	
4.c	The simulator must have instructor controls for environmental conditions including wind speed and direction. A subjective test is required.		X	X	X	
4.d	The simulator must provide the instructor or evaluator the the ability to present ground and air hazards.			X	X	For example, another aircraft crossing the active runway and converging airborne traffic.
	A subjective test is required.					
5. Motion System						
5.a	The simulator must have motion (force) cues perceptible to the pilot that are representative of the motion in a helicopter. A subjective test is required.		X	X	X	For example, touchdown cues should be a function of the rate of descent (RoD) of the simulated helicopter.
5.b	The simulator must have a motion (force cueing) system with a minimum of three degrees of freedom (at least pitch, roll, and heave). An SOC is required.		X			
5.c	The simulator must have a motion (force cueing) system that produces cues at least equivalent to those of a six-degrees-of-freedom, synergistic platform motion system (i.e., pitch, roll, yaw, heave, sway, and surge). An SOC is required.			X	X	
5.d	The simulator must provide for the recording of the motion system response time. An SOC is required.		X	X	X	
5.e	The simulator must provide motion effects programming to include the following: (1) Runway rumble, oleo deflections, effects of ground speed, uneven runway, characteristics. (2) Buffets due to transverse flow effects. (3) Buffet during extension and retraction of landing gear. (4) Buffet due to retreating blade stall. (5) Buffet due to settling with power. (6) Representative cues resulting from touchdown. (7) Rotor vibrations. A subjective test is required for each.		X	X	X	
	(8) Tire failure dynamics. (9) Engine malfunction and engine damage. (10) Airframe ground strike. A subjective test is required for each.			X	X	
	(11) Motion vibrations that result from atmospheric disturbances.				X	For air turbulence, general purpose disturbance models that approximate demonstrable flight test data are acceptable.
5.f	The simulator must provide characteristic motion vibrations that result from operation of the helicopter, (for example, retreating blade stall, extended landing gear, settling with power) in so far as vibration marks an event or helicopter state, which can be sensed in the cockpit. A subjective test is required.				X	The simulator should be programmed and instrumented in such a manner that the characteristic buffet modes can be measured and compared to helicopter data.

TABLE C1A— MINIMUM SIMULATOR REQUIREMENTS—Continued

QPS requirements		Simulator levels				Information Notes
No.	General simulator requirements	A	B	C	D	
	An objective test is required.					
6. Visual System						
6.a	The simulator must have a visual system providing an out-of-the-cockpit view. A subjective test is required.		X	X	X	
6.b	The simulator must provide a continuous minimum collimated field of view of 75° horizontally and 30° vertically per pilot seat. Both pilot seat visual systems must be operable simultaneously. An SOC is required.		X			
6.c	The simulator must provide a continuous minimum collimated visual field of view of 150° horizontally and 40° vertically per pilot seat. Both pilot seat visual systems must be operable simultaneously. Horizontal field of view is centered on the zero degree azimuth line relative to the aircraft fuselange. An SOC is required.			X		Optimization of the visual field of view may be considered with respect to the specific helicopter cockpit cut-off angle.
6.d	The simulator must provide a continuous minimum collimated visual field of view of 180° horizontally and 60° vertically per pilot seat. Both pilot seat visual systems must be operable simultaneously. Horizontal field of view is centered on the zero degree azimuth line relative to the aircraft fuselage. An SOC is required. An objective test is required.				X	Optimization of the visual field of view may be considered with respect to the specific airplane cockpit cut-off angle.
6.e	The visual system must be free from optical discontinuities and artifacts that create non-realistic cues. A subjective test is required.		X	X	X	Non-realistic cues might include image ''swimming'' and image ''roll-off,'' that may lead a pilot to make incorrect assessments of speed, acceleration and/or situational awareness.
6.f	The simulator must have operational landing lights for night scenes. Where used, dusk (or twilight) scenes require operational landing lights. A subjective test is required.		X	X	X	
6.g	The simulator must have instructor controls for the following: (1) Cloudbase. (2) Visibility in statute miles (kilometers) and runway visual range (RVR) in ft. (meters). (3) Airport or landing area selection. (4) Airport or landing area lighting. A subjective test is required.		X	X	X	
6.h	Each airport scene displayed must include the following: 1. Airport runways and taxiways. 2. Runway definition: a. Runway surface and markings. b. Lighting for the runway in use, including runway threshold, edge, centerline, touchdown zone, VASI (or PAPI), and approach lighting of appropriate colors, as appropriate. c. Taxiway lights. A subjective test is required.		X	X	X	
6.i	The distances at which runway features are visible, as measured from runway threshold to a helicopter aligned with the runway on an extended 3° glide slope must not be less than listed below:		X	X	X	

TABLE C1A— MINIMUM SIMULATOR REQUIREMENTS—Continued

QPS requirements		Simulator levels				Information Notes
No.	General simulator requirements	A	B	C	D	
	1. Runway definition, strobe lights, approach lights, runway edge white lights and VASI or PAPI system lights from 5 statute miles (8 km) of the runway threshold. 2. Runway centerline lights and taxiway definition from 3 statute miles (4.8 km). 3. Threshold lights and touchdown zone lights from 2 statute miles (3.2 km). 4. Runway markings within range of landing lights for night scenes and as required by three (3) arc-minutes resolution on day scenes. A subjective test is required.					
6.j	The simulator must provide visual system compatibility with dynamic response programming. A subjective test is required.		X	X	X	
6.k	The simulator must show that the segment of the ground visible from the simulator cockpit is the same as from the airplane cockpit (within established tolerances) when at the correct airspeed, in the landing configuration, at a main wheel height of 100 feet (30 meters) above the touchdown zone. Data submitted must include at least the following: (1) Static helicopter dimensions as follows: (i) Horizontal and vertical distance from main landing gear (MLG) or landing skids to glideslope reception antenna. (ii) Horizontal and vertical distance from MLG or skids to pilot's eyepoint. (iii) Static cockpit cutoff angle. (2) Approach data as follows: (i) Identification of runway. (ii) Horizontal distance from runway threshold to glideslope intercept with runway. (iii) Glideslope angle. (iv) Helicopter pitch angle on approach. (3) Helicopter data for manual testing: (i) Gross weight. (ii) Helicopter configuration. (iii) Approach airspeed. The QTG must contain appropriate calculations and a drawing showing the pertinent data used to establish the helicopter location and the segment of the ground that is visible considering the helicopter attitude (cockpit cut-off angle) and a runway visual range of 1,200 feet or 350 meters. Simulator performance must be measured against the QTG calculations. Sponsors must provide this data for each simulator (regardless of previous qualification standards) to qualify the simulator for all precision instrument approaches. At the near end of the visual ground segment, lights and ground objects computed to be visible from the helicopter cockpit must be visible in the FFS. The far end of the visual ground segment must be at the computed end of the segment ±20% of the computed visible segment distance. An SOC is required. An objective test is required.		X	X	X	The test should be conducted in the landing configuration, trimmed for appropriate airspeed, at 100 ft (30m) above the touchdown zone, on glide slope with an RVR value set at 1,200 ft (350m). This will show the modeling accuracy of RVR, glideslope, and localizer for a given weight, configuration and speed within the helicopter's operational envelope for a normal appraoch and landing. If non-homogenous fog is used, the vertical variation in horizontal visibility should be described and be included in the slant range visibility calculation used in the computations.
6.l	The simulator must provide visual cues necessary to assess rate of change of height, height AGL, as well as translational displacement and rates during takeoffs and landings. A subjective test is required.		X			

TABLE C1A— MINIMUM SIMULATOR REQUIREMENTS—Continued

QPS requirements		Simulator levels				Information Notes
No.	General simulator requirements	A	B	C	D	
6.m	The simulator must have night and dusk (or twilight) visual scene capability, including general terrain characteristics and significant landmarks, free from apparent quantization. Dusk (or twilight) scene must enable identification of a visible horizon and general terrain characteristics. A subjective test is required.			X	X	Examples of general terrain characteristics are fields, roads, and bodies of water.
6.n	The simulator must provide visual cues necessary to assess rate of change of height, height AGL, as well as translational displacement and rates during takeoff, low altitude/low airspeed maneuvering, hover, and landing. A subjective test is required.			X	X	
6.o.	The simulator must provide for accurate portrayal of the visual environment relating to the simulator attitude. A subjective test is required.		X	X	X	Visual attitude vs. simulator attitude is a comparison of pitch and roll of the horizon as displayed in the visual scene compared to the display on the attitude indicator.
6.p	The simulator must provide for quick confirmation of visual system color, RVR, focus, and intensity. An SOC is required. A subjective test is required.			X	X	
6.q	The simulator must provide a minimum of three airport scenes including the following: 1. Surfaces on runways, taxiways, and ramps. 2. Lighting of approriate color for all runways, including runway threshold, edge, centerline, VASI (or PAPI), and approach lighting for the runway in use. 3. Airport taxiway lighting. 4. Ramps and buildings that correspond to the sponsor's Line Oriented scenarios, as appropriate. A subjective test is required.			X	X	
6.r	The simulator must be capable of producing at least 10 levels of occulting.. A subjective test is required.			X	X	
6.s	The fog simulator must be able to provide weather representations including the following: (1) Variable cloud density. (2) Partial obscuration of ground scenes; i.e., the effect of a scattered to broken cloud deck. (3) Gradual breakout. (4) Patchy fog. (5) The effect of fog on airport lighting The weather representations must be provided at and below an altitude of 2,000 ft (610 m) height above the airport and within a radius of 10 miles (16 km) from the airport. A subjective test is required.			X	X	

TABLE C1A— MINIMUM SIMULATOR REQUIREMENTS—Continued

QPS requirements		Simulator levels				Information Notes
No.	General simulator requirements	A	B	C	D	
6.t	Night Visual Scenes. The simulator must provide night visual scenes with sufficient scene content to recognize the airport, the terrain, and major landmarks around the airport. The scene content must allow a pilot to successfully accomplish a visual landing. Night scenes, as a minimum, must provide presentations of sufficient surfaces with appropriate textural cues that include self-illuminated objects such as road networks, ramp lighting, and airport signage, to conduct a visual approach, a landing, and airport movement (taxi). Scenes must include a definable horizon and typical terrain characteristics such as fields, roads and bodies of water and surfaces illuminated by airplane landing lights.		X	X	X	
6.u	Dusk (Twilight) Visual Scenes. The simulator must provide dusk (or twilight) visual scenes with sufficient scene content to recognize the airport, the terrain, and major landmarks around the airport. The scene content must allow a pilot to successfully accomplish a visual landing. Dusk (or twilight) scenes, as a minimum, must provide full color presentations of reduced ambient intensity, sufficient surfaces with appropriate textural cues that include self-illuminated objects such as road networks, ramp lighting and airport signage, to conduct a visual approach, landing and airport movement (taxi). Scenes must include a definable horizon and typical terrain characteristics such as fields, roads and bodies of water and surfaces illuminated by representative aircraft lighting (e.g., landing lights). If provided, directional horizon lighting must have correct orientation and be consistent with surface shading effects. Total scene content must be comparable in detail to that produced by 10,000 visible textured surfaces and 15,000 visible lights with sufficient system capacity to display 16 simultaneously moving objects. An SOC is required.			X	X	
6.v	Night, Dusk (Twilight), and Daylight Visual Scenes. The simulator must have night, dusk (twilight), and daylight visual scenes with sufficient scene content to recognize the airport, the terrain, and major landmarks around the airport. The scene content must allow a pilot to successfully accomplish a visual landing. Any ambient lighting must not ''washout'' the displayed visual scene. Total scene content must be comparable in detail to that produced by 10,000 visible textured surfaces and 6,000 visible lights with sufficient system capacity to display 16 simultaneously moving objects. The visual display must be free of apparent quantization and other distracting visual effects while the simulator is in motion. **Note:** These requirements are applicable to any level of simulator equipped with a daylight visual system. An SOC is required. A subjective test is required. Objective tests are required.				X	
6.w	The simulator must provide operational visual scenes that portray physical relationships known to cause landing illusions to pilots.				X	For example: short runways, landing approaches over water, uphill or downhill runways, rising terrain on the approach path, unique topographic features.

TABLE C1A— MINIMUM SIMULATOR REQUIREMENTS—Continued

QPS requirements		Simulator levels				Information Notes
No.	General simulator requirements	A	B	C	D	
	A subjective test is required.					
6.x	The simulator must provide special weather representations of light, medium, and heavy precipitation near a thunderstorm on takeoff and during approach and landing. Representations need only be presented at and below an altitude of 2,000 ft. (610 m) above the airport surface and within 10 miles (16 km) of the airport. A subjective test is required.				X	
6.y.	The simulator must present visual scenes of wet and snow-covered runways, including runway lighting reflections for wet conditions, partially obscured lights for snow conditions. A subjective test is required.				X	The NSPM will consider suitable alternative effects.
6.z	The simulator must present realistic color and directionality of all airport lighting. A subjective test is required.				X	
7. Sound System						
7.a	The simulator must provide cockpit sounds that result from pilot actions that correspond to those that occur in the helicopter.		X	X	X	
7.b	Volume control, if installed, must have an indication of the sound level setting.		X	X	X	
7.c	The simulator must accurately simulate the sound of precipitation, windshield wipers, and other significant helicopter noises perceptible to the pilot during normal and abnormal operations, and include the sound of a crash (when the simulator is landed in an unusual attitude or in excess of the structural gear limitations); normal engine sounds; and the sounds of gear extension and retraction. An SOC is required. A subjective test is required.			X	X	
7.d	The simulator must provide realistic amplitude and frequency of cockpit noises and sounds. Simulator performance must be recorded, compared to amplitude and frequency of the same sounds recorded in the helicopter, and made a part of the QTG.				X	

ATTACHMENT 2 TO APPENDIX C TO PART 60—SIMULATOR OBJECTIVE TESTS

BEGIN INFORMATION

1. DISCUSSION.

(a) If relevant winds are present in the objective data, the wind vector (magnitude and direction) should be clearly noted as part of the data presentation, expressed in conventional terminology, and related to the runway being used for the test.

(b) The NSPM will not evaluate any simulator unless the required SOC indicates that the motion system is designed and manufactured to safely operate within the simulator's maximum excursion, acceleration, and velocity capabilities (see Motion System in the following table).

END INFORMATION

BEGIN QPS REQUIREMENTS

1. TEST REQUIREMENTS.

a. The ground and flight tests required for qualification are listed in Table of C2A, FFS Objective Tests. Computer generated simulator test results must be provided for each

test except where an alternative test is specifically authorized by the NSPM. If a flight condition or operating condition is required for the test but does not apply to the helicopter being simulated or to the qualification level sought, it may be disregarded (e.g., an engine out missed approach for a single-engine helicopter, or a hover test for a Level B simulator). Each test result is compared against the validation data described in §60.13 and in this appendix. Although use of a driver program designed to automatically accomplish the tests is encouraged for all simulators and required for Level C and Level D simulators, each test must be able to be accomplished manually while recording all appropriate parameters. The results must be produced on an appropriate recording device acceptable to the NSPM and must include simulator number, date, time, conditions, tolerances, and appropriate dependent variables portrayed in comparison to the validation data. Time histories are required unless otherwise indicated in Table C2A. All results must be labeled using the tolerances and units given.

b. Table C2A sets out the test results required, including the parameters, tolerances, and flight conditions for simulator validation. Tolerances are provided for the listed tests because mathematical modeling and acquisition/development of reference data are often inexact. All tolerances listed in the following tables are applied to simulator performance. When two tolerance values are given for a parameter, the less restrictive may be used unless otherwise indicated.

c. Certain tests included in this attachment must be supported with a Statement of Compliance and Capability (SOC). In Table C2A, requirements for SOCs are indicated in the ''Test Details'' column.

d. When operational or engineering judgment is used in making assessments for flight test data applications for simulator validity, such judgment must not be limited to a single parameter. For example, data that exhibit rapid variations of the measured parameters may require interpolations or a ''best fit'' data selection. All relevant parameters related to a given maneuver or flight condition must be provided to allow overall interpretation. When it is difficult or impossible to match simulator to helicopter data throughout a time history, differences must be justified by providing a comparison of other related variables for the condition being assessed.

e. It is not acceptable to program the FFS so that the mathematical modeling is correct only at the validation test points. Unless noted otherwise, simulator tests must represent helicopter performance and handling qualities at operating weights and centers of gravity (CG) typical of normal operation. If a test is supported by helicopter data at one extreme weight or CG, another test supported by helicopter data at mid-conditions or as close as possible to the other extreme must be included, except as may be authorized by the NSPM. Certain tests that are relevant only at one extreme CG or weight condition need not be repeated at the other extreme. Tests of handling qualities must include validation of augmentation devices.

f. When comparing the parameters listed to those of the helicopter, sufficient data must also be provided to verify the correct flight condition and helicopter configuration changes. For example, to show that control force is within ±0.5 pound (0.22 daN) in a static stability test, data to show the correct airspeed, power, thrust or torque, helicopter configuration, altitude, and other appropriate datum identification parameters must also be given. If comparing short period dynamics, normal acceleration may be used to establish a match to the helicopter, but airspeed, altitude, control input, helicopter configuration, and other appropriate data must also be given. All airspeed values must be properly annotated (e.g., indicated versus calibrated). In addition, the same variables must be used for comparison (e.g., compare inches to inches rather than inches to centimeters).

g. The QTG provided by the sponsor must clearly describe how the simulator will be set up and operated for each test. Each simulator subsystem may be tested independently, but overall integrated testing of the simulator must be accomplished to assure that the total simulator system meets the prescribed standards. A manual test procedure with explicit and detailed steps for completing each test must also be provided.

h. In those cases where the objective test results authorize a ''snapshot test'' or ''a series of snapshot test'' results in lieu of a time-history result, the sponsor or other data provider must ensure that a steady state condition exists at the instant of time captured by the ''snapshot.''

i. For previously qualified simulators, the tests and tolerances of this attachment may be used in subsequent continuing qualification evaluations for any given test if the sponsor has submitted a proposed MQTG revision to the NSPM and has received NSPM approval.

j. Motion System Tests:

(a) The minimum excursions, accelerations, and velocities for pitch, roll, and yaw must be measurable about a single, common reference point and must be achieved by driving one degree of freedom at a time.

(b) The minimum excursions, accelerations, and velocities for heave, sway, and surge may be measured about different but identifiable reference points and must also be achieved by driving one degree of freedom at a time.

k. Tests of handling qualities must include validation of augmentation devices. FFSs for highly augmented helicopters will be validated both in the unaugmented configuration (or failure state with the maximum permitted degradation in handling qualities) and the augmented configuration. Where various levels of handling qualities result from failure states, validation of the effect of the failure is necessary. For those performance and static handling qualities tests where the primary concern is control position in the unaugmented configuration, unaugmented data are not required if the design of the system precludes any affect on control position. In those instances where the unaugmented helicopter response is divergent and non-repeatable, it may not be feasible to meet the specified tolerances. Alternative requirements for testing will be mutually agreed upon by the sponsor and the NSPM on a case-by-case basis.

l. Some tests will not be required for helicopters using helicopter hardware in the simulator cockpit (*e.g.*, ''helicopter modular controller''). These exceptions are noted in Table C2A of this attachment. However, in these cases, the sponsor must provide a statement that the helicopter hardware meets the appropriate manufacturer's specifications and the sponsor must have supporting information to that fact available for NSPM review.

m. For objective test purposes, ''Near maximum'' gross weight is a weight chosen by the sponsor or data provider that is not less than the basic operating weight (BOW) of the helicopter being simulated plus 80% of the difference between the maximum certificated gross weight (either takeoff weight or landing weight, as appropriate for the test) and the BOW. ''Light'' gross weight is a weight chosen by the sponsor or data provider that is not more than 120% of the BOW of the helicopter being simulated or as limited by the minimum practical operating weight of the test helicopter. ''Medium'' gross weight is a weight chosen by the sponsor or data provider that is approximately ±10% of the average of the numerical values of the BOW and the maximum certificated gross weight. (Note: BOW is the empty weight of the aircraft plus the weight of the following: normal oil quantity; lavatory servicing fluid; potable water; required crewmembers and their baggage; and emergency equipment. (References: Advisory Circular 120–27, ''Aircraft Weight and Balance;'' and FAA–H–8083–1, ''Aircraft Weight and Balance Handbook.'').

END QPS REQUIREMENTS

BEGIN QPS REQUIREMENTS

TABLE C2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS

<<<QPS requirements>>>									<<Information>>
Test		Tolerance(s)	Flight condition	Test details	Simulator level				Notes
No.	Title				A	B	C	D	
1. Performance									
1.a	Engine Assessment.								
1.a.1	Start Operations..								
1.a.1.a	Engine start and acceleration (transient).	Light Off Time — ±10% or ±1 sec., Torque — ±5%, Rotor Speed — ±3%, Fuel Flow — ±10%, Gas Generator Speed — ±5%, Power Turbine Speed — ±5%, Gas Turbine Temp. — ±30 °C.	Ground with the Rotor Brake Used and Not Used.	Record each engine start from the initiation of the start sequence to steady state idle and from steady state idle to operating RPM.		X	X	X	
1.a.1.b	Steady State Idle and Operating RPM conditions.	Torque — ±3%, Rotor Speed — ±1.5%, Fuel Flow — ±5%, Gas Generator Speed — ±2%, Power Turbine Speed — ±2%, Turbine Gas Temp. — ±20 °C.	Ground	Record both steady state idle and operating RPM conditions.. May be a series of snapshot tests..		X	X	X	
1.a.2	Power Turbine Speed Trim.	±10% of total change of power turbine speed.	Ground	Record engine response to trim system actuation in both directions.		X	X	X	
1.a.3	Engine and Rotor Speed Governing.	Torque — ±5%, Rotor Speed — 1.5%.	Climb, descent	Record results using a step input to the collective. May be conducted concurrently with climb and descent performance tests.		X	X	X	

TABLE C2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS—Continued

<<<QPS requirements>>>									<<Information>>
Test		Tolerance(s)	Flight condition	Test details	Simulator level				Notes
No.	Title				A	B	C	D	
1.b	Surface Operations.								
1.b.1	Minimum Radius Turn ..	±3 ft. (0.9m) or 20% of helicopter turn radius.	Ground	If brakes are used, brake force must be matched to the helicopter flight test value.		X	X	X	
1.b.2	Rate of Turn vs. Pedal Deflection or Nosewheel Angle.	±10% or ±2°/sec. Turn Rate ..	Ground Takeoff	.....		X	X	X	
1.b.3	Taxi	Pitch Angle — ±1.5°, Torque — ±3%, Longitudinal Control Position — ±5%, Lateral Control Position — ±5%, Dirrectional Control Position.	Ground	Record results for control position and pitch attitude during ground taxi for a specific ground speed, wind speed and direction, and density altitude.		X	X	X	
		±5%, Collective Control Position — ±5%.	.....	.....		X	X	X	
1.b.4	Brake Effectiveness	±10% of time and distance	Ground	.....		X	X	X	
1.c	Takeoff .								

1.c.1	All Engines	Airspeed — ±3 kt, Altitude — ±20 ft (6.1m), Torque — ±3%, Rotor Speed — ±1.5%, Vertical Velocity — ±100 fpm (0.50m/sec) or 10%, Pitch Attitude — ±1.5°, Bank Attitude — ±2°, Heading — ±2°, Longitudinal Control Position — ±10%, Lateral Control Position — ±10%, Directional Control Position — ±10%, Collective Control Position — ±10%.	Ground/Takeoff and Initial Segment of Climb.	Record results of takeoff flight path as appropriate to helicopter model simulated (running takeoff for Level B, takeoff from a hover for Level C and D). For Level B, the criteria apply only to those segments at airspeeds above effective translational lift. Results must be recorded from the initiation of the takeoff to at least 200 ft (61m) AGL.		X	X	X
1.c.2	One Engine Inoperative	Airspeed — ±3 kt, Altitude — ±20 ft (6.1m), Torque — ±3%, Rotor Speed — ±1.5%, Vertical Velocity — ±100 fpm (0.50m/sec) or 10%, Pitch Attitude — ±1.5°, Bank Attitude — ±2°, Heading — ±2°, Longitudinal Control Position — ±10%, Lateral Control Position — ±10%, Directional Control Position — ±10%, Collective Control Position — ±10%.	Ground/Takeoff; and Initial Segment of Climb.	Record takeoff flight path as appropriate to helicopter model simulated. Results must be recorded from the initiation of the takeoff to at least 200 ft (61m) AGL.		X	X	X
1.d	Hover.							

TABLE C2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS—Continued

<<<QPS requirements>>>									<<Information>>
Test		Tolerance(s)	Flight condition	Test details	Simulator level				Notes
No.	Title				A	B	C	D	
	Performance	Torque — ±3%, Pitch Attitude — ±1.5°, Bank Attitude — ±1.5°, Longitudinal Control Position — ±5%, Lateral Control Position — ±5%, Directional Control Position — ±5%, Collective Control Position — ±5%,.	In Ground Effect (IGE); and Out of Ground Effect (OGE).	Record results for light and heavy gross weights. May be a series of snapshot tests.		X	X	X	
1.e	Vertical Climb.								
	Performance	Vertical Velocity — ±100 fpm (0.50 m/sec) or ±10%, Directional Control Position — ±5%, Collective Control Position — ±5%.	From OGE Hover ...	Record results for light and heavy gross weights. May be a series of snapshot tests.			X	X	
1.f	Level Flight.								
	Performance and Trimmed Flight Control Positions.	Torque — ±3%, Pitch Attitude — ±1.5°, Sideslip Angle — ±2°, Longitudinal Control Position — ±5%, Lateral Control Position — ±5%, Directional Control Position — ±5%, Collective Control Position — ±5%.	Cruise (Augmentation On and Off).	Record results for two gross weight and CG combinations with varying trim speeds throughout the airspeed envelope. May be a series of snapshot tests.		X	X	X	
1.g	Climb.								

	Performance and Trimmed Flight Control Positions.	Vertical Velocity — ±100 fpm (6.1m/sec) or ±10%, Pitch Attitude — ±1.5°, Sideslip Angle — ±2°, Longitudinal Control Position — ±5%, Lateral Control Position — ±5%, Directional Control Position — ±5%, Collective Control Position — ±5%.	All engines operating; One engine inoperative; Augmentation System(s) On and Off.	Record results for two gross weight and CG combinations. The data presented must be for normal climb power conditions. May be a series of snapshot tests.		X	X	X
1.h	Descent.							
1.h.1	Descent Performance and Trimmed Flight Control Positions.	Torque — ±3%, Pitch Attitude — ±1.5°, Sideslip Angle — ±2°, Longitudinal Control Position — ±5%, Lateral Control Position — ±5%, Directional Control Position — ±5%, Collective Control Position — ±5%.	At or near 1,000 fpm rate of descent (RoD) at normal approach speed. Augmentation System(s) On and Off.	Results must be recorded for two gross weight and CG combinations. May be a series of snapshot tests.		X	X	X
1.h.2	Autorotation Performance and Trimmed Flight Control Positions.	Torque — ±3%, Pitch Attitude — ±1.5°, Sideslip Angle — ±2°, Longitudinal Control Position — ±5%, Lateral Control Position — ±5%, Directional Control Position — ±5%, Collective Control Position — ±5% Vertical Velocity ±100 fpm or 19%, Rotor Speed ±1.5%.	Steady descents. Augmentation System(s) On and Off.	Record results for two gross weight conditions. Data must be recorded for normal operating RPM. (Rotor speed tolerance applies only if collective control position is full down.) May be a series of snapshot tests.		X	X	X
1.i	Autorotation.							

TABLE C2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS—Continued

<<<QPS requirements>>>									<<Information>>
Test		Tolerance(s)	Flight condition	Test details	Simulator level				Notes
No.	Title				A	B	C	D	
	Entry	Rotor Speed—±3% Pitch Attitude ±2°Roll Attitude—±3° Yaw Attitude—±5° Airspeed—±5 kts. Vertical Velocity—±200 fpm (1.00 m/sec) or 10%.	Cruise or Climb	Record results of a rapid throttle reduction to idle. If the cruise condition is selected, comparison must be made for the maximum range airspeed. If the climb condition is selected, comparison must be made for the maximum rate of climb airspeed at or near maximum continuous power.		.....	X	X	
1.j	Landing.								

1.j.1	All Engines	Airspeed—±3 kts., Altitude—±20 ft. (6.1m), Torque—±3%, Rotor Speed—±1.5%, Pitch Attitude—±1.5°, Bank Attitude—±1.5°, Heading—±2°, Longitudinal Control Position—±10%, Lateral Control Position—±10%, Directional Control Position—±10%, Collective Control Position—±10%.	Approach	Record results of the approach and landing profile as appropriate to the helicopter model simulated (running landing for Level B, or approach to a hover for Level C and D). For Level B, the criteria apply only to those segments at airspeeds above effective translational lift.		X	X	X
1.j.2	One Engine Inoperative	Airspeed—±3 kts., Altitude—±20 ft. (6.1m), Torque—±3%, Rotor Speed—±1.5%, Pitch Attitude—±1.5°, Bank Attitude—±1.5°, Heading—±2°, Longitudinal Control Position—±10%, Lateral Control Position—±10%, Directional Control Position—±10%, Collective Control Position—±10%.	Approach	Record results for both Category A and Category B approaches and landing as appropriate to helicopter model simulated. For Level B, the criteria apply only to those segments at airspeeds above effective translational lift.		X	X	X

TABLE C2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS—Continued

<<<QPS requirements>>>									<<Information>>
Test		Tolerance(s)	Flight condition	Test details	Simulator level				Notes
No.	Title				A	B	C	D	
1.j.3	Balked Landing	Airspeed—±3 kts., Altitude—±20 ft. (6.1 m), Torque—±3%, Rotor Speed—±1.5%, Pitch Attitude—±1.5°, Bank Attitude—±1.5°, Heading—±2°, Longitudinal Control Position—±10%, Lateral Control Position—±10%, Directional Control Position—±10%, Collective Control Position—±10%.	Approach	Record the results for the maneuver initiated from a stabilized approach at the landing decision point (LDP).		X	X	X	
1.j.4	Autorotational Landing	Torque—±3%, Rotor Speed—±3%, Vertical Velocity—±100 fpm (0.50 m/sec) or 10%, Pitch Attitude—±2°, Bank Attitude—±2°, Heading—±5°, Longitudinal Control Position—±10%, Lateral Control Position—±10%, Directional Control Position—±10%, Collective Control Position—±10%.	Landing	Record the results of an autorotational deceleration and landing from a stabilized autorotational descent, to touch down.			X	X	
2. Handling Qualities.									
2.a	Control System Mechanical Characteristic(s).								
	For simulators requiring Static or Dynamic tests at the controls (i.e., cyclic, collective, and pedal), special test fixtures will not be required during initial or upgrade evaluations if the sponsor's QTG/MQTG shows both test fixture results *and* the results of an alternative approach, such as computer plots produced concurrently showing satisfactory agreement. Repeat of the alternative method during the initial or upgrade evaluation would then satisfy this test requirement. For initial and upgrade evaluations, the control dynamic characteristics must be measured at and recorded directly from the cockpit controls, and must be accomplished in hover, climb, cruise, and autorotation.								Contact the NSPM for clarification of any issue regarding helicopters with reversible controls.

2.a.1	Cyclic	Breakout—±0.25 lbs. (0.112 daN) or 25%; Force—±1.0 lb. (0.224 daN) or 10%.	Ground; Static conditions. Trim On and Off. Friction Off. Augmentation On and Off.	Record results for an uninterrupted control sweep to the stops. (This test does not apply if aircraft hardware modular controllers are used.).		X	X	X	
2.a.2	Collective/Pedals	Breakout—±0.5 lb. (0.224 daN) or 25%; Force—±1.0 lb. (0.224 daN) or 10%..	Ground; Static conditions. Trim On and Off. Friction Off. Augmentation On and Off.	Record results for an uninterrupted control sweep to the stops.		X	X	X	
2.a.3	Brake Pedal Force vs. Position.	±5 lbs. (2.224 daN) or 10% ...	Ground; Static conditions.	.....		X	X	X	
2.a.4	Trim System Rate (all applicable systems).	Rate—±10%	Ground; Static conditions. Trim On, Friction Off.	The tolerance applies to the recorded value of the trim rate.		X	X	X	
2.a.5	Control Dynamics (all axes).	±10% of time for first zero crossing and ±10 (N+1)% of period thereafter, ±10% of amplitude of first overshoot, 20% of amplitude of 2nd and subsequent overshoots greater than 5% of initial displacement, ±1 overshoot.	Hover/Cruise, Trim On, Friction Off.	Results must be recorded for a normal control displacement in both directions in each axis.		.....	X	X	Typically, control displacement of 25% to 50% is necessary for proper excitation. Control Dynamics for irreversible control systems may be evaluated in a ground/static condition. Additional information on control dynamics is found later in this attachment. "N" is the sequential period of a full cycle of oscillation.

TABLE C2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS—Continued

<<<QPS requirements>>>									<<Information>>
Test		Tolerance(s)	Flight condition	Test details	Simulator level				Notes
No.	Title				A	B	C	D	
2.a.6	Freeplay	±0.10 in	Ground; Static conditions.	Record and compare results for all controls.		X	X	X	
2.b	Low Airspeed Handling Qualities.								
2.b.1	Trimmed Flight Control Positions.	Torque—±3% Pitch Attitude—±1.5° Bank Attitude—±2° Longitudinal Control Position—±5% Lateral Control Position—±5% Directional Control Position—±5% Collective Control Position—±5%.	Translational Flight IGE—Sideward, rearward, and forward flight. Augmentation On and Off.	Record results for several airspeed increments to the translational airspeed limits and for 45 kts. forward airspeed.. May be a series of snapshot tests.			X	X	
2.b.2	Critical Azimuth	Torque—±3% Pitch Hover—Bank Attitude—±2°, Longitudinal Control Position—±5%, Lateral Control Position—±5%, Directional Control Position—±5%, Collective Control Position—±5%.	Stationary Hover. Augmentation On and Off.	Record results for three relative wind directions (including the most critical case) in the critical quadrant. May be a series of snapshot tests.			X	X	
2.b.3	Control Response.								
2.b.3.a	Longitudinal	Pitch Rate—±10% or ±2% sec. Pitch Attitude Change—±10% or 1.5°.	Hover. Agumentation On and Off.	Record results for a step control input. The Off-axis response must show correct trend for unaugmented cases.			X	X	

2.b.3.b	Lateral	Roll Rate—±10% or ±2% sec. Pitch Attitude Change—±10% or 1.5°.	Hover. Augmentation On and Off.	Record results for a step control input. The Off-axis response must show correct trend for unaugmented cases.		X	X	
2.b.3.c	Directional	Yaw Rate—±10% or ±2% sec. Heading Change—±10% or 2°.	Hover. Augmentation On and Off.	Record results for a step control input. The Off-axis response must show correct trend for unaugmented cases.		X	X	
2.b.3.d	Vertical	Normal Acceleration—±0.1 g	Hover control input. The Off-axis response must show correct trend for unaugmented cases.	Record results for a step.		X	X	
2.c	Longitudinal Handling Qualities.							
2.c.1	Control Response	Pitch Rate—±10% or ±2°/sec., Pitch Attitude Change—±10% or ±1.5°.	Cruise Augmentation On and Off.	Results must be recorded for two cruise airspeeds to include minimum power required speed. Record data for a step control input. The Off-axis response must show correct trend for unaugmented cases.	X	X	X	

TABLE C2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS—Continued

<<<QPS requirements>>>									<<Information>>
Test		Tolerance(s)	Flight condition	Test details	Simulator level				Notes
No.	Title				A	B	C	D	
2.c.2	Static Stability	Longitudinal Control Position: ±10% of change from trim or ±0.25 in. (6.3 mm) or Longitudinal Control Force: ±0.5 lb. (0.223 daN) or ±10%.	Cruise or Climb. Autorotation. Augmentation On and Off.	Record results for a minimum of two speeds on each side of the trim speed. May be a series of snap-shot tests.		X	X	X	
2.c.3	Dynamic Stability.								
2.c.3.a	Long Term Response ..	±10% of calculated period, ±10% of time to ½ or double amplitude, or ±0.02 of damping ratio.	Cruise Augmentation On and Off.	Record results for three full cycles (6 overshoots after input completed) or that sufficient to determine time to ½ or double amplitude, whichever is less. For non-period responses, the time history must be matched.		X	X	X	
2.c.3.b	Short Term Response ..	±1.5° Pitch or ±2°/sec. Pitch Rate. ±0.1 g Normal Acceleration.	Cruise or Climb. Augmentation On and Off.	Record results for at least two airspeeds.		X	X	X	

2.c.4	Maneuvering Stability ...	Longitudinal Control Position—±10% of change from trim or ±0.25 in. (6.3mm) or Longitudinal Control Forces—±0.5 lb. (0.223 daN) or ±10%.	Cruise or Climb. Augmentation On and Off.	Record results for at least two airspeeds. The force may be shown as a cross plot for irreversible systems. May be a series of snapshot tests.		X	X	X	Typically, 30°–45° bank angle is necessary for adequate stability measurement.
2.c.5	Landing Gear Operating Times.	±1 sec	Takeoff (Retraction) Approach (Extension).		X	X	X	x[1]	
2.d	Lateral and Directional Handling Qualities.								
2.d.1	Control Response.								
2.d.1.a	Lateral	Roll Rate—±10% or ±3°/sec., Roll Attitude Change—±10% or ±3°.	Cruise Augmentation On and Off.	Record results for least two airspeeds, including the speed at or near the minimum power required airspeed. Record results for a step control input. The Off-axis response must show correct trend for unaugmented cases.		X	X	X	

TABLE C2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS—Continued

<<<QPS requirements>>>									<<Information>>
Test		Tolerance(s)	Flight condition	Test details	Simulator level				Notes
No.	Title				A	B	C	D	
2.d.1.b	Directional	Yaw Rate—±10% or ±2°/sec., Yaw Attitude Change—±10% or ±2°.	Cruise Augmentation On and Off.	Record data for at least two airspeeds, including the speed at or near the minimum power required airspeed. Record results for a step control input. The Off-axis response must show correct trend for unaugmented cases.		X	X	X	
2.d.2	Directional Static Stability.	Lateral Control Position—±10% of change from trim or ±0.25 in. (6.3mm) or Lateral Control Force—±0.5 lb. (0.223 daN) or 10%, Roll Attitude—±1.5, Directional Control Position—±10% of change from trim or ±0.25 in. (6.3mm) or Directional Control Force—±1 lb. (0.448 daN) or 10%., Longitudinal Control Position—±10% of change from trim or ±0.25 in. (6.3mm), Vertical Velocity—±100 fpm (0.50m/sec) or 10%.	Cruise; or Climb (may use Descent instead of Climb if desired), Augmentation On and Off.	Record results for at least two sideslip angles on either side of the trim point. The force may be shown as a cross plot for irreversible systems. May be a series of snapshot tests.		X	X	X	This is a steady heading sideslip test.
2.d.3	Dynamic Lateral and Directional Stability.								

2.d.3.a	Lateral-Directional Oscillations.	±0.5 sec. or ±10% of period, ±10% of time to ½ or double amplitude or ±0.02 of damping ratio, ±20% of ±1 sec. of time difference between peaks of bank and sideslip.	Cruise or Climb. Augmentation On/Off.	Record results for at least two airspeeds. The test must be initiated with a cyclic or a pedal doublet input. Record results for six full cycles (12 overshoots after input completed) or that sufficient to determine time to ½ or double amplitude, whichever is less. For nonperiodic response, the time history must be matched.		X	X	X
2.d.3.b	Spiral Stability	Correct Trend, ±2° bank or ±10% in 20 sec.	Cruise or Climb. Augmentation On and Off.	Record the results of a release from pedal only or cyclic only turns. Results must be recorded from turns in both directions.		X	X	X
2.d.3.c	Adverse/Proverse Yaw	Correct Trend, ±2° transient sideslip angle.	Cruise or Climb. Augmentation On and Off.	Record the time history of initial entry into cyclic only turns, using only a moderate rate for cyclic input. Results must be recorded for turns in both directions.		X	X	X
2. Handling Qualities.								

TABLE C2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS—Continued

<<<QPS requirements>>>									<<Information>>
Test		Tolerance(s)	Flight condition	Test details	Simulator level				Notes
No.	Title				A	B	C	D	
2.a	Control System								
3. Motion System.									
3.a	Motion Envelope.								
3.a.1	Pitch.								
3.a.1.a	Displacement—TBD° ...	.....	.....	.....	.....	X			
	±25°	.....	.....	.....			X	X	
3.a.1.b	Velocity—TBD°/sec	.....	.....	.....		X			
	±20°/sec	.....	.....	.....			X	X	
3.a.1.c	Acceleration—TBD°/sec^2.	.....	.....	.....		X			
	±100°/sec^2	.....	.....	.....		X	X		
3.a.2 3.a.2.a	Displacement—TBD° ...	.....	.....	.....		X			
	±25°	.....	.....	.....			X	X	
3.a.2.b	Velocity—TBD°/sec	.....	.....	.....		X			
	±20°/sec	.....	.....	.....			X	X	
3.a.2.c	Acceleration—TBD°/sec^2.	.....	.....	.....		X	.....		
	±100°/sec^2	.....	.....	.....			X	X	
3.a.3	Yaw								

3.a.3.a	Displacement – ±25° ...	.....	.....			X	X	
3.a.3.b	Velocity—±20°/sec	.....	.....			X	X	
3.a.3.c	Acceleration—±100°/sec^2.	.....	.....			X	X	
3.a.4	Vertical	.....	.....					
3.a.4.a	Displacement—TBD in	.....	.....	X				
	±34 in.	.....	.....			X	X	
3.a.4.b	Velocity—TBD in	.....	.....	X				
	±24 in	.....	.....			X	X	
3.a.4.c	Acceleration—TBD g ...	.....	.....	X	.....			
	±0.8 g	.....	.....			X	X	
3.A.5	Lateral							
	Displacement: ±45 in ..	.....	.....			X	X	
	Velocity: ±28 in/sec	.....	.....			X	X	
	Acceleration: ±0.6 g	.....	.....			X	X	
3.a.6	Longitudinal.							
	Displacement: ±34 in ...	.....	.....			X	X	
	Velocity: ±28 in/sec	.....	.....			X	X	
	Acceleration: ±0.6 g	.....	.....			X	X	
3.a.7	Initial Rotational Acceleration Ratio							
	All axes: TBD°/sec^2/sec	.....	.....	X				
	All axes: 300°/ sec^2/sec	.....	.....			X	X	
3.a.8	Initial Linear Acceleration Ratio.							

TABLE C2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS—Continued

<<<QPS requirements>>>									<<Information>>
Test		Tolerance(s)	Flight condition	Test details	Simulator level				Notes
No.	Title				A	B	C	D	
	Vertical: ±TBD g/sec	.....	.....	.....		X			
	±6g/sec	.....	.....	.....			X	X	
	Lateral: ±3g/sec	.....	.....	.....			X	X	
	Longitudinal: ±3g/sec ...	.....	.....	.....			X	X	
3.b	Frequency Response								
	Band, Hz Phase, deg. ..	Amplitude, Ratio, db, ...	.....	.....	.....	X	X	X	
	0.10 to 0.5 −15 to −20.	±2 ..... ±2	.....	.....	.....				
	0.51 to 1.0 −15 to −20.	±4, ... ±4	.....	.....	.....				
3.c	Leg Balance.								
	Leg Balance	1.5°	.....	The phase shift between a datum jack and any other jack must be measured using a heave (vertical) signal of 0.5 Hz. at ±0.25 g.	.....	X	X	X	
3.d	Turn Around.								

	Turn Around	0.05 g	.....	The motion base must be driven sinusoidally in heave through a displacement of 6 inches (150mm) peak to peak at a frequency of 0.5 Hz. Deviation from the desired sinusoidal acceleration must be measured.		X	X	X	
4	Visual System Display Tests.								
4.a	Field of View.								
4.a.1	Continuous collimated visual field of view.	Minimum continuous collimated field of view providing 75° horizontal and 30° vertical field of view for each pilot simultaneously.	N/A	An SOC is required. Horizontal field of view is centered on the zero degree azimuth line relative to the aircraft fuselage.		X			A vertical field of view of 30° may be insufficient to meet visual ground segment requirements. Field of view may be measured using a visual test pattern filling the entire visual scene (all channels) with a matrix of black and white 5° squares. The installed alignment should be addressed in the SOC.

TABLE C2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS—Continued

<<<QPS requirements>>>									<<Information>>
Test		Tolerance(s)	Flight condition	Test details	Simulator level				Notes
No.	Title				A	B	C	D	
4.a.2	Continuous collimated visual field of view.	Minimum continuous collimated field of view providing 150° horizontal and 40° vertical field of view for each pilot simultaneously.	N/A/	An SOC is required. Horizontal field of view is centered on the zero degree azimuth line relative to the aircraft fuselage.			X		Field of view may be measured using a visual test pattern filling the entire visual scene (all channels) with a matrix of black and white 5° squares. The installed alignment should be addressed in the SOC.
4.a.3	Continuous collimated visual field of view.	Minimum continuous collimated field of view providing 180° horizontal and 60° vertical field of view for each pilot simultaneously.	N/A	An SOC is required. Horizontal field of view is centered on the zero degree azimuth line relative to the aircraft fuselage.				X	Field of view may be measured using a visual test pattern filling the entire visual scene (all channels) with a matrix of black and white 5° squares. The installed alignment should be addressed in the SOC.

4.c	Surface contrast ratio ...	Not less than 5:1	N/A	The ratio is calculated by dividing the brightness level of the center, bright square (providing at least 2 foot-lamberts or 7 cd/ms^2) by the brightness level of any adjacent dark square.			X	Measurements may be made using a 1° spot photometer and a raster drawn test pattern filling the entire visual scene (all channels) with a test pattern of black and white squares, 5 per square, with a white square in the center of each channel. During contrast ratio testing, simulator aft-cab and flight deck ambient light levels should be zero.
4.d	Highlight brightness	Not less than six (6) foot-lamberts (20 cd/m^2).	N/A	Measure the brightness of the center, white square while superimposing a high-light on that white square. The use of calligraphic capabilities to enhance the raster brightness is acceptable; however, measuring light points is not acceptable.			X	Measurements may be made using a 1° spot photometer and a raster drawn test pattern filling the entire visual scene (all channels) with a test pattern of black and white squares, 5 per square, with a white square in the center of each channel.

TABLE C2A—FULL FLIGHT SIMULATOR (FFS) OBJECTIVE TESTS—Continued

<<<QPS requirements>>>								<<Information>>
Test		Tolerance(s)	Flight condition	Test details	Simulator level			Notes
No.	Title				A	B	C	D	
4.e	Vernier resolution (surface resolution).	Not greater than 3 arc minutes.	N/A	An SOC is required and must include the appropriate calculations and an explanation of those calculations.			X	X	
4.f	Light point size	Not greater than six (6) arc-minutes..	N/A	An SOC is required and must include the relevant calculations and an explanation of those calculations.			X	X	Light point size may be measured using a test pattern consisting of a centrally located single row of light points reduced in length until modulation is just discernible in each visual channel. A row of 48 lights will form a 4° angle or less.

4.g	Light point contrast ratio	Not less than 25:1	N/A	An SOC is required and must include the relevant calculations..			X	A 1° spot photometer may be used to measure a square of at least 1° filled with light points (where light point modulation is just discernible) and compare the results to the measured adjacent background. During contrast ratio testing, simulator aft-cab and flight deck ambient light levels should be zero.

BEGIN INFORMATION

2. CONTROL DYNAMICS.

a. General. The characteristics of a helicopter flight control system have a major effect on the handling qualities. A significant consideration in pilot acceptability of a helicopter is the ''feel'' provided through the flight controls. Considerable effort is expended on helicopter feel system design so that pilots will be comfortable and will consider the helicopter desirable to fly. In order for a FFS to be representative, it should ''feel'' like the helicopter being simulated. Compliance with this requirement is determined by comparing a recording of the control feel dynamics of the FFS to actual helicopter measurements in the takeoff, cruise and landing configurations.

b. Recordings such as free response to an impulse or step function are classically used to estimate the dynamic properties of electromechanical systems. In any case, it is only possible to estimate the dynamic properties as a result of only being able to estimate true inputs and responses. Therefore, it is imperative that the best possible data be collected since close matching of the FFS control loading system to the helicopter system is essential. The required dynamic control tests are described in Table C2A of this attachment.

c. For initial and upgrade evaluations, the QPS requires that control dynamics characteristics be measured and recorded directly from the flight controls (Handling Qualities—Table C2A). This procedure is usually accomplished by measuring the free response of the controls using a step or impulse input to excite the system. The procedure should be accomplished in the takeoff, cruise and landing flight conditions and configurations.

d. For helicopters with irreversible control systems, measurements may be obtained on the ground if proper pitot-static inputs are provided to represent airspeeds typical of those encountered in flight. Likewise, it may be shown that for some helicopters, hover, climb, cruise, and autorotation have like effects. Thus, one may suffice for another. If either or both considerations apply, engineering validation or helicopter manufacturer rationale should be submitted as justification for ground tests or for eliminating a configuration. For FFSs requiring static and dynamic tests at the controls, special test fixtures will not be required during initial and upgrade evaluations if the QTG shows both test fixture results and the results of an alternate approach (*e.g.*, computer plots that were produced concurrently and show satisfactory agreement). Repeat of the alternate method during the initial evaluation would satisfy this test requirement.

(1) Control Dynamics Evaluations. The dynamic properties of control systems are often stated in terms of frequency, damping, and a number of other classical measurements. In order to establish a consistent means of validating test results for FFS control loading, criteria are needed that will clearly define the measurement interpretation and the applied tolerances. Criteria are needed for underdamped, critically damped and overdamped systems. In the case of an underdamped system with very light damping, the system may be quantified in terms of frequency and damping. In critically damped or overdamped systems, the frequency and damping are not readily measured from a response time history. Therefore, the following suggested measurements may be used:

(2) For Levels C and D simulators. Tests to verify that control feel dynamics represent the helicopter should show that the dynamic damping cycles (free response of the controls) match those of the helicopter within specified tolerances. The NSPM recognizes that several different testing methods may be used to verify the control feel dynamic response. The NSPM will consider the merits of testing methods based on reliability and consistency. One acceptable method of evaluating the response and the tolerance to be applied is described below for the underdamped and critically damped cases. A sponsor using this method to comply with the QPS requirements should perform the tests as follows:

e. Tolerances.

(1) Underdamped Response.

(a) Two measurements are required for the period, the time to first zero crossing (in case a rate limit is present) and the subsequent frequency of oscillation. It is necessary to measure cycles on an individual basis in case there are non-uniform periods in the response. Each period will be independently compared to the respective period of the helicopter control system and, consequently, will enjoy the full tolerance specified for that period.

(b) The damping tolerance will be applied to overshoots on an individual basis. Care should be taken when applying the tolerance to small overshoots since the significance of such overshoots becomes questionable. Only those overshoots larger than 5 percent of the total initial displacement should be considered significant. The residual band, labeled $T(A_d)$ on Figure C2A is ±5 percent of the initial displacement amplitude A_d from the steady state value of the oscillation. Only oscillations outside the residual band are considered significant. When comparing FFS data to helicopter data, the process should begin by overlaying or aligning the FFS and airplane steady state values and then comparing amplitudes of oscillation peaks, the time of the first zero crossing, and individual

periods of oscillation. The FFS should show the same number of significant overshoots to within one when compared against the helicopter airplane data. The procedure for evaluating the response is illustrated in Figure C2A.

(2) Critically damped and Overdamped Response. overdamped response. Due to the nature of critically damped and overdamped responses (no overshoots), the time to reach 90 percent of the steady state (neutral point) value should be the same as the helicopter within ±10 percent. The simulator response must be critically damped also. Figure C2B illustrates the procedure.

(3) The following summarizes the tolerances:

$T(P_0)$ ±10% of P_0
$T(P_1)$ ±20% of P_1
T(A) ±10% of A_1, ±20% of Subsequent Peaks
$T(A_d)$ ±10% of A_d = Residual Band
Overshoots ±1

(4) In the event the number of cycles completed outside of the residual band, and thereby significant, exceeds the number depicted in figure 1 of this attachment, the following tolerances (T) will apply:

$T(P_n)$ ±10%(n+1)% of P_n, where ''n'' is the next in sequence.

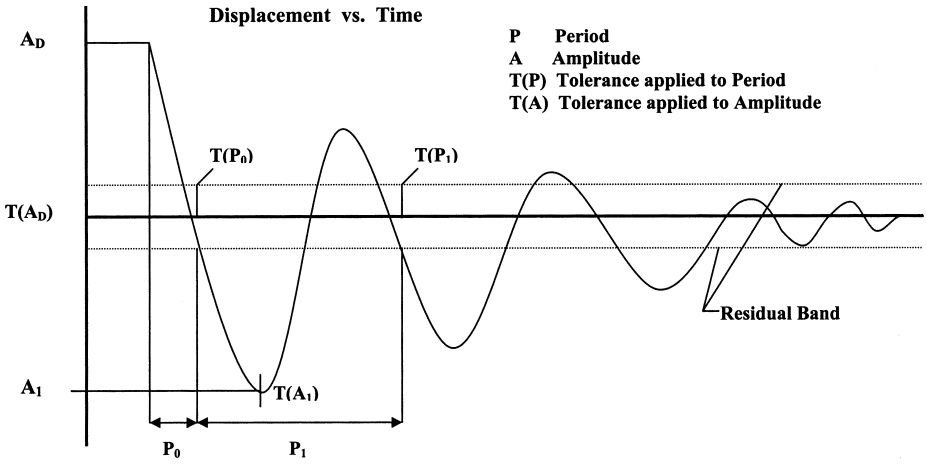


Figure C2A
Under-Damped Step Response

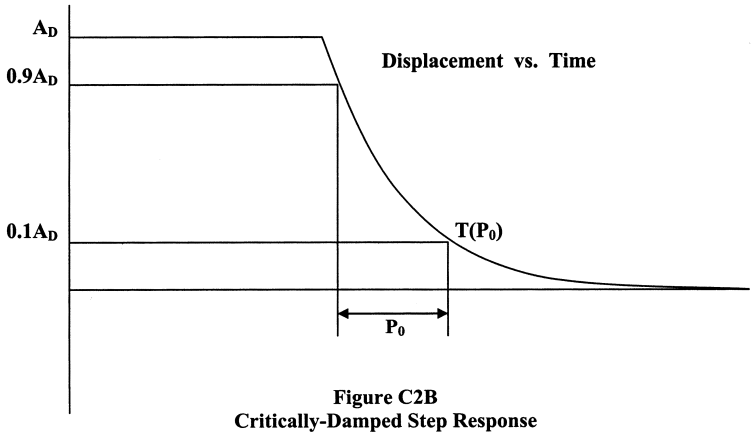


Figure C2B
Critically-Damped Step Response

3. MOTION CUE REPEATABILITY TESTING.

a. The motion system characteristics in the Table C2A address basic system capability, but not pilot cueing capability. Motion systems will continue to be ''tuned'' subjectively until there is an objective procedure for determining the motion cues necessary to support pilot tasks and stimulate the pilot response that occurs in a helicopter for the same tasks. When a motion system is tuned, it is important to test the system to ensure that it continues to perform as originally qualified. Any motion performance change from the initially qualified baseline can be measured objectively.

b. Motion performance change should be assessed at least annually. An assessment may be conducted as follows:

(1) Compare the current performance of the motion system to the initial recorded test data.

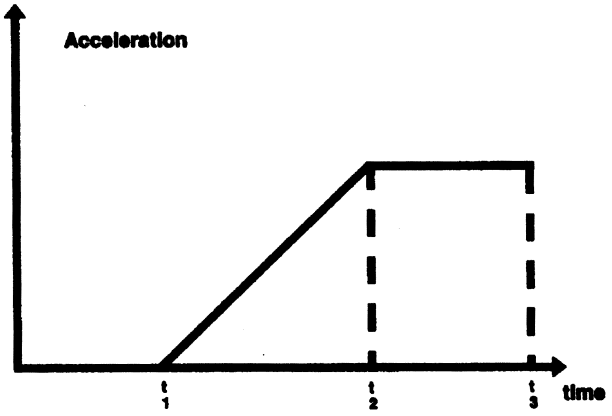
(2) Record the parameters of the motion drive algorithms and the jack position transducers.

(3) Insert the test input signals at an appropriate point prior to the integrations in

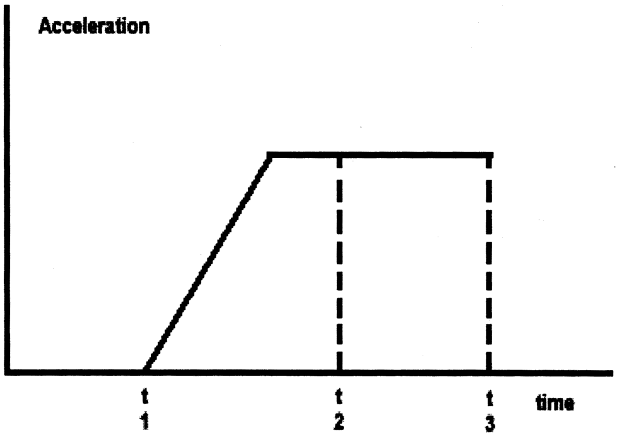
the equations of motion (see Figure C2C of this attachment).

(4) Adjust the characteristics of the test signal (see Figure C2D of this attachment) to ensure that the motion is exercised properly. Motion system manufactures suggest a range of approximately ⅔ of the maximum displacement capability in each axis with a time segment (T_0–T_1) of sufficient duration to ensure steady initial conditions.

Attachment 2 to Appendix C to Part 60—
Figure C2C. Acceleration Test Signals



Attachment 2 to Appendix C to Part 60—
Figure C2D. Test Signal Characteristics



NOTE: Motion system baseline performance repeatability tests should be rerun if the simulator weight changes for any reason (i.e., visual change, or structural change). The new results should be used for future comparison.

End Information

ATTACHMENT 3 TO APPENDIX C TO PART 60—SIMULATOR SUBJECTIVE EVALUATION

1. DISCUSSION

BEGIN INFORMATION

a. The subjective tests provide a basis for evaluating the capability of the simulator to perform over a typical utilization period; determining that the simulator competently simulates each required maneuver, procedure, or task; and verifying correct operation of the simulator controls, instruments, and systems. The items listed in the following Tables are for simulator evaluation purposes only. They must not be used to limit or exceed the authorizations for use of a given level of simulator as described on the Statement of Qualification or as may be approved by the TPAA. All items in the following paragraphs are subject to an examination.

b. The tests in Table A3A, Operations Tasks, in this attachment address pilot functions, including maneuvers and procedures (called flight tasks), and is divided by flight phases. The performance of these tasks by the NSPM includes an operational examination of the visual system and special effects. There are flight tasks included to address some features of advanced technology helicopters and innovative training programs.

c. The tests in Table A3A, Operations Tasks, and Table A3G, Instructor Operating Station, in this attachment addresses the overall function and control of the simulator including the various simulated environmental conditions; simulated helicopter system operation (normal, abnormal, and emergency); visual system displays; and special effects necessary to meet flight crew training, evaluation, or flight experience requirements.

d. All simulated helicopter systems functions will be assessed for normal and, where appropriate, alternate operations. Normal, abnormal, and emergency operations associated with a flight phase will be assessed during the evaluation of flight tasks or events within that flight phase. Simulated helicopter systems are listed separately under ''Any Flight Phase'' to ensure appropriate attention to systems checks. Operational navigation systems (including inertial navigation systems, global positioning systems, or other long-range systems) and the associated electronic display systems will be evaluated if installed. The NSP pilot will include in his report to the TPAA, the effect of the system operation and any system limitation.

e. Simulators demonstrating a satisfactory circling approach will be qualified for the circling approach maneuver and may be approved for such use by the TPAA in the sponsor's FAA-approved flight training program. To be considered satisfactory, the circling approach will be flown at maximum gross weight for landing, with minimum visibility for the helicopter approach category, and must allow proper alignment with a landing runway at least 90° different from the instrument approach course while allowing the pilot to keep an identifiable portion of the airport in sight throughout the maneuver (reference—14 CFR 91.175(e)).

f. At the request of the TPAA, the NSP Pilot may assess the simulator for a special aspect of a sponsor's training program during the functions and subjective portion of an evaluation. Such an assessment may include a portion of a Line Oriented Flight Training (LOFT) scenario or special emphasis items in the sponsor's training program. Unless directly related to a requirement for the qualification level, the results of such an evaluation would not affect the qualification of the simulator.

g. The NSPM acknowledges that there are previously qualified simulators with certain, early generation Computer Generated Image (CGI) visual systems, that are limited by either the capability of the Imgage Generator or the display system used. As a result, the NSPM has agreed to discuss the specific circumstances that may be determined to exist and has agreed to reach a mutually acceptable course of action to address these limitations beyond those that are listed in the QPS requirements of this table. The following are examples:

(1) Early CGI visual systems that are exempt from the necessity of including runway numbers as a part of the specific runway marking requirements are:

(a) Link NVS and DNVS.

(b) Novoview 2500 and 6000.

(c) FlightSafety VITAL series up to, and including, VITAL III, but not beyond.

(d) Redifusion SP1, SP1T, and SP2.

(2) Early CGI visual systems that are exempt from the necessity of including runway numbers except for those runways used for LOFT training sessions. These LOFT airport models require runway numbers but only for the specific runway end (one direction) used in the LOFT session. The systems required to display runway numbers only for LOFT scenes are:

(a) FlightSafety VITAL IV.

(b) Redifusion SP3 and SP3T.

(c) Link-Miles Image II.

(3) Previously qualified CGI and/or display systems that are incapable of generating blue lights, and therefore will not be required to have accurate taxi-way edge lighting are:

(a) Redifusion SP1 and SP1T.

(b) FlightSafety Vital IV.

(c) Link-Miles Image II and Image IIT

(d) XKD displays (even though the XKD image generator is capable of generating

blue colored lights, the display cannot accommodate that color).

END INFORMATION

TABLE C3A—FUNCTIONS AND SUBJECTIVE TESTS

<<< QPS requirements >>>					
No.	Operations tasks	Simulator level			
		A	B	C	D
Tasks in this table are subject to evaluation if appropriate for the helicopter simulated as indicated in the SOQ Configuration List and/or the level of simulator qualification involved. Items not installed or not functional on the simulator and, therefore, not appearing on the SOQ Configuration List, are not required to be listed as exceptions on the SOQ.					
1. Preparation For Flight					
1.a	Cockpit check: switches, indicators, systems, and equipment		X	X	X
2. APU/Engine start and run-up					
2.a	Normal start procedures		X	X	X
2.b	Alternate start procedures		X	X	X
2.c	Abnormal starts and shutdowns (e.g., hot start, hung start)		X	X	X
2.d	Rotor engagement		X	X	X
2.e	System checks		X	X	X
3. (Reserved)					
4. (Reserved)					
5. (Reserved)					
6. Take-off					
6.a	Normal		X	X	X
6.a.1	From ground		X	X	X
6.a.2	From hover		X	X	X
6.a.2.a	Cat A		X	X	X
6.a.2.b	Cat B		X	X	X
6.a.3	Running		X	X	X
6.a.4	Crosswind/tailwind		X	X	X
6.a.5	Maximum performance		X	X	X
6.a.6	Instrument		X	X	X
6.a.7	(Reserved).				
6.a.8	(Reserved).				
6.a.9	(Reserved).				
6.a.10	(Reserved).				
6.b	Abnormal/emergency procedures		X	X	X
6.b.1	Takeoff with engine failure after critical decision point (CDP)		X	X	X
6.b.1.a	Cat A		X	X	X
6.b.1.b	Cat B		X	X	X
6.c	(Reserved).				
7. Climb					

TABLE C3A—FUNCTIONS AND SUBJECTIVE TESTS—Continued

<<< QPS requirements >>>					
No.	Operations tasks	Simulator level			
		A	B	C	D
7.a	Normal		X	X	X
7.b	(Reserved).				
7.c	(Reserved).				
7.d	One engine inoperative		X	X	X
8. Cruise					
8.a	Performance		X	X	X
8.b	Flying qualities		X	X	X
8.c	Turns		X	X	X
8.c.1	Timed		X	X	X
8.c.2	Normal		X	X	X
8.c.3	Steep		X	X	X
8.d	Accelerations and decelerations		X	X	X
8.e	High speed vibrations		X	X	X
8.f	(Reserved).				
8.g	Abnormal/emergency procedures		X	X	X
8.g.1	Engine fire		X	X	X
8.g.2	Engine failure		X	X	X
8.g.3	Inflight engine shutdown and restart		X	X	X
8.g.4	Fuel governing system failures		X	X	X
8.g.5	Directional control malfunction		X	X	X
8.g.6	Hydraulic failure		X	X	X
8.g.7	Stability system failure		X	X	X
8.g.8	Rotor vibrations		X	X	X
9. Descent					
9.a	Normal		X	X	X
9.b	Maximum rate		X	X	X
9.c	(Reserved).				
10. Approach					
10.a	Non-precision		X	X	X
10.a.1	All engines operating		X	X	X
10.a.2	One or more engines inoperative		X	X	X
10.a.3	Approach procedures		X	X	X
10.a.3.a	NDB		X	X	X
10.a.3.b	VOR, RNAV, TACAN		X	X	X
10.a.3.c	ASR		X	X	X

TABLE C3A—FUNCTIONS AND SUBJECTIVE TESTS—Continued

<<< QPS requirements >>>					
No.	Operations tasks	Simulator level			
		A	B	C	D
10.a.3.d	(Reserved).				
10.a.3.e	Helicopter only		X	X	X
10.a.4	Missed approach		X	X	X
10.a.4.a	All engines operating		X	X	X
10.a.4.b	One or more engines inoperative		X	X	X
10.b	Precision		X	X	X
10.b.1	All engines operating		X	X	X
10.b.2	One or more engines inoperative		X	X	X
10.b.3	Approach procedures		X	X	X
10.b.3.a	PAR		X	X	X
10.b.3.b	MLS		X	X	X
10.b.3.c	ILS		X	X	X
10.b.3.c	(1) Manual (raw data)		X	X	X
10.b.3.c	(2) Flight director only		X	X	X
10.b.3.c	(3) Autopilot coupled		X	X	X
10.b.3.c	—Cat I		X	X	X
10.b.3.c	—Cat II		X	X	X
10.b.4	Missed approach.				
10.b.4.a	All engines operating		X	X	X
10.b.4.b	One or more engines inoperative		X	X	X
10.b.4.c	Stability system failure		X	X	X
10.c	(Reserved).				
11. (Reserved)					
12. Any Flight Phase					
12.a	Helicopter and powerplant systems operation.				
12.a.1	Air conditioning		X	X	X
12.a.2	Anti-icing/deicing		X	X	X
12.a.3	Auxiliary power-plant		X	X	X
12.a.4	Communications		X	X	X
12.a.5	Electrical		X	X	X
12.a.6	Fire detection and suppression		X	X	X
12.a.7	Stabilizer		X	X	X
12.a.8	Flight controls		X	X	X
12.a.9	Fuel and oil		X	X	X
12.a.10	Hydraulic		X	X	X

TABLE C3A—FUNCTIONS AND SUBJECTIVE TESTS—Continued

<<< QPS requirements >>>					
No.	Operations tasks	Simulator level			
		A	B	C	D
12.a.11	Landing gear		X	X	X
12.a.12	Oxygen		X	X	X
12.a.13	Pneumatic		X	X	X
12.a.14	Powerplant		X	X	X
12.a.15	Flight control computers		X	X	X
12.a.16	Stability and control augmentation		X	X	X
12.b	Flight management and guidance system.				
12.b.1	Airborne radar		X	X	X
12.b.2	Automatic landing aids		X	X	X
12.b.3	Autopilot		X	X	X
12.b.4	Collision avoidance system		X	X	X
12.b.5	Flight data displays		X	X	X
12.b.6	Flight management computers		X	X	X
12.b.7	Heads-up displays		X	X	X
12.b.8	Navigation systems		X	X	X
12.c	Airborne procedures.				
12.c.1	Holding		X	X	X
12.c.2	Air hazard avoidance		X	X	X
12.c.3	Retreating blade stall recovery		X	X	X
12.c.4	Mast bumping		X	X	X
13. Engine Shutdown and Parking					
13.a	Engine and systems operation		X	X	X
13.b	Parking brake operation		X	X	X
13.c	Rotor brake operation		X	X	X
13.d	Abnormal/emergency procedures		X	X	X

Table C3B [Reserved]

Table C3C [Reserved]

TABLE C3D—FUNCTIONS AND SUBJECTIVE TESTS

<<< QPS requirements >>>					
Number	Instructor Operating Station (IOS) (As appropriate)	Simulator level			
		A	B	C	D
Functions in this table are subject to evaluation only if appropriate for the helicopter and/or the system is installed on the specific simulator.					
1. Simulator Power Switch(es)			X	X	X

TABLE C3D—FUNCTIONS AND SUBJECTIVE TESTS—Continued

<<< QPS requirements >>>					
Number	Instructor Operating Station (IOS) (As appropriate)	Simulator level			
		A	B	C	D
2. Helicopter conditions					
2.a	Gross weight, center of gravity, fuel loading and allocation	....	X	X	X
2.b	Helicopter systems status	....	X	X	X
2.c.	Ground crew functions	....	X	X	X
3. Airports/Heliports					
3.a	Number and selection	....	X	X	X
3.b	Runway or landing area selection	....	X	X	X
3.c	Landing surface conditions (rough, smooth, icy, wet, dry, snow)	....	X	X	X
3.d	Preset positions	....	X	X	X
3.e	Lighting controls	....	X	X	X
4. Environmental controls					
4.a	(Reserved).				
4.b	(Reserved).				
4.c	Temperature	....	X	X	X
4.d	Climate conditions	....	X	X	X
4.e	Wind speed and direction	....	X	X	X
4.f	(Reserved)	....	....	....	
5. Helicopter system malfunctions (Insertion/deletion)		X	X	X	
6. Locks, Freezes, and Repositioning					
6.a	Problem (all) freeze/release	....	X	X	X
6.b	Position (geographic) freeze/release	....	X	X	X
6.c	Repositioning (locations, freezes, and releases)	....	X	X	X
6.d	Ground speed control	....	X	X	X
7. Remote IOS.		X	X	X	
8. Sound Controls. On/off/adjustment		X	X	X	
9. Motion/Control Loading System					
9.a	On/off/emergency stop	....	X	X	X
10. Observer Seats/Stations. Position/Adjustment/Positive restraint system		X	X	X	

ATTACHMENT 4 TO APPENDIX C TO PART 60—SAMPLE DOCUMENTS

TABLE OF CONTENTS

Title of Sample

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ATTACHMENT 4 TO APPENDIX C TO PART 60—
Figure A4A – Sample Letter , Request for Initial, Upgrade, or Reinstatement Evaluation
INFORMATION

Date _____

Charles A. Spillner
Manager, National Simulator Program
Federal Aviation Administration
100 Hartsfield Centre Parkway
Suite 400
Atlanta, GA 30354

Dear Mr. Spillner:

RE: Request for Initial/Upgrade Evaluation Date

This is to advise you of our intent to request an (initial or upgrade) evaluation of our (FSTD Manufacturer), (Aircraft Type/Level) Flight Simulation Training Device (FSTD), (FAA ID Number, if previously qualified), located in (City, State) at the (Facility) on (Proposed Evaluation Date). (The proposed evaluation date shall not be more than 180 days following the date of this letter.) The FSTD will be sponsored by (Name of Training Center/Air Carrier), FAA Designator (4 Letter Code). The FSTD will be sponsored under the following options: (Select One)

☐ The FSTD will be used within the sponsor's FAA approved training program and placed on the sponsor's Training/Operations Specifications; or

☐ The FSTD will be used for dry lease only in accordance with Paragraph 3b, FSTD Guidance Bulletin 03-08.

We agree to provide the formal request for the evaluation (*Ref: Appendix 4, AC 120-40B*) to your staff as follows: (check one)

☐ For QTG tests run at the factory, not later, than 45 days prior to the proposed evaluation date with the additional "l/3 on-site" tests provided not later than 14 days prior to the proposed evaluation date.

☐ For QTG tests run on-site, not later than 30 days prior to the proposed evaluation date.

We understand that the formal request will contain the following documents:

7. Sponsor's Letter of Request (*Company Compliance Letter*).
8. Principal Operations Inspector (POI) or Training Center Program Manager's (TCPM) endorsement.
9. Complete QTG.

If we are unable to meet the above requirements, we understand this may result in a significant delay, perhaps 45 days or more, in rescheduling and completing the evaluation.

(The sponsor should add additional comments as necessary).

Please contact (Name Telephone and Fax Number of Sponsor's Contact) to confirm the date for this initial evaluation. We understand a member of your National Simulator Program staff will respond to this request within 14 days.

A copy of this letter of intent has been provided to (Name), the Principal Operations Inspector (POI) and/or Training Center Program Manager (TCPM).

Sincerely,

Attachment: FSTD Information Form
cc: POI/TCPM

ATTACHMENT 4 TO APPENDIX C TO PART 60—
Figure A4B – Sample Letter , Request for Initial, Upgrade, or Reinstatement Evaluation
Attachment: FSTD Information Form
INFORMATION

Date: ____					
Section 1. FSTD Information and Characteristics					
Sponsor Name:	____		**FSTD Location:**		
Address:	____		**Physical Address:**	____	
City:	____		**City:**	____	
State:	____		**State:**	____	
Country:	____		**Country:**	____	
ZIP:	____		**ZIP:**	____	
Manager	____				
Sponsor ID No: *(Four Letter FAA Designator)*	____		**Nearest Airport:** *(Airport Designator)*	____	
Type of Evaluation Requested:			☐ **Initial** ☐ **Upgrade** ☐ **Recurrent** ☐ **Special** ☐ **Reinstatement**		
Qualification Basis: ____	☐ **A**	☐ **B**	☐ **Interim C**	☐ **C**	☐ **D**
	☐ **6**	☐ **7**	☐ **Provisional Status**		
Initial Qualification: (If Applicable)	**Date:** ____ **Level** ____		**Manufacturer's Identification/Serial No:**	____	
Upgrade Qualification: (If Applicable)	**Date:** ____ **Level** ____ MM/DD/YYYY		☐ **eQTG**		
Other Technical Information:					
FAA FSTD ID No: (If Applicable)	____		**FSTD Manufacturer:**	____	
Convertible FSTD:	☐**Yes:**		**Date of Manufacture:**	____ MM/DD/YYYY	
Related FAA ID No. (If Applicable)	____ ____ ____		**Sponsor FSTD ID No:** ____		
Aircraft model/series: ____			**Source of aerodynamic model:** ____		
Engine model(s) and data revision: ____			**Source of aerodynamic coefficient data:** ____		
FMS identification and revision level: ____			**Aerodynamic data revision number:** ____		
Visual system manufacturer/model: ____			**Visual system display:** ____		
Flight control data revision: ____			**FSTD computer(s) identification:** ____		
Motion system manufacturer/type: ____					
National Aviation Authority (NAA): (If Applicable)	____			____	
NAA FSTD ID No:	____		**Last NAA Evaluation Date:**	____	
NAA Qualification Level:	____				
NAA Qualification Basis:	____				

ATTACHMENT 4 TO APPENDIX C TO PART 60—
Figure A4B – Sample Letter , Request for Initial, Upgrade, or Reinstatement Evaluation
Attachment: FSTD Information Form
INFORMATION

Visual System Manufacturer and Type:	____	**Motion System Manufacturer and Type:**	____
Aircraft Make/Model/Series:	____	**FSTD Seats Available:**	____

Aircraft Equipment	**ENGINE TYPE(S):** ____	**Flight Instrumentation:** ☐ EFIS ☐ HUD ☐ HGS ☐ EFVS ☐ TCAS ☐ GPWS ☐ Plain View ☐ GPS ☐ FMS Type: ____ ☐ WX Radar ☐ Other: ____	Engine Instrumentation: ☐ EICAS ☐ FADEC ☐ Other: ____

Airport Models:	3.6.1 ____ *Airport Designator*	3.6.2 ____ *Airport Designator*	3.6.3 ____ *Airport Designator*
Circle to Land:	3. 7.1 ____ *Airport Designator*	3. 7.2 ____ *Approach*	3. 7.3 ____ *Landing Runway*
Visual Ground Segment	3.8.1 ____ *Airport Designator*	3.8 .2 ____ *Approach*	3. 8.3 ____ *Landing Runway*

Section 2. Supplementary Information

FAA Training Program Approval Authority:		☐ **POI** ☐ **TCPM** ☐ **Other:** ____	
Name:	____	**Office:**	____
Tel:	____	**Fax:**	____
Email:	____		

FSTD Scheduling Person:			
Name:	____		
Address 1:	____	**Address 2**	____
City:	____	**State:**	____
ZIP:	____	**Email:**	____
Tel:	____	**Fax:**	____

FSTD Technical Contact:			
Name:	____		
Address 1:	____	**Address 2**	____
City:	____	**State:**	____
ZIP:	____	**Email:**	____
Tel:	____	**Fax:**	____

Section 3. Training, Testing and Checking Considerations

Area/Function/Maneuver	Requested	Remarks
Private Pilot - Training / Checks: (142)	☐	____
Commercial Pilot - Training /Checks:(142)	☐	____
Multi-Engine Rating - Training / Checks (142)	☐	____
Instrument Rating -Training / Checks (142)	☐	____
Type Rating - Training / Checks (135/121/142)	☐	____
Proficiency Checks (135/121/142)	☐	____
CAT I: (RVR 2400/1800 ft. DH200 ft)	☐	____

ATTACHMENT 4 TO APPENDIX C TO PART 60—
Figure A4B – Sample Letter , Request for Initial, Upgrade, or Reinstatement Evaluation
Attachment: FSTD Information Form
INFORMATION

CAT III * (lowest minimum) _____ RVR _____ ft. * *State CAT III (≤ 700 ft.), CAT IIIb (≤ 150 ft.), or CAT IIIc (0 ft.)*	☐	____
Circling Approach	☐	____
Windshear Training: (FSTD GB 03-05)	☐	____
Windshear Training IAW 121.409d (121 Turbojets Only) (FSTD GB 03-05)	☐	____
Generic Unusual Attitudes and Recoveries within the Normal Flight Envelope (FSTD GB 04-03)	☐	____
Specific Unusual Attitudes Recoveries (HBAT 95-10) (FSTD GB 04-03)	☐	____
Auto-coupled Approach/Auto Go Around	☐	____
Auto-land / Roll Out Guidance	☐	____
TCAS/ACAS I / II	☐	____
WX-Radar	☐	____
HUD (FSTD GB 03-02)	☐	____
HGS (FSTD GB 03-02)	☐	
EFVS (FSTD GB 03-03)	☐	
Future Air Navigation Systems (HBAT 98-16A)	☐	____
GPWS / EGPWS	☐	____
ETOPS Capability	☐	____
GPS	☐	____
SMGCS	☐	____
Helicopter Slope Landings	☐	____
Helicopter External Load Operations	☐	____
Helicopter Pinnacle Approach to Landings	☐	____
Helicopter Night Vision Maneuvers	☐	____
Helicopter Category A Takeoffs	☐	____

ATTACHMENT 4 TO APPENDIX C TO PART 60—
Figure A4C – Sample Qualification Test Guide Cover Page
INFORMATION

SPONSOR NAME

SPONSOR ADDRESS

FAA QUALIFICATION TEST GUIDE

(SPECIFIC Helicopter MODEL)
for example
Farnsworth Z-100

(Type of Simulator)

(Simulator Identification Including Manufacturer, Serial Number, Visual System Used)

(Simulator Level)

(Qualification Performance Standard Used)

(Simulator Location)

FAA Initial Evaluation

Date: _____

_____ Date: _____
(Sponsor)

_____ Date: _____
Manager, National
Simulator Program, FAA

ATTACHMENT 4 TO APPENDIX C TO PART 60—
Figure A4D – Sample Statement of Qualification - Certificate

INFORMATION

Federal Aviation Administration
National Simulator Program

Statement of Qualification

This is to certify that representatives of the National Simulator Program Completed an evaluation of the

Go-Fast Airlines
Farnsworth Z-100 Full Flight Simulator
FAA Identification Number 0999

And found it to meet the standards set forth in
AC 120-63

The Master Qualification Test Guide and the attached Configuration List and List of Qualified Tasks Provide the Qualification Basis for this device to operate at

Level D

Until March 30, 2009

Unless sooner rescinded or extended by the National Simulator Program Manager

February 15, 2008 (date)

I. B. Checkin, Jr. (for the NSPM)

ATTACHMENT 4 TO APPENDIX C TO PART 60—

Figure A4E – Sample Statement of Qualification; Configuration List

INFORMATION

STATEMENT of QUALIFICATION
CONFIGURATION LIST

Date: ____					
Section 1. FSTD Information and Characteristics					
Sponsor Name:	____		**FSTD Location:**		
Address:	____ ____		**Physical Address:**	____ ____	
City:	____		**City:**	____	
State:	____		**State:**	____	
Country:	____		**Country:**	____	
ZIP:	____		**ZIP:**	____	
Manager	____				
Sponsor ID No: *(Four Letter FAA Designator)*	____		**Nearest Airport:** *(Airport Designator)*	____	
Type of Evaluation Requested:			☐ **Initial** ☐ **Upgrade** ☐ **Recurrent** ☐ **Special** ☐ **Reinstatement**		
Qualification Basis: ____	☐ **A**	☐ **B**	☐ **Interim C**	☐ **C**	☐ **D**
	☐ **6**	☐ **7**	☐ **Provisional Status**		
Initial Qualification: (If Applicable)	**Date:** ____ **Level** ____		**Manufacturer's Identification/Serial No:**	____	
Upgrade Qualification: (If Applicable)	**Date:** ____ **Level** ____ MM/DD/YYYY		☐ **eQTG**		
Other Technical Information:					
FAA FSTD ID No: (If Applicable)	____		**FSTD Manufacturer:**	____	
Convertible FSTD:	☐**Yes**:		**Date of Manufacture**:	____ MM/DD/YYYY	
Related FAA ID No. (If Applicable)	____ ____ ____		**Sponsor FSTD ID No:** ____		
Aircraft model/series: ____			**Source of aerodynamic model:** ____		
Engine model(s) and data revision: ____			**Source of aerodynamic coefficient data:** ____		
FMS identification and revision level: ____			**Aerodynamic data revision number:** ____		
Visual system manufacturer/model: ____			**Visual system display:** ____		
Flight control data revision: ____			**FSTD computer(s) identification:** ____		
Motion system manufacturer/type: ____					
National Aviation Authority (NAA): (If Applicable)	____			____	
NAA FSTD ID No:	____		**Last NAA Evaluation Date:**	____	
NAA Qualification Level:	____				
NAA Qualification Basis:	____				

ATTACHMENT 4 TO APPENDIX C TO PART 60—

Figure A4E – Sample Statement of Qualification; Configuration List

INFORMATION

Visual System Manufacturer and Type:	____	**Motion System Manufacturer and Type:**	____
Aircraft Make/Model/Series:	____	**FSTD Seats Available:**	____

Aircraft Equipment	**ENGINE TYPE(S):** ____	**Flight Instrumentation:** ☐ EFIS ☐ HUD ☐ HGS ☐ EFVS ☐ TCAS ☐ GPWS ☐ Plain View ☐ GPS ☐ FMS Type: ____ ☐ WX Radar ☐ Other: ____	Engine Instrumentation: ☐ EICAS ☐ FADEC ☐ Other: ____

Airport Models:	3.6.1 ____ *Airport Designator*	3.6.2 ____ *Airport Designator*	3.6.3 ____ *Airport Designator*
Circle to Land:	3. 7.1 ____ *Airport Designator*	3. 7.2 ____ *Approach*	3. 7.3 ____ *Landing Runway*
Visual Ground Segment	3.8.1 ____ *Airport Designator*	3.8 .2 ____ *Approach*	3. 8.3 ____ *Landing Runway*

Section 2. Supplementary Information

FAA Training Program Approval Authority:		☐ POI ☐ TCPM ☐ Other: ____	
Name:	____	**Office:**	____
Tel:	____	**Fax:**	____
Email:	____		

FSTD Scheduling Person:			
Name:	____		
Address 1:	____	**Address 2**	____
City:	____	**State:**	____
ZIP:	____	**Email:**	____
Tel:	____	**Fax:**	____

FSTD Technical Contact:			
Name:	____		
Address 1:	____	**Address 2**	____
City:	____	**State:**	____
ZIP:	____	**Email:**	____
Tel:	____	**Fax:**	____

Section 3. Training, Testing and Checking Considerations

Area/Function/Maneuver	Requested	Remarks
Private Pilot - Training / Checks: (142)	☐	____
Commercial Pilot - Training /Checks:(142)	☐	____
Multi-Engine Rating - Training / Checks (142)	☐	____
Instrument Rating -Training / Checks (142)	☐	____
Type Rating - Training / Checks (135/121/142)	☐	____
Proficiency Checks (135/121/142)	☐	____

ATTACHMENT 4 TO APPENDIX C TO PART 60—

Figure A4E – Sample Statement of Qualification; Configuration List

INFORMATION		
CAT III * (lowest minimum) _____ RVR _____ ft. * *State CAT III (≤ 700 ft.), CAT IIIb (≤ 150 ft.), or CAT IIIc (0 ft.)*	☐	____
Circling Approach	☐	____
Windshear Training: (FSTD GB 03-05)	☐	____
Windshear Training IAW 121.409d (121 Turbojets Only) (FSTD GB 03-05)	☐	____
Generic Unusual Attitudes and Recoveries within the Normal Flight Envelope (FSTD GB 04-03)	☐	____
Specific Unusual Attitudes Recoveries (HBAT 95-10) (FSTD GB 04-03)	☐	____
Auto-coupled Approach/Auto Go Around	☐	____
Auto-land / Roll Out Guidance	☐	____
TCAS/ACAS I / II	☐	____
WX-Radar	☐	____
HUD (FSTD GB 03-02)	☐	____
HGS (FSTD GB 03-02)	☐	
EFVS (FSTD GB 03-03)	☐	
Future Air Navigation Systems (HBAT 98-16A)	☐	____
GPWS / EGPWS	☐	____
ETOPS Capability	☐	____
GPS	☐	____
SMGCS	☐	____
Helicopter Slope Landings	☐	____
Helicopter External Load Operations	☐	____
Helicopter Pinnacle Approach to Landings	☐	____
Helicopter Night Vision Maneuvers	☐	____
Helicopter Category A Takeoffs	☐	____

ATTACHMENT 4 TO APPENDIX C TO PART 60—

Figure A4F – Sample Statement of Qualification – List of Qualified Tasks

INFORMATION

STATEMENT of QUALIFICATION
List of Qualified Tasks
Go Fast Airline Training -- Farnsworth Z-100 -- Level D -- FAA ID# 0999

The FSTD is qualified to perform all of the Maneuvers, Procedures, Tasks, and Functions Listed in Appendix A, Attachment 1, Table A1B, Minimum FSTD Requirements In Effect on [mm/dd/yyyy] except for the following listed Tasks or Functions.

Qualified for all tasks in Table C1B for which the sponsor has requested qualification, except for the following: 6.e. Environmental system. 6.f. Fire detection and extinguisher system. 7.b. In-flight fire and smoke removal. 7.d. Ditching.
Additional tasks for which this FSTD is qualified (i.e., in addition to the list in Table C1B) Enhanced Visual System

Attachment 4 to Appendix C to Part 60—
Figure A4G – Sample Continuing Qualification Evaluation Requirements Page
INFORMATION

Recurrent Evaluation Requirements ***Completed at conclusion of Initial Evaluation***	
Recurrent Evaluations to be conducted each _(fill in)__ months Allotting _____ hours of FTD time. Signed: _____ NSPM / Evaluation Team Leader	Recurrent evaluations are due as follows: _(month)__ and __(month)_ and __(month)_ (enter or strike out, as appropriate) _____ Date

Revision: Based on (enter reasoning):	
Recurrent Evaluations are to be conducted each _(fill in)__ months. Allotting _____ hours. Signed: _____ NSPM Evaluation Team Leader	Recurrent evaluations are due as follows: _(month)__ and __(month)_ and __(month)_ (enter or strike out, as appropriate) _____ Date

Revision: Based on (enter reasoning):	
Recurrent Evaluations are to be conducted each _(fill in)__ months. Allotting _____ hours. Signed: _____ NSPM Evaluation Team Leader	Recurrent evaluations are due as follows: _(month)__ and __(month)_ and __(month)_ (enter or strike out, as appropriate) _____ Date

(Repeat as Necessary)

Index of Effective FSTD Directives
Filed in this Section

Notification Number	Received From: (TPAA/NSPM)	Date of Notification	Date of Modification Completion

Continue as Necessary....

APPENDIX D TO PART 60—QUALIFICATION PERFORMANCE STANDARDS FOR HELICOPTER FLIGHT TRAINING DEVICES

BEGIN INFORMATION

This appendix establishes the standards for Helicopter Flight Training Device (FTD) evaluation and qualification at Level 4, Level 5, or Level 6. The Flight Standards Service, National Simulator Program Manager (NSPM), is responsible for the development, application, and implementation of the standards contained within this appendix. The procedures and criteria specified in this appendix will be used by the NSPM, or a person or persons assigned by the NSPM when conducting helicopter FTD evaluations.

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END INFORMATION

1. INTRODUCTION

BEGIN INFORMATION

a. This appendix contains background information as well as regulatory and informative material as described later in this section. To assist the reader in determining what areas are required and what areas are permissive, the text in this appendix is divided into two sections: ''QPS Requirements'' and ''Information.'' The QPS Requirements sections contain details regarding compliance with the part 60 rule language. These details are regulatory, but are found only in this appendix. The Information sections contain material that is advisory in nature, and designed to give the user general information about the regulation.

b. Related Reading References.

(1) 14 CFR part 60

(2) 14 CFR part 61.

(3) 14 CFR part 63.

(4) 14 CFR part 119.

(5) 14 CFR part 121.

(6) 14 CFR part 125

(7) 14 CFR part 135.

(8) 14 CFR part 141

(9) 14 CFR part 142

(10) Advisory Circular (AC) 120–28C, Criteria for Approval of Category III Landing Weather Minima.

(11) AC 120–29, Criteria for Approving Category I and Category II Landing Minima for part 121 operators.

(12) AC 120–35B, Line Operational Simulations: Line-Oriented Flight Training, Special Purpose Operational Training, Line Operational Evaluation.

(13) AC 120–41, Criteria for Operational Approval of Airborne Wind Shear Alerting and Flight Guidance Systems.

(14) AC 120–57A, Surface Movement Guidance and Control System (SMGS).

(15) AC 150/5300–13, Airport Design.

(16) AC 150/5340–1G, Standards for Airport Markings.

(17) AC 150/5340–4C, Installation Details for Runway Centerline Touchdown Zone Lighting Systems.

(18) AC 150/5390—2B, Heliport Design.

(19) AC 150/5340–19, Taxiway Centerline Lighting System.

(20) AC 150/5340–24, Runway and Taxiway Edge Lighting System.

(21) AC 150/5345–28D, Precision Approach Path Indicator (PAPI) Systems.

(22) International Air Transport Association document, ''Flight Simulator Design and Performance Data Requirements,'' as amended.

(23) AC 29–2B, Flight Test Guide for Certification of Transport Category Rotorcraft.

(24) AC 27–1A, Flight Test Guide for Certification of Normal Category Rotorcraft.

(25) International Civil Aviation Organization (ICAO) Manual of Criteria for the Qualification of Flight Simulators, as amended.

(26) Airplane Flight Simulator Evaluation Handbook, Volume I, as amended and Volume II, as amended, The Royal Aeronautical Society, London, UK.

(27) FAA Publication FAA–S–8081 series (Practical Test Standards for Airline Transport Pilot Certificate, Type Ratings, Commercial Pilot, and Instrument Ratings).

(28) The FAA Aeronautical Information Manual (AIM). An electronic version of the AIM is on the internet at *http://www.faa.gov/atpubs*.

END INFORMATION

2. APPLICABILITY (§§ 60.1 & 60.2)

There is no additional regulatory or informational material that applies to § 60.1, Applicability, or to § 60.2, Applicability of sponsor rules to person who are not sponsors and who are engaged in certain unauthorized activities.

3. DEFINITIONS (§ 60.3)

BEGIN INFORMATION

See appendix F for a list of definitions and abbreviations from part 1, part 60, and the QPS appendices of part 60.

END INFORMATION

4. QUALIFICATION PERFORMANCE STANDARDS (§ 60.4)

There is no additional regulatory or informational material that applies to § 60.4, Qualification Performance Standards.

5. QUALITY MANAGEMENT SYSTEM (§ 60.5)

BEGIN INFORMATION

Additional regulatory material and informational material regarding Quality Management Systems for FTDs may be found in appendix E of this part.

END INFORMATION

6. SPONSOR QUALIFICATION REQUIREMENTS (§ 60.7)

BEGIN INFORMATION

a. The intent of the language in §60.7(b) is to have a specific FTD, identified by the sponsor, used at least once in an FAA-approved flight training program for the helicopter simulated during the 12-month period described. The identification of the specific FTD may change from one 12-month period to the next 12-month period as long as that sponsor sponsors and uses at least one FTD at least once during the prescribed period. There is no minimum number of hours or minimum FTD periods required.

b. The following examples describe acceptable operational practices:

(1) Example One.

(a) A sponsor is sponsoring a single, specific FTD for its own use, in its own facility or elsewhere —this single FTD forms the basis for the sponsorship. The sponsor uses that FTD at least once in each 12-month period in that sponsor's FAA-approved flight training program for the helicopter simulated. This 12-month period is established according to the following schedule:

(i) If the FTD was qualified prior to October 30, 2007 the 12-month period begins on the date of the first continuing qualification evaluation conducted in accordance with §60.19 after October 30, 2007 and continues for each subsequent 12-month period;

(ii) A device qualified on or after October 30, 2007 will be required to undergo an initial or upgrade evaluation in accordance with §60.15. Once the initial or upgrade evaluation is complete, the first continuing qualification evaluation will be conducted within 6 months. The 12 month continuing qualification evaluation cycle begins on that date and continues for each subsequent 12-month period.

(b) There is no minimum number of hours of FTD use required.

(c) The identification of the specific FTD may change from one 12-month period to the next 12-month period as long as that sponsor sponsors and uses at least one FTD at least once during the prescribed period.

(2) Example Two.

(a) A sponsor sponsors an additional number of FTDs, in its facility or elsewhere. Each additionally sponsored FTD must be—

(i) Used by the sponsor in the sponsor's FAA-approved flight training program for the helicopter simulated (as described in §60.7(d)(1));

OR

(ii) Used by another FAA certificate holder in that other certificate holder's FAA-approved flight training program for the helicopter simulated (as described in §60.7(d)(1)). This 12-month period is established in the same manner as in example one.

OR

(iii) Provided a statement each year from a qualified pilot, (after having flown the helicopter not the subject FTD or another FTD, during the preceding 12-month period) stating that the subject FTD's performance and handling qualities represent the helicopter (as described in §60.7(d)(2)). This statement is provided at least once in each 12-month period established in the same manner as in example one.

(b) There is no minimum number of hours of FTD use required.

(3) Example Three.

(a) A sponsor in New York (in this example, a Part 142 certificate holder) establishes ''satellite'' training centers in Chicago and Moscow.

(b) The satellite function means that the Chicago and Moscow centers must operate under the New York center's certificate (in accordance with all of the New York center's practices, procedures, and policies; *e.g.*, instructor and/or technician training/checking requirements, record keeping, QMS program).

(c) All of the FTDs in the Chicago and Moscow centers could be dry-leased (*i.e.*, the certificate holder does not have and use FAA-approved flight training programs for the FTDs in the Chicago and Moscow centers) because—

(i) Each FTD in the Chicago center and each FTD in the Moscow center is used at least once each 12-month period by another FAA certificate holder in that other certificate holder's FAA-approved flight training program for the helicopter (as described in §60.7(d)(1));

OR

(ii) A statement is obtained from a qualified pilot (having flown the helicopter, not the subject FTD or another FTD during the preceding 12-month period) stating that the performance and handling qualities of each FTD in the Chicago and Moscow centers represents the helicopter (as described in §60.7(d)(2)).

END INFORMATION

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7. ADDITIONAL RESPONSIBILITIES OF THE SPONSOR (§60.9)

BEGIN INFORMATION

The phrase ''as soon as practicable'' in §60.9(a) means without unnecessarily disrupting or delaying beyond a reasonable time the training, evaluation, or experience being conducted in the FSTD.

END INFORMATION

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8. FTD USE (§60.11)

There is no additional regulatory or informational material that applies to §60.11, FTD Use.

9. FTD OBJECTIVE DATA REQUIREMENTS (§60.13)

BEGIN QPS REQUIREMENTS

a. Flight test data used to validate FTD performance and handling qualities must have been gathered in accordance with a flight test program containing the following:

(1) A flight test plan consisting of:

(a) The maneuvers and procedures required for aircraft certification and simulation programming and validation.

(b) For each maneuver or procedure—

(i) The procedures and control input the flight test pilot and/or engineer used.

(ii) The atmospheric and environmental conditions.

(iii) The initial flight conditions.

(iv) The helicopter configuration, including weight and center of gravity.

(v) The data to be gathered.

(vi) All other information necessary to recreate the flight test conditions in the FTD.

(2) Appropriately qualified flight test personnel.

(3) An understanding of the accuracy of the data to be gathered using appropriate alternative data sources, procedures, and instrumentation that is traceable to a recognized standard as described in Attachment 2, Table D2F.

(4) Appropriate and sufficient data acquisition equipment or system(s), including appropriate data reduction and analysis methods and techniques, as would be acceptable to the FAA's Aircraft Certification Service.

b. The data, regardless of source, must be presented:

(1) In a format that supports the FTD validation process;

(2) In a manner that is clearly readable and annotated correctly and completely;

(3) With resolution sufficient to determine compliance with the tolerances set forth in Attachment 2, Table D2A appendix.

(4) With any necessary guidance information provided; and

(5) Without alteration, adjustments, or bias; however the data may be re-scaled, digitized, or otherwise manipulated to fit the desired presentation.

c. After completion of any additional flight test, a flight test report must be submitted in support of the validation data. The report must contain sufficient data and rationale to support qualification of the FTD at the level requested.

d. As required by §60.13(f), the sponsor must notify the NSPM when it becomes aware that an addition to or a revision of the flight related data or helicopter systems related data is available if this data is used to program and operate a qualified FTD. The data referred to in this sub-section are those data that are used to validate the performance, handling qualities, or other characteristics of the aircraft, including data related to any relevant changes occurring after the type certification is issued. This notification must be made within 10 working days.

END QPS REQUIREMENTS

BEGIN INFORMATION

e. The FTD sponsor is encouraged to maintain a liaison with the manufacturer of the aircraft being simulated (or with the holder of the aircraft type certificate for the aircraft being simulated if the manufacturer is no longer in business), and if appropriate, with the person having supplied the aircraft data package for the FTD in order to facilitate the notification described in this paragraph.

f. It is the intent of the NSPM that for new aircraft entering service, at a point well in advance of preparation of the Qualification Test Guide (QTG), the sponsor should submit to the NSPM for approval, a descriptive document (a validation data roadmap) containing the plan for acquiring the validation data, including data sources. This document should clearly identify sources of data for all required tests, a description of the validity of these data for a specific engine type and thrust rating configuration, and the revision levels of all avionics affecting the performance or flying qualities of the aircraft. Additionally, this document should provide other information such as the rationale or explanation for cases where data or data parameters are missing, instances where engineering simulation data are used, or where flight test methods require further explanations. It should also provide a brief narrative describing the cause and effect of any deviation from data requirements. The aircraft manufacturer may provide this document.

g. There is no requirement for any flight test data supplier to submit a flight test plan or program prior to gathering flight test data. However, the NSPM notes that inexperienced data gatherers often provide data that is irrelevant, improperly marked, lacking adequate justification for selection. Other problems include inadequate information regarding initial conditions or test maneuvers. The NSPM has been forced to refuse these data submissions as validation data for an FTD evaluation. It is for this reason that the NSPM recommends that any data supplier not previously experienced in this area review the data necessary for programming and for validating the performance of the

FTD and discuss the flight test plan anticipated for acquiring such data with the NSPM well in advance of commencing the flight tests.

h. In those cases where the objective test results authorize a ''snapshot test'' or a ''series of snapshot tests'' results in lieu of a time-history result, Attachment 2 requires the sponsor or other data provider to ensure that a steady state condition exists at the instant of time captured by the ''snapshot.'' This is often verified by showing that a steady state condition existed from some period of time during which the snap shot is taken. The time period most frequently used is 5 seconds prior through 2 seconds following the instant of time captured by the snap shot. This paragraph is primarily addressing the source data and the method by which the data provider ensures that the steady state condition for the snap shot is representative.

i. The NSPM will consider, on a case-by-case basis, whether or not to approve supplemental validation data derived from flight data recording systems such as a Quick Access Recorder or Flight Data Recorder.

END INFORMATION

10. SPECIAL EQUIPMENT AND PERSONNEL REQUIREMENTS FOR QUALIFICATION OF THE FTD (§60.14)

BEGIN INFORMATION

a. In the event that the NSPM determines that special equipment or specifically qualified persons will be required to conduct an evaluation, the NSPM will make every attempt to notify the sponsor at least one (1) week, but in no case less than 72 hours, in advance of the evaluation. Examples of special equipment include flight control measurement devices, accelerometers, or oscilloscopes. Examples of specially qualified personnel include individuals specifically qualified to install or use any special equipment when its use is required.

b. Examples of a special evaluation include an evaluation conducted after an FTD is moved; at the request of the TPAA; or as a result of comments received from FTD users that raise questions regarding the continued qualification or use of the FTD.

END INFORMATION

11. INITIAL (AND UPGRADE) QUALIFICATION REQUIREMENTS (§60.15)

BEGIN QPS REQUIREMENT

a. In order to be qualified at a particular qualification level, the FTD must:

(1) Meet the general requirements listed in Attachment 1;

(2) Meet the objective testing requirements listed in Attachment 2 (Level 4 FTDs do not require objective tests); and

(3) Satisfactorily accomplish the subjective tests listed in Attachment 3.

b. The request described in §60.15(a) must include all of the following:

(1) A statement that the FTD meets all of the applicable provisions of this part and all applicable provisions of the QPS.

(2) A confirmation that the sponsor will forward to the NSPM the statement described in §60.15(b) in such time as to be received no later than 5 business days prior to the scheduled evaluation and may be forwarded to the NSPM via traditional or electronic means.

(3) Except for a Level 4 FTD, a qualification test guide (QTG), acceptable to the NSPM, that includes all of the following:

(a) Objective data obtained from aircraft testing or another approved source.

(b) Correlating objective test results obtained from the performance of the FTD as prescribed in the applicable QPS.

(c) The result of FTD subjective tests prescribed in the applicable QPS.

(d) A description of the equipment necessary to perform the evaluation for initial qualification and the continuing qualification evaluations.

c. The QTG described in paragraph a(3) of this section, must provide the documented proof of compliance with the FTD objective tests in Attachment 2,Table D2A of this appendix.

d. The QTG is prepared and submitted by the sponsor, or the sponsor's agent on behalf of the sponsor, to the NSPM for review and approval, and must include, for each objective test:

(1) Parameters, tolerances, and flight conditions;

(2) Pertinent and complete instructions for conducting automatic and manual tests;

(3) A means of comparing the FTD test results to the objective data;

(4) Any other information as necessary to assist in the evaluation of the test results;

(5) Other information appropriate to the qualification level of the FTD.

e. The QTG described in paragraphs (a)(3) and (b) of this section, must include the following:

(1) A QTG cover page with sponsor and FAA approval signature blocks (see Attachment 4, Figure D4C, for a sample QTG cover page).

(2) A continuing qualification evaluation requirements page. This page will be used by the NSPM to establish and record the frequency with which continuing qualification evaluations must be conducted and any subsequent changes that may be determined by

the NSPM in accordance with §60.19. See Attachment 4, Figure D4G, for a sample Continuing Qualification Evaluation Requirements page.

(3) An FTD information page that provides the information listed in this paragraph, if applicable (see Attachment 4, Figure D4B, for a sample FTD information page). For convertible FTDs, the sponsor must submit a separate page for each configuration of the FTD.

(a) The sponsor's FTD identification number or code.

(b) The helicopter model and series being simulated.

(c) The aerodynamic data revision number or reference.

(d) The engine model(s) and its data revision number or reference.

(e) The flight control data revision number or reference.

(f) The flight management system identification and revision level.

(g) The FTD model and manufacturer.

(h) The date of FTD manufacture.

(i) The FTD computer identification.

(j) The visual system model and manufacturer, including display type.

(k) The motion system type and manufacturer, including degrees of freedom.

(4) A Table of Contents.

(5) A log of revisions and a list of effective pages.

(6) List of all relevant data references.

(7) A glossary of terms and symbols used (including sign conventions and units).

(8) Statements of compliance and capability (SOCs) with certain requirements. SOCs must provide references to the sources of information that show the capability of the FTD to comply with the requirement, a rationale explaining how the referenced material is used, mathematical equations and parameter values used, and the conclusions reached; *i.e.*, that the FTD complies with the requirement. Refer to the ''General FTD Requirements'' column, Table D1A, in Attachment 1, or in the ''Alternative Data Sources, Procedures, and Instrumentation'' column, Table D2F, in Attachment 2, to see when SOCs are required.

(9) Recording procedures or equipment required to accomplish the objective tests.

(10) The following information for each objective test designated in Attachment 2, as applicable to the qualification level sought:

(a) Name of the test.

(b) Objective of the test.

(c) Initial conditions.

(d) Manual test procedures.

(e) Automatic test procedures (if applicable).

(f) Method for evaluating FTD objective test results.

(g) List of all relevant parameters driven or constrained during the automatic test(s).

(h) List of all relevant parameters driven or constrained during the manual test(s).

(i) Tolerances for relevant parameters.

(j) Source of Validation Data (document and page number).

(k) Copy of the Validation Data (if located in a separate binder, a cross reference for the identification and page number for pertinent data location must be provided).

(l) FTD Objective Test Results as obtained by the sponsor. Each test result must reflect the date completed and must be clearly labeled as a product of the device being tested.

f. A convertible FTD is addressed as a separate FTD for each model and series helicopter to which it will be converted and for the FAA qualification level sought. The NSPM will conduct an evaluation for each configuration. If a sponsor seeks qualification for two or more models of a helicopter type using a convertible FTD, the sponsor must provide a QTG for each helicopter model, or a supplemented QTG for each helicopter model. The NSPM will conduct evaluations for each helicopter model.

g. The form and manner of presentation of objective test results in the QTG must include the following:

(1) The sponsor's FTD test results must be recorded in a manner acceptable to the NSPM, that allows easy comparison of the FTD test results to the validation data (*e.g.*, use of a multi-channel recorder, line printer, cross plotting, overlays, transparencies).

(2) FTD results must be labeled using terminology common to helicopter parameters as opposed to computer software identifications.

(3) Validation data documents included in a QTG may be photographically reduced only if such reduction will not alter the graphic scaling or cause difficulties in scale interpretation or resolution.

(4) Scaling on graphical presentations must provide the resolution necessary to evaluate the parameters shown in Attachment 2, Table D2A of this appendix.

(5) Tests involving time histories, data sheets (or transparencies thereof) and FTD test results must be clearly marked with appropriate reference points to ensure an accurate comparison between FTD and helicopter with respect to time. Time histories recorded via a line printer are to be clearly identified for cross-plotting on the helicopter data. Over-plots must not obscure the reference data.

h. The sponsor may elect to complete the QTG objective and subjective tests at the manufacturer's facility or at the sponsor's training facility. If the tests are conducted at the manufacturer's facility, the sponsor must repeat at least one-third of the tests at the sponsor's training facility in order to substantiate FTD performance. The QTG must be clearly annotated to indicate when and where each test was accomplished. Tests

conducted at the manufacturer's facility and at the sponsor's training facility must be conducted after the FTD is assembled with systems and sub-systems functional and operating in an interactive manner. The test results must be submitted to the NSPM.

i. The sponsor must maintain a copy of the MQTG at the FTD location.

j. All FTDs for which the initial qualification is conducted after October 30, 2013 must have an electronic MQTG (eMQTG) including all objective data obtained from helicopter testing, or another approved source (reformatted or digitized), together with correlating objective test results obtained from the performance of the FTD (reformatted or digitized) as prescribed in this appendix. The eMQTG must also contain the general FTD performance or demonstration results (reformatted or digitized) prescribed in this appendix, and a description of the equipment necessary to perform the initial qualification evaluation and the continuing qualification evaluations. The eMQTG must include the original validation data used to validate FTD performance and handling qualities in either the original digitized format from the data supplier or an electronic scan of the original time-history plots that were provided by the data supplier. A copy of the eMQTG must be provided to the NSPM.

k. All other FTDs (not covered in subparagraph ''j'') must have an electronic copy of the MQTG by and after October 30, 2013. A copy of the eMQTG must be provided to the NSPM. This may be provided by an electronic scan presented in a Portable Document File (PDF), or similar format acceptable to the NSPM.

END QPS REQUIREMENTS

BEGIN INFORMATION

l. Only those FTDs that are sponsored by a certificate holder as defined in appendix F will be evaluated by the NSPM. However, other FTD evaluations may be conducted on a case-by-case basis as the Administrator deems appropriate, but only in accordance with applicable agreements.

m. The NSPM will conduct an evaluation for each configuration, and each FTD must be evaluated as completely as possible. To ensure a thorough and uniform evaluation, each FTD is subjected to the general FTD requirements in Attachment 1, the objective tests listed in Attachment 2, and the subjective tests listed in Attachment 3 of this appendix. The evaluations described herein will include, but not necessarily be limited to the following:

(1) Helicopter responses, including longitudinal and lateral-directional control responses (see Attachment 2 of this appendix);

(2) Performance in authorized portions of the simulated helicopter's operating envelope, to include tasks evaluated by the NSPM in the areas of surface operations, takeoff, climb, cruise, descent, approach and landing, as well as abnormal and emergency operations (see Attachment 2 of this appendix);

(3) Control checks (see Attachment 1 and Attachment 2 of this appendix);

(4) Cockpit configuration (see Attachment 1 of this appendix);

(5) Pilot, flight engineer, and instructor station functions checks (see Attachment 1 and Attachment 3 of this appendix);

(6) Helicopter systems and sub-systems (as appropriate) as compared to the helicopter simulated (see attachment 1 and attachment 3 of this appendix);

(7) FTD systems and sub-systems, including force cueing (motion), visual, and aural (sound) systems, as appropriate (see Attachment 1 and Attachment 2 of this appendix); and

(8) Certain additional requirements, depending upon the qualification level sought, including equipment or circumstances that may become hazardous to the occupants. The sponsor may be subject to Occupational Safety and Health Administration requirements.

n. The NSPM administers the objective and subjective tests, which includes an examination of functions. The tests include a qualitative assessment of the FTD by an NSP pilot. The NSP evaluation team leader may assign other qualified personnel to assist in accomplishing the functions examination and/or the objective and subjective tests performed during an evaluation when required.

(1) Objective tests provide a basis for measuring and evaluating FTD performance and determining compliance with the requirements of this part.

(2) Subjective tests provide a basis for:

(a) Evaluating the capability of the FTD to perform over a typical utilization period;

(b) Determining that the FTD satisfactorily simulates each required task;

(c) Verifying correct operation of the FTD controls, instruments, and systems; and

(d) Demonstrating compliance with the requirements of this part.

o. The tolerances for the test parameters listed in Attachment 2 of this appendix reflect the range of tolerances acceptable to the NSPM for FTD validation and are not to be confused with design tolerances specified for FTD manufacture. In making decisions regarding tests and test results, the NSPM relies on the use of operational and engineering judgment in the application of data (including consideration of the way in which the flight test was flown and way the data

was gathered and applied) data presentations, and the applicable tolerances for each test.

p. In addition to the scheduled continuing qualification evaluation, each FTD is subject to evaluations conducted by the NSPM at any time without prior notification to the sponsor. Such evaluations would be accomplished in a normal manner (*i.e.,* requiring exclusive use of the FTD for the conduct of objective and subjective tests and an examination of functions) if the FTD is not being used for flight crewmember training, testing, or checking. However, if the FTD were being used, the evaluation would be conducted in a non-exclusive manner. This non-exclusive evaluation will be conducted by the FTD evaluator accompanying the check airman, instructor, Aircrew Program Designee (APD), or FAA inspector aboard the FTD along with the student(s) and observing the operation of the FTD during the training, testing, or checking activities.

q. Problems with objective test results are handled as follows:

(1) If a problem with an objective test result is detected by the NSP evaluation team during an evaluation, the test may be repeated or the QTG may be amended.

(2) If it is determined that the results of an objective test do not support the qualification level requested but do support a lower level, the NSPM may qualify the FTD at a lower level.

r. After an FTD is successfully evaluated, the NSPM issues a statement of qualification (SOQ) to the sponsor, The NSPM recommends the FTD to the TPAA, who will approve the FTD for use in a flight training program. The SOQ will be issued at the satisfactory conclusion of the initial or continuing qualification. However, it is the sponsor's responsibility to obtain TPAA approval prior to using the FTD in an FAA-approved flight training program.

s. Under normal circumstances, the NSPM establishes a date for the initial or upgrade evaluation within ten (10) working days after determining that a complete QTG is acceptable. Unusual circumstances may warrant establishing an evaluation date before this determination is made. A sponsor may schedule an evaluation date as early as 6 months in advance. However, there may be a delay of 45 days or more in rescheduling and completing the evaluation if the sponsor is unable to meet the scheduled date. See Attachment 4, Figure D4A, Sample Request for Initial, Upgrade, or Reinstatement Evaluation.

t. The numbering system used for objective test results in the QTG should closely follow the numbering system set out in Attachment 2, FTD Objective Tests, Table D2A.

u. Contact the NSPM or visit the NSPM Web site for additional information regarding the preferred qualifications of pilots used to meet the requirements of §60.15(d).

v. Examples of the exclusions for which the FTD might not have been subjectively tested by the sponsor or the NSPM and for which qualification might not be sought or granted, as described in §60.15(g)(6), include approaches to and departures from slopes and pinnacles.

END INFORMATION

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12. ADDITIONAL QUALIFICATIONS FOR CURRENTLY QUALIFIED FTDS (§60.16)

There is no additional regulatory or informational material that applies to §60.16, Additional Qualifications for a Currently Qualified FTD.

13. PREVIOUSLY QUALIFIED FTDS (§60.17)

BEGIN QPS REQUIREMENTS

a. In instances where a sponsor plans to remove an FTD from active status for a period of less than two years, the following procedures apply:

(1) The NSPM must be notified in writing and the notification must include an estimate of the period that the FTD will be inactive;

(2) Continuing Qualification evaluations will not be scheduled during the inactive period;

(3) The NSPM will remove the FTD from the list of qualified FSTDs on a mutually established date not later than the date on which the first missed continuing qualification evaluation would have been scheduled;

(4) Before the FTD is restored to qualified status, it must be evaluated by the NSPM. The evaluation content and the time required to accomplish the evaluation is based on the number of continuing qualification evaluations and sponsor-conducted quarterly inspections missed during the period of inactivity.

(5) The sponsor must notify the NSPM of any changes to the original scheduled time out of service;

b. FTDs qualified prior to October 30, 2007, are not required to meet the general FTD requirements, the objective test requirements, and the subjective test requirements of Attachments 1, 2, and 3, respectively, of this appendix.

c. [Reserved]

END QPS REQUIREMENTS

BEGIN INFORMATION

d. Other certificate holders or persons desiring to use an FTD may contract with FTD

sponsors to use FTDs previously qualified at a particular level for a helicopter type and approved for use within an FAA-approved flight training program. Such FTDs are not required to undergo an additional qualification process, except as described in §60.16.

e. Each FTD user must obtain approval from the appropriate TPAA to use any FTD in an FAA-approved flight training program.

f. The intent of the requirement listed in §60.17(b), for each FTD to have a Statement of Qualification within 6 years, is to have the availability of that statement (including the configuration list and the limitations to authorizations) to provide a complete picture of the FTD inventory regulated by the FAA. The issuance of the statement will not require any additional evaluation or require any adjustment to the evaluation basis for the FTD.

g. Downgrading of an FTD is a permanent change in qualification level and will necessitate the issuance of a revised Statement of Qualification to reflect the revised qualification level, as appropriate. If a temporary restriction is placed on an FTD because of a missing, malfunctioning, or inoperative component or on-going repairs, the restriction is not a permanent change in qualification level. Instead, the restriction is temporary and is removed when the reason for the restriction has been resolved.

h. It is not the intent of the NSPM to discourage the improvement of existing simulation (*e.g.*, the ''updating'' of a control loading system, or the replacement of the IOS with a more capable unit) by requiring the ''updated'' device to meet the qualification standards current at the time of the update. Depending on the extent of the update, the NSPM may require that the updated device be evaluated and may require that an evaluation include all or a portion of the elements of an initial evaluation. However, the standards against which the device would be evaluated are those that are found in the MQTG for that device.

i. The NSPM will determine the evaluation criteria for an FTD that has been removed from active status for a prolonged period. The criteria will be based on the number of continuing qualification evaluations and quarterly inspections missed during the period of inactivity. For example, if the FTD were out of service for a 1 year period, it would be necessary to complete the entire QTG, since all of the quarterly evaluations would have been missed. The NSPM will also consider how the FTD was stored, whether parts were removed from the FTD and whether the FTD was disassembled.

j. The FTD will normally be requalified using the FAA-approved MQTG and the criteria that was in effect prior to its removal from qualification. However, inactive periods of 2 years or more will require re-qualification under the standards in effect and current at the time of requalification.

END INFORMATION

14. INSPECTION, CONTINUING QUALIFICATION EVALUATION, AND MAINTENANCE REQUIREMENTS (§60.19).

BEGIN QPS REQUIREMENT

a. The sponsor must conduct a minimum of four evenly spaced inspections throughout the year. The objective test sequence and content of each inspection in this sequence must be developed by the sponsor and must be acceptable to the NSPM.

b. The description of the functional preflight inspection must be contained in the sponsor's QMS.

c. Record ''functional preflight'' in the FTD discrepancy log book or other acceptable location, including any item found to be missing, malfunctioning, or inoperative.

END QPS REQUIREMENTS

BEGIN INFORMATION

d. The sponsor's test sequence and the content of each quarterly inspection required in §60.19(a)(1) should include a balance and a mix from the objective test requirement areas listed as follows:

(1) Performance.
(2) Handling qualities.
(3) Motion system (where appropriate).
(4) Visual system (where appropriate).
(5) Sound system (where appropriate).
(6) Other FTD systems.

e. If the NSP evaluator plans to accomplish specific tests during a normal continuing qualification evaluation that requires the use of special equipment or technicians, the sponsor will be notified as far in advance of the evaluation as practical; but not less than 72 hours. Examples of such tests include latencies and control sweeps.

f. The continuing qualification evaluations described in §60.19(b) will normally require 4 hours of FTD time. However, flexibility is necessary to address abnormal situations or situations involving aircraft with additional levels of complexity (e.g., computer controlled aircraft). The sponsor should anticipate that some tests may require additional time. The continuing qualification evaluations will consist of the following:

(1) Review of the results of the quarterly inspections conducted by the sponsor since the last scheduled continuing qualification evaluation.

(2) A selection of approximately 8 to 15 objective tests from the MQTG that provide an adequate opportunity to evaluate the performance of the FTD. The tests chosen will

be performed either automatically or manually and should be able to be conducted within approximately one-third (⅓) of the allotted FTD time.

(3) A subjective evaluation of the FTD to perform a representative sampling of the tasks set out in attachment 3 of this appendix. This portion of the evaluation should take approximately two-thirds (⅔) of the allotted FTD time.

(4) An examination of the functions of the FTD may include the motion system, visual system, sound system as applicable, instructor operating station, and the normal functions and simulated malfunctions of the simulated helicopter systems. This examination is normally accomplished simultaneously with the subjective evaluation requirements.

g. The requirement established in §60.19(b)(4) regarding the frequency of NSPM-conducted continuing qualification evaluations for each FTD is typically 12 months. However, the establishment and satisfactory implementation of an approved QMS for a sponsor will provide a basis for adjusting the frequency of evaluations to exceed 12-month intervals.

END INFORMATION

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15. LOGGING FTD DISCREPANCIES (§60.20).

There is no additional regulatory or informational material that applies to §60.20. Logging FTD Discrepancies.

16. INTERIM QUALIFICATION OF FTDS FOR NEW HELICOPTER TYPES OR MODELS (§60.21).

There is no additional regulatory or informational material that applies to §60.21, Interim Qualification of FTDs for New Helicopter Types or Models.

17. Modifications to FTDs (§60.23).

BEGIN QPS REQUIREMENTS

a. The notification described in §60.23(c)(2) must include a complete description of the planned modification, with a description of the operational and engineering effect the proposed modification will have on the operation of the FTD and the results that are expected with the modification incorporated.

b. Prior to using the modified FTD:

(1) All the applicable objective tests completed with the modification incorporated, including any necessary updates to the MQTG (*e.g.*, accomplishment of FSTD Directives) must be acceptable to the NSPM; and

(2) The sponsor must provide the NSPM with a statement signed by the MR that the factors listed in §60.15(b) are addressed by the appropriate personnel as described in that section.

END QPS REQUIREMENTS

BEGIN INFORMATION

c. FSTD Directives are considered modification of an FTD. See Attachment 4, Figure D4H for a sample index of effective FSTD Directives.

END INFORMATION

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18. OPERATION WITH MISSING, MALFUNCTIONING, OR INOPERATIVE COMPONENTS (§60.25).

BEGIN INFORMATION

a. The sponsor's responsibility with respect to §60.25(a) is satisfied when the sponsor fairly and accurately advises the user of the current status of an FTD, including any missing, malfunctioning, or inoperative (MMI) component(s).

b. If the 29th or 30th day of the 30-day period described in §60.25(b) is on a Saturday, a Sunday, or a holiday, the FAA will extend the deadline until the next business day.

c. In accordance with the authorization described in §60.25(b), the sponsor may develop a discrepancy prioritizing system to accomplish repairs based on the level of impact on the capability of the FTD. Repairs having a larger impact on the FTD's ability to provide the required training, evaluation, or flight experience will have a higher priority for repair or replacement.

END INFORMATION

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19. AUTOMATIC LOSS OF QUALIFICATION AND PROCEDURES FOR RESTORATION OF QUALIFICATION (§60.27).

BEGIN INFORMATION

If the sponsor provides a plan for how the FTD will be maintained during its out-of-service period (*e.g.*, periodic exercise of mechanical, hydraulic, and electrical systems; routine replacement of hydraulic fluid; control of the environmental factors in which the FTD is to be maintained.) there is a greater likelihood that the NSPM will be able to determine the amount of testing that is required for requalification.

END INFORMATION

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20. OTHER LOSSES OF QUALIFICATION AND PROCEDURES FOR RESTORATION OF QUALIFICATION (§ 60.29).

BEGIN INFORMATION

If the sponsor provides a plan for how the FTD will be maintained during its out-of-service period (*e.g.*, periodic exercise of mechanical, hydraulic, and electrical systems; routine replacement of hydraulic fluid; control of the environmental factors in which the FTD is to be maintained.) there is a greater likelihood that the NSPM will be able to determine the amount of testing that is required for requalification.

END INFORMATION

21. RECORDKEEPING AND REPORTING (§ 60.31).

BEGIN QPS REQUIREMENTS

a. FTD modifications can include hardware or software changes. For FTD modifications involving software programming changes, the record required by § 60.31(a)(2) must consist of the name of the aircraft system software, aerodynamic model, or engine model change, the date of the change, a summary of the change, and the reason for the change.

b. If a coded form for record keeping is used, it must provide for the preservation and retrieval of information with appropriate security or controls to prevent the inappropriate alteration of such records after the fact.

END QPS REQUIREMENTS

22. Applications, Logbooks, Reports, and Records: Fraud, Falsification, or Incorrect Statements (§ 60.33).

There are no additional QPS requirements or informational material that apply to § 60.33, Applications, Logbooks, Reports, and Records: Fraud, Falsification, or Incorrect Statements.

23. [RESERVED]

24. LEVELS OF FTD.

BEGIN INFORMATION

a. The following is a general description of each level of FTD. Detailed standards and tests for the various levels of FTDs are fully defined in Attachments 1 through 3 of this appendix.

(1) *Level 4*. A device that may have an open helicopter-specific flight deck area, or an enclosed helicopter-specific cockpit and at least one operating system with air/ground logic (no aerodynamic programming required).

(2) *Level 5*. A device that may have an open helicopter-specific flight deck area, or an enclosed helicopter-specific cockpit and a generic aerodynamic program with at least one operating system and control loading that is representative of the simulated helicopter only at an approach speed and configuration.

(3) *Level 6*. A device that has an enclosed helicopter-specific cockpit and aerodynamic program with all applicable helicopter systems operating and control loading that is representative of the simulated helicopter throughout its ground and flight envelope and significant sound representation.

END INFORMATION

25. FSTD QUALIFICATION ON THE BASIS OF A BILATERAL AVIATION SAFETY AGREEMENT (BASA) (§ 60.37).

BEGIN INFORMATION

There are no additional QPS requirements or informational material that apply to § 60.37, FSTD Qualification on the Basis of a Bilateral Aviation Safety Agreement (BASA).

END INFORMATION

ATTACHMENT 1 TO APPENDIX D TO PART 60—GENERAL FTD REQUIREMENTS

BEGIN QPS REQUIREMENTS

1. REQUIREMENTS

a. Certain requirements included in this appendix must be supported with a Statement of Compliance and Capability (SOC), which may include objective and subjective tests. The SOC will confirm that the requirement was satisfied, and describe how the requirement was met. The requirements for SOCs and tests are indicated in the ''General FTD Requirements'' column in Table D1A of this appendix.

b. Table D1A describes the requirements for the indicated level of FTD. Many devices include operational systems or functions that exceed the requirements outlined in this section. In any event, all systems will be tested and evaluated in accordance with this appendix to ensure proper operation.

END QPS REQUIREMENTS

BEGIN INFORMATION

2. DISCUSSION

a. This attachment describes the general requirements for qualifying Level 4 through Level 6 FTDs. The sponsor should also consult the objectives tests in Attachment 2 and the examination of functions and subjective tests listed in Attachment 3 to determine the complete requirements for a specific level FTD.

b. The material contained in this attachment is divided into the following categories:

(1) General Cockpit Configuration.
(2) Programming.
(3) Equipment Operation.
(4) Equipment and facilities for instructor/evaluator functions.
(5) Motion System.
(6) Visual System.
(7) Sound System.

c. Table D1A provides the standards for the General FTD Requirements.

END INFORMATION

TABLE D1A—MINIMUM FTD REQUIREMENTS

<<<QPS requirements >>>					<<Information>> Notes
No.	General FTD requirements	FTD Level			
		4	5	6	
1. General Cockpit Configuration					

TABLE D1A—MINIMUM FTD REQUIREMENTS

<<<QPS requirements >>>					<<Information>> Notes
No.	General FTD requirements	FTD Level			
		4	5	6	
1.a	The FTD must have a cockpit that is a replica of the helicopter, or set purposes, the of helicopters simulated with controls, equipment, observable cockpit indicators, circuit breakers, and bulkheads properly located, functionally accurate and replicating the helicopter or set of helicopters. The direction of movement of controls and switches must be identical to that in the helicopters or set of helicopters. Crewmember seats must afford the capability for the occupant to be able to achieve the design ''eye position'' for specific helicopters, or to approximate such a position for a generic set of helicopters.			X	For FTD purposes, the cockpit consists of all that space forward of a cross section of the fuselage at the most extreme aft setting of the pilots' seats including additional, required crewmember duty stations and those required bulkheads aft of the pilot seats.
2.b	The FTD must have equipment (i.e., instruments, panels, systems, and controls) simulated sufficiently for the authorized training/checking events to be accomplished. The installed equipment, must be locted in a spatially correct configuration, and may be in a cockpit or an open flight deck area. Actuation of this equipment must replicate the appropriate function in the helicopter.	X	X		
3.c	Circuit breakers must function accurately when they are involved in operating procedures or malfunctions requiring or involving flight crew response. Level 6 devices must have installed circuit breakers properly located in the FTD cockpit.		X	X	
4. Programming					

TABLE D1A—MINIMUM FTD REQUIREMENTS—Continued

<<<QPS requirements >>>					<<Information>> Notes
No.	General FTD requirements	FTD Level			
		4	5	6	
4.a	The FTD must provide the proper effect of aerodynamic changes for the combinations of drag and thrust normally encountered in flight. This must include the effect of change in helicopter attitude, thrust, drag, altitude, temperature, and configuration. Level 6 additionally requires the effects of changes in gross weight and center of gravity. Level 5 requires only generic aerodynamic programming.		X	X	
4.b	The FTD must have computer (analog or digital) capability (i.e., capacity, accuracy, resolution, and dynamic response) needed to meet the qualification level sought.	X	X	X	
4.c	The FTD hardware and programming must be updated within 6 months of any helicopter modifications or data releases (or any such modification or data releases applicable to the set of helicopters) unless, with prior coordination, the NSPM authorizes otherwise.	X	X	X	
4.d	Related responses of the cockpit instruments (and the visual and motion systems, if installed and training, testing, or checking credits are being sought) must be coupled closely to provide integrated sensory cues. The instruments (and the visual and motion systems, if installed, and training, testing, or checking credits are being sought) must respond to abrupt input at the pilot's position within the allotted time, but not before the time, when the helicopter or set of helicopters would respond under the same conditions. (If a visual system is installed and training, testing, or checking credits are sought, the visual scene changes from steady state disturbance must occur within the appropriate system dynamic response limt but not before the instrument response (and not before the motion system onset if a motion system is installed)). A demonstration is required and must simultaneously record: The analog out put from the pilot's control column, wheel, and pedals; and the output signal to the pilot's attitude indicator. These recordings must be compared to helicopter response data in the following configurations: Takeoff, cruise, and approach or landing. The results must be recorded in the QTG. Additionally, if a visual system is installed and training, testing, or checking credit are sought, the output signal to the visual system display (including visual system analog delays must be recorded); and if a motion system is installed and training, testing, or checking credits are sought, the output from an accelerometer attached to the motion system platform located at an acceptable location near the pilots' seats is also required.	.....	X	X	
5. Equipment Operation					

TABLE D1A—MINIMUM FTD REQUIREMENTS—Continued

<<<QPS requirements >>>					<<Information>> Notes
No.	General FTD requirements	FTD Level			
		4	5	6	
5.a	All relevant instrument indications involved in the simulation of the helicopter (or set of helicopters) must automatically respond to control movement or external disturbances to the simulated helicopter or set of helicopters; e.g., turbulence or winds.		X	X	
5.b	Navigation equipment must be installed and operate within the tolerances applicable for the helicopter or set of helicopters. Level 5 only needs that navigation equipment necessary to fly an instrument approach. Level 6 must also include communication equipment (inter-phone and air/ground) like that in the helicopter, or set of helicopters, and, if appropriate to the operation being conducted, an oxygen mask microphone system.		X	X	
5.c	Installed systems must simulate the applicable helicopter (or set of helicopters) system operation both on the ground and in flight. At least one helicopter system must be represented. Systems must be operative to the extent that applicable normal, abnormal, and emergency operating procedures included in the sponor's training programs can be accomplished. Level 6 must simulate all applicable helicopter flight, navigation, and systems operation. Level 5 must have functional flight and navigational controls, displays, and instrumentation.	X	X	X	
5.d	The lighting environment for panels and instruments must be sufficient for the operation being conducted.	X	X	X	
5.e	The FTD must provide control forces and control travel that correspond to the replicated helicopter or set of helicopters. Control forces must react in the same manner as in the helicopter or set of helicopters under the same flight conditions.			X	
5.f	The FTD must provide control forces and control travel of sufficient precision to manually fly an instrument approach. The control forces must react in the same manner as in the helicopter or set of helicopters under the same flight conditions.		X		
6. Instructor or Evaluator Facilities					
6.a	In addition to the flight crewmember stations, suitable seating arrangements for an instructor/check airman and FAA Inspector must be available. These seats must provide adequate view of crewmember's panel(s).	X	X	X	These seats need not be a replica of an aircraft seat and may be as simple as an office chair placed in an appropriate position.
6.b	The FTD must have instructor controls that permit activation of normal, abnormal, and emergency conditions, as may be appropriate. Once activated, proper system operation must result from system management by the crew and not require input from the instructor controls.	X	X	X	

TABLE D1A—MINIMUM FTD REQUIREMENTS—Continued

<<<QPS requirements >>>					<<Information>> Notes
No.	General FTD requirements	FTD Level			
		4	5	6	
7. Motion System					
7.a	The FTD may have a motion system; if desired, although it is not required. If installed, the motion system operation may not be distracting. The motion system standards set out in QPS FAA–S–120–40C for at least Level A simulators is acceptable.	X	X	X	
8. Visual System					
8.a	The FTD may have a visual system; if desired, although it is not required. If a visual system is installed, it must meet the following criteria: (1) Single channel, uncollimated display is acceptable. (2) Minimum field of view: 18° vertical/24° horizontal for the pilot flying. (3) Maximum paralax error: 10° per pilot. (4) Scene content may not be distracting. (5) Minimum distance from the pilot's eye position to the surface of a direct view display may not be less than the distance to any front panel instrument. (6) Minimum resolution of 5 arc-min. for both computed and displayed pixel size. (7) Maximum latency or through-put must not exceed 300 milliseconds. A statement of capability is required. A demonstration of latency or through-put is required. Visual system standards set out in QPS FAA–S–120–40C, for at least Level A simulators is acceptable. However, if additional authorizations (training, testing, or checking credits) are sought that require the use of a visual systems, the Level A simulator visual system standards apply.	X	X	X	
9. Sound System					
9.a	The FTD must simulate significant cockpit sounds resulting from pilot actions that correspond to those heard in the helicopter.			X	

ATTACHMENT 2 TO APPENDIX D TO PART 60—FLIGHT TRAINING DEVICE (FTD) OBJECTIVE TESTS

BEGIN QPS REQUIREMENTS

1. TEST REQUIREMENTS

a. The ground and flight tests required for qualification are listed in Table D2A Objective Evaluation. Computer generated FTD test results must be provided for each test except where an alternate test is specifically authorized by the NSPM. If a flight condition or operating condition is required for the test but does not apply to the helicopter being simulated or to the qualification level sought, it may be disregarded (e.g., engine out climb capability for a single-engine helicopter). Each test result is compared against the validation data described in §60.13, and in appendix B. The results must be produced on an appropriate recording device acceptable to the NSPM and must include FTD number, date, time, conditions, tolerances, and appropriate dependent variables portrayed in comparison to the validation data. Time histories are required unless otherwise indicated in Table D2A. All results must be labeled using the tolerances and units given.

b. Table D2A in this attachment sets out the test results required, including the parameters, tolerances, and flight conditions for FTD validation. Tolerances are provided for the listed tests because mathematical

modeling and acquisition and development of reference data are often inexact. All tolerances listed in the following tables are applied to FTD performance. When two tolerance values are given for a parameter, the less restrictive may be used unless otherwise indicated.

c. Certain tests included in this attachment must be supported with a Statement of Compliance and Capability (SOC). In Table D2A, requirements for SOCs are indicated in the ''Test Details'' column.

d. When operational or engineering judgment is used in making assessments for flight test data applications for FTD validity, such judgment must not be limited to a single parameter. For example, data that exhibit rapid variations of the measured parameters may require interpolations or a ''best fit'' data section. All relevant parameters related to a given maneuver or flight condition must be provided to allow overall interpretation. When it is difficult or impossible to match FTD to helicopter data throughout a time history, differences must be justified by providing a comparison of other related variables for the condition being assessed.

e. It is not acceptable to program the FTD so that the mathematical modeling is correct only at the validation test points. Unless noted otherwise, tests must represent helicopter performance and handling qualities at operating weights and centers of gravity (CG) typical of normal operation. If a test is supported by aircraft data at one extreme weight or CG, another test supported by aircraft data at mid-conditions or as close as possible to the other extreme is necessary. Certain tests that are relevant only at one extreme CG or weight condition need not be repeated at the other extreme. The results of the tests for Level 6 are expected to be indicative of the device's performance and handling qualities throughout all of the following:

(1) The helicopter weight and CG envelope;

(2) The operational envelope; and

(3) Varying atmospheric ambient and environmental conditions—including the extremes authorized for the respective helicopter or set of helicopters.

f. When comparing the parameters listed to those of the helicopter, sufficient data must also be provided to verify the correct flight condition and helicopter configuration changes. For example, to show that control force is within the parameters for a static stability test, data to show the correct airspeed, power, thrust or torque, helicopter configuration, altitude, and other appropriate datum identification parameters must also be given. If comparing short period dynamics, normal acceleration may be used to establish a match to the helicopter, but airspeed, altitude, control input, helicopter configuration, and other appropriate data must also be given. If comparing landing gear change dynamics, pitch, airspeed, and altitude may be used to establish a match to the helicopter, but landing gear position must also be provided. All airspeed values must be properly annotated (e.g., indicated versus calibrated). In addition, the same variables must be used for comparison (e.g., compare inches to inches rather than inches to centimeters).

g. The QTG provided by the sponsor must clearly describe how the FTD will be set up and operated for each test. Each FTD subsystem may be tested independently, but overall integrated testing of the FTD must be accomplished to assure that the total FTD system meets the prescribed standards. A manual test procedure with explicit and detailed steps for completing each test must also be provided.

h. In those cases where the objective test results authorize a ''snapshot test'' or a ''series of snapshot test'' results in lieu of a time-history result, the sponsor or other data provider must ensure that a steady state condition exists at the instant of time captured by the ''snapshot.''

i. For previously qualified FTDs, the tests and tolerances of this attachment may be used in subsequent continuing qualification evaluations for any given test if the sponsor has submitted a proposed MQTG revision to the NSPM and has received NSPM approval.

j. Tests of handling qualities must include validation of augmentation devices. FTDs for highly augmented helicopters will be validated both in the unaugmented configuration (or failure state with the maximum permitted degradation in handling qualities) and the augmented configuration. Where various levels of handling qualities result from failure states, validation of the effect of the failure is necessary. For those performance and static handling qualities tests where the primary concern is control position in the unaugmented configuration, unaugmented data are not required if the design of the system precludes any affect on control position. In those instances where the unaugmented helicopter response is divergent and non-repeatable, it may not be feasible to meet the specified tolerances. Alternative requirements for testing will be mutually agreed upon by the sponsor and the NSPM on a case-by-case basis.

k. Some tests will not be required for helicopters using helicopter hardware in the FTD cockpit (e.g., ''helicopter modular controller''). These exceptions are noted in Section 2 ''Handling Qualities'' in Table D2A of this attachment. However, in these cases, the sponsor must provide a statement that the helicopter hardware meets the appropriate manufacturer's specifications and the sponsor must have supporting information to that fact available for NSPM review.

1. For objective test purposes, ''Near maximum'' gross weight is a weight chosen by the sponsor or data provider that is not less than the basic operating weight (BOW) of the helicopter being simulated plus 80% of the difference between the maximum certificated gross weight (either takeoff weight or landing weight, as appropriate for the test) and the BOW. ''Light'' gross weight is a weight chosen by the sponsor or data provider that is not more than 120% of the BOW of the helicopter being simulated or as limited by the minimum practical operating weight of the test helicopter. ''Medium'' gross weight is a weight chosen by the sponsor or data provider that is approximately ±10% of the average of the numerical values of the BOW and the maximum certificated gross weight. (NOTE: BOW is the empty weight of the aircraft plus the weight of the following: Normal oil quantity; lavatory servicing fluid; potable water; required crewmembers and their baggage; and emergency equipment. (References: Advisory Circular 120–27, ''Aircraft Weight and Balance;'' and FAA–H–8083–1, ''Aircraft Weight and Balance Handbook.'').

TABLE D2A—FLIGHT TRAINING DEVICE (FTD) OBJECTIVE TESTS

<<< QPS Requirements >>>		Tolerances	Flight conditions	Test details	FTD Level		<< Information >>
Test							Notes
No.	Title				5	6	
1. Performance							
1.a Engine Assessment							
1.a.1	Start Operations						
1.a.1.a	Engine start and acceleration (transient).	Light Off Time—±10% or ±1 sec.Torque—±5%Rotor Speed—±3% Fuel Flow—±10% Gas Generator Speed—±5% Power TurbineSpeed—±5% Gas TurbineTemp.—±30 °C.	Ground with the Rotor Brake Used and Not Used.	Record each engine start from the initiation of the start sequence to steady state idle and from steady state idle to operating RPM.		X	
1.a.1.b	Steady State Idle and Operating RPM conditions.	Torque—±3% Rotor Speed—±1.5% Fuel Flow—±5% Gas Generator Speed—±2% Power Turbine Speed—±2% Turbine Gas Temp.—±20 °C.	Ground	Record both steady state idle and operating RPM conditions. May be a series of snapshot tests.	X	X	
1.a.2	Power Turbine Speed Trim	±10% of total change of power turbine speed.	Ground	Record engine response to trim system actuation in both directions.		X	
1.a.3	Engine and Rotor Speed Governing.	Torque—±5% Rotor Speed—±1.5%	1) Climb ..... 2) Descent	Record results using a step input to the collective. May be conducted concurrently with climb and descent performance tests.		X	
1.b. In Flight							
	Performance and Trimmed Flight Control Positions.	Torque—±3% Pitch Attitude—±1.5° Sideslip Angle—±2° Longitudinal Control Position—±5% Lateral Control Position—±5% Directional Control Position—±5% Collective Control Position—±5%.	Cruise (Augmentation On and Off).	Record results for two gross weight CG combinations with varying trim speeds throughout the airspeed envelope. May be a series of snapshot tests.	X	X	
1.c. Climb							

TABLE D2A—FLIGHT TRAINING DEVICE (FTD) OBJECTIVE TESTS—Continued

<<< QPS Requirements >>>		Tolerances	Flight conditions	Test details	FTD Level		<< Information >>
Test							Notes
No.	Title				5	6	
	Performance and Trimmed Flight Control Positions.	Verticle Velocity—±100 fpm (61m/sec) or ±10% Pitch Attitude—±1.5° Sideslip Angle—±2° Longitudinal Control Position—±5% Lateral Control Position—±5% Directional Control Position—±5% Collective Control Position—±5%.	All engines operating. One engine inoperative. Augmentation System(s) On and Off.	Record results for two gross weight and CG combinations. The data presented must be for normal climb power conditions. May be a series of snapshot tests.	X	X	
1.d Descent							
1.d.1	Descent Performance and Trimmed Flight Control Positions.	Torque—±3% Pitch Attitude—±1.5° Sideslip Angle—±2° Longitudinal Control Position—±5%. Lateral Control Position—±5% Directional Control Position—±5% Collective Control Position—±5%.	At or near 1,000 fpm rate of descent (RoD) at normal approach speed. Augmentati on System(s) On and Off.	Record results for two gross weight and CG combinations. May be a series of snapshot tests.	X	X	
1.d.2	Autorotation Performance and Trimmed Flight Control Positions.	Torque—±3% Pitch Attitude—±1.5° Sideslip Angle—±2° Longitudinal Control Position—±5% Lateral Control Position—±5% Directional Control Position—±5% Collective Control Position—±5%.	Steady descents. Augmentation System(s) On and Off.	Record results for two gross weight conditions. Data must be recorded for normal operating RPM. (Rotor speed tolerance applies only if collective control position is full down.) Data must be recorded for speeds from approximately 50 kts. through at least maximum glide distance airspeed. May be a series of snapshot tests.	X	X	
1.e. Autorotation							

	Entry	Rotor Speed—±3% Pitch Attitude±2° Roll Attitude—±3° Yaw Attitude—±5° Airspeed—±5 kts. Vertical Velocity—±200 fpm (1.00 m/sec) or 10%.	1) Cruise; or 2) Climb	Record results of a rapid throttle reduction to idle. If accomplished in cruise, results must be for the maximum range airspeed. If accomplished in climb, results must be for the maximum rate of climb airspeed at or near maximum continuous power.			X		
2. Handling Qualities.									
2.a.	Start [here] Contro 1 System Mechanical Characteristics.	Contact the NSPM for clarification of any issue regarding helicopters with reversible controls.							
2.a.1.	Cyclic	Breakout—±0.25lbs. (0.112 daN) or 25%. Force—±1.0 lb. (0.224 daN) or 10%.	Ground; Static conditions. Trim On and Off. Friction Off Augmentation On and off.	Record results for an uninterrupted control sweep to the stops. (This test does not apply if aircraft hardware modular controllers are used.).	X	X			
2.a.2.	Collective and Pedals	Breakout—±0.5 lb. (0.224 daN) or 25%. Force —±1.0 lb. (0.224 daN) or 10%.	Ground; Static conditions. Trim On and Off. Friction Off Augmentation and On and Off.	Record results for an uninterrupted control sweep to the stops.	X	X			
2.a.3.	Brake Pedal Force vs. Position.	±5 lbs. (2.224 daN) or 10%	Ground; Static conditions.		X	X			
2.a.4.	Trim System Rate (all applicable systems).	Rate—±10%	Ground; Static conditions. Trim On Friction Off.	The tolerance applies to the recorded value of the trim rate.	X	X			
2.a.5.	Control Dynamics (all axes)	±10% of time for first zero crossing and ±10 (N+1)% of period thereafter. ±10% of amplitude of first overshoot. ±20% of amplitude of 2nd and subsequent overshoots greater than 5% of initial displacement ±1 overshoot.	Hover/Cruise Trim On Friction Off.	Results must be recorded for a normal control displacement in both directions in each axis (approximately 255 to 50% of full throw).			X		Control Dynamics for irreversible control systems may be evaluated in a ground/static condition. Refer to paragraph 3 of this attachment for additional information. "N" is the sequential period of a full cycle of oscillation.
2.a.6	Freeplay	±0.10 in	Ground; Static conditions	Record and compare results for all controls.	X	X			
2.b. Longitudinal Handling Qualities.									

TABLE D2A—FLIGHT TRAINING DEVICE (FTD) OBJECTIVE TESTS—Continued

<<< QPS Requirements >>>		Tolerances	Flight conditions	Test details	FTD Level		<< Information >>
Test							Notes
No.	Title				5	6	
2.b.1	Control Response	Pitch Rate—±10% or ±2/sec. Pitch Attitude Change—±10% or ±1.5°.	Cruise Augmentation On and Off.	Results must be recorded for two cruise airspeeds to include minimum power required speed Record data for a step control input. The Off-axis response must show correct trend for unaugmented cases.	X	X	
2.b.2	Static Stability	Longitudinal Control Position: ±10% of change from trim or ±0.25 in. (6.3 mm) or Longitudinal Control Force: ±0.5 lb. (0.223 daN) or ±10%.	Cruise or Climb. Autorotation. Augmentation On and Off.	Record results for a minimum of two speeds on each side of the trim speed. May be a series of snapshot tests.	X	X	
2.b.3	Dynamic Stability						
2.b.3.a.	Long Term Response	±10% of calculated period. ±10% of time to ½ or double amplitude, or ±0.02 of damping ratio.	Cruise Augmentation On and Off.	Record results for three full cycles (6 overshoots after input completed) or that sufficient to determine time to ½ double or amplitude, whichever is less. For non-periodic responses, the time history must be matched.	X	X	
2.b.3.b	Short Term Response	±1.5° Pitch or ±2/sec. Pitch Rate. ±0.1 g Normal Acceleration.	Cruise or Climb. Augmentation On and Off.	Record results for at least two airspeeds.		X	
2.b.4	Maneuvering Stability	Longitudinal Control Position—±10% of change from trim or ±0.25 in. (6.3mm) or Longitudinal Control Forces—±0.5 lb. (0.223 daN) or ±10%.	Cruise or Climb. Augmentation On and Off.	Record results for at least two airspeeds. Record results for Approximately 30°–45° bank angle. The force may be shown as a cross plot for irreversible systems. May be a series of snapshot tests.		X	
2.b.5	Landing Gear Operating Times	±1 sec	Takeoff (Retraction) Approach (Extension).	.....	X	X	

2.c. Lateral and Directional Handling Qualities.

2.c.1	Control Response						
2.c.1.a	Lateral	Roll Rate—±10% or ±3°/sec. Roll Attitude Change—±10% or ±3°.	Cruise Augmentation On and Off.	Record results for at least two airspeeds, including the speed at or near the minimum power required airspeed. Record results for a step control input. The Off-axis response must show correct trend for unaugmented cases.	X	X	
2.c.1.b	(b) Directional	Yaw Rate—±10% or ±2°/sec. Yaw Attitude Change—±10% or ±2°.	Cruise Augmentation On and Off.	Record data for at least two Airspeeds, including the speed at or near the minimum power required airspeed Record results for a step control input. The Off-axis response must show correct trend for unaugmented cases.	X	X	
2.c.2.	Directional Static Stability	Lateral Control Position—±10% of change from trim or ±0.25 in. (6.3mm) or Lateral Control Force—±0.5 lb. (0.223 daN) or 10%. Roll Attitude—±1.5.. Directional Control Position—±10% of change from trim or ±0.25 in. (6.3mm) or Directional Control Force—±1 lb. (0.448 daN) or 10%.. Longitudinal Control Position—±10% of change from trim or ±0.25 in. (6.3mm). Vertical Velocity—±100 fpm (0.50m/sec) or 10%.	1) Cruise; ..... or 2) Climb (may use Descent instead of Climb if desired). Augmentation On and Off.	Record results for at least two sideslip angles on either side of the trim point.. The force may be shown as a cross plot for irreversible systems.. May be a series of snapshot test..	X	X	This is a steady heading sideslip test.
2.c.3.	Dynamic Lateral and Directional Stability.	.....	.....	.....			

TABLE D2A—FLIGHT TRAINING DEVICE (FTD) OBJECTIVE TESTS—Continued

<<< QPS Requirements >>>		Tolerances	Flight conditions	Test details	FTD Level		<< Information >>
Test							Notes
No.	Title				5	6	
2.c.3.a.	Lateral-Directional Oscillations	±0.5 sec. or ±10% of period. ±10% of time to ½ or double amplitude or ±0.02 of damping ratio. ±20% or ±1 sec of time difference between peaks of bank and sideslip.	Cruise or Climb. Augmentation On/Off.	Record results for at least two airspeeds.. The test must be initiated with a cyclic or a pedal doublet input. Record results for six full cycles (12 overshoots after input completed) or that sufficient to determine time to ½ or double amplitude, whichever is less. For non-periodic response, the time history must be matched.	X	X	
2.c.3.b.	Spiral Stability	Correct Trend, ±2 bank or ±10% in 20 sec.	Cruise or Climb. Augmentation On and Off.	Record the results of a release from pedal only or cyclic only turns. Results must be recorded from turns in both directions.	X	X	
2.c.3.c.	Adverse/Proverse Yaw	Correct Trend, ±2 transient sideslip angle.	Cruise or Climb. Augmentation On and Off.	Record the time history of initial entry into cyclic only turns, using only a moderate rate for cyclic input. Results must be recorded for turns in both directions.	X	X	

3. CONTROL DYNAMICS

BEGIN INFORMATION

a. The characteristics of a helicopter flight control system have a major effect on the handling qualities. A significant consideration in pilot acceptability of a helicopter is the ''feel'' provided through the cockpit controls. Considerable effort is expended on helicopter feel system design in order to deliver a system with which pilots will be comfortable and consider the helicopter desirable to fly. In order for an FTD to be representative, it too must present the pilot with the proper feel; that of the respective helicopter.

b. Recordings such as free response to an impulse or step function are classically used to estimate the dynamic properties of electromechanical systems. In any case, it is only possible to estimate the dynamic properties as a result of only being able to estimate true inputs and responses. Therefore, it is imperative that the best possible data be collected since close matching of the FTD control loading system to the helicopter systems is essential. Control feel dynamic tests are described in the Table of Objective Tests in this appendix. Where accomplished, the free response is measured after a step or pulse input is used to excite the system.

c. For initial and upgrade evaluations, it is required that control dynamic characteristics be measured at and recorded directly from the cockpit controls. This procedure is usually accomplished by measuring the free response of the controls using a step or pulse input to excite the system. The procedure must be accomplished in hover, climb, cruise, and autorotation. For helicopters with irreversible control systems, measurements may be obtained on the ground. Proper pitot-static inputs (if appropriate) must be provided to represent airspeeds typical of those encountered in flight.

d. It may be shown that for some helicopters, climb, cruise, and autorotation have like effects. Thus, some tests for one may suffice for some tests for another. If either or both considerations apply, engineering validation or helicopter manufacturer rationale must be submitted as justification for ground tests or for eliminating a configuration. For FTDs requiring static and dynamic tests at the controls, special test fixtures will not be required during initial and upgrade evaluations if the sponsor's QTG shows both test fixture results and the results of an alternative approach, such as computer plots which were produced concurrently and show satisfactory agreement. Repeat of the alternative method during the initial evaluation would then satisfy this test requirement.

e. Control Dynamics Evaluations. The dynamic properties of control systems are often stated in terms of frequency, damping, and a number of other classical measurements which can be found in texts on control systems. In order to establish a consistent means of validating test results for FTD control loading, criteria are needed that will clearly define the interpretation of the measurements and the tolerances to be applied. Criteria are needed for both the underdamped system and the overdamped system, including the critically damped case. In the case of an underdamped system with very light damping, the system may be quantified in terms of frequency and damping. In critically damped or overdamped systems, the frequency and damping is not readily measured from a response time history. Therefore, some other measurement must be used.

f. Tests to verify that control feel dynamics represent the helicopter must show that the dynamic damping cycles (free response of the control) match that of the helicopter within specified tolerances. The method of evaluating the response and the tolerance to be applied are described below for the underdamped and critically damped cases.

g. Tolerances.

(1) Underdamped Response.

(a) Two measurements are required for the period, the time to first zero crossing (in case a rate limit is present) and the subsequent frequency of oscillation. It is necessary to measure cycles on an individual basis in case there are nonuniform periods in the response. Each period will be independently compared to the respective period of the helicopter control system and, consequently, will enjoy the full tolerance specified for that period.

(b) The damping tolerance will be applied to overshoots on an individual basis. Care must be taken when applying the tolerance to small overshoots since the significance of such overshoots becomes questionable. Only those overshoots larger than 5 percent of the total initial displacement will be considered significant. The residual band, labeled $T(A_d)$ on Figure 1 of this attachment is ±5 percent of the initial displacement amplitude, A_d, from the steady state value of the oscillation. Oscillations within the residual band are considered insignificant. When comparing simulator data to helicopter data, the process would begin by overlaying or aligning the simulator and helicopter steady state values and then comparing amplitudes of oscillation peaks, the time of the first zero crossing, and individual periods of oscillation. To be satisfactory, the simulator must show the same number of significant overshoots to within one when compared against the helicopter data. The procedure for evaluating the response is illustrated in Figure 1 of this attachment.

(2) Critically Damped and Overdamped Response. Due to the nature of critically damped responses (no overshoots), the time to reach 90 percent of the steady state (neutral point) value must be the same as the

helicopter within ±10 percent. The simulator response must be critically damped also. Figure 2 of this attachment illustrates the procedure.

(3)(a) The following summarizes the tolerances, T, for an illustration of the referenced measurements. (See Figures 1 and 2, above)

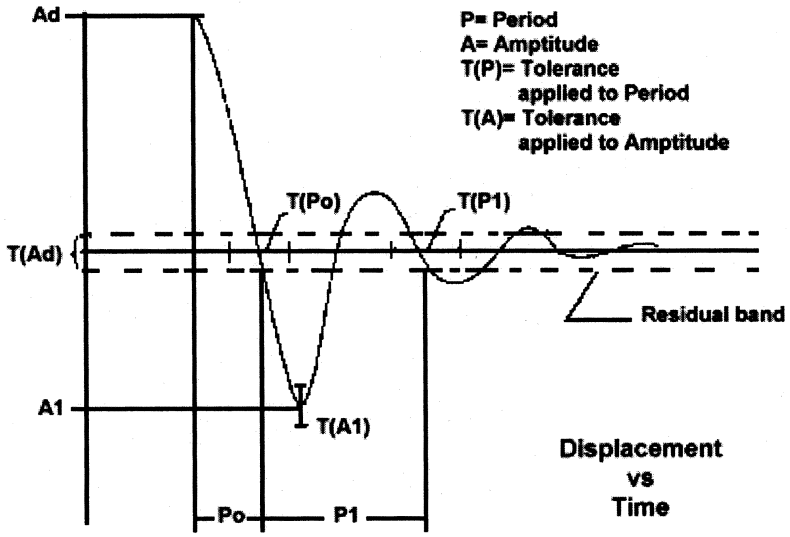
$T(P_0)$ ±10% of P_0
$T(P_1)$ ±20% of P_1
T(A) ±10% of A_1, ±20% of Subsequent Peaks
$T(A_d)$ ±10% of A_d = Residual Band
Overshoots ±1

(b) In the event the number of cycles completed outside of the residual band, and thereby significant, exceeds the number depicted in figure 1, the following tolerances (T) will apply:

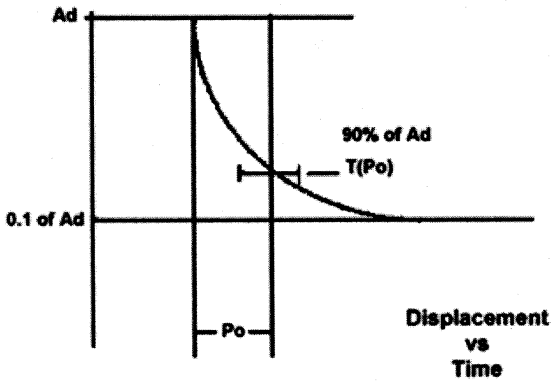
$T(P_n)$ ±10%(n+1)% of P_n, where ''n'' is the next in sequence.

END INFORMATION

Attachment 2 to Appendix D to Part 60—
Figure 1. Under-Damped Step Response



Attachment 2 to Appendix D to Part 60—
Figure 2. Critically-Damped Step Response



ATTACHMENT 3 TO APPENDIX D TO PART 60—FLIGHT TRAINING DEVICE (FTD) SUBJECTIVE EVALUATION

1. DISCUSSION

BEGIN INFORMATION

a. The subjective tests and the examination of functions provide a basis for evaluating the capability of the FTD to perform over a typical utilization period; determining that the FTD satisfactorily meets the appropriate training/testing/checking objectives and competently simulates each required maneuver, procedure, or task; and verifying correct operation of the FTD controls, instruments, and systems. The items in the list of operations tasks are for FTD evaluation purposes only. They must not be used to limit or exceed the authorizations for use of a given level of FTD as found in the Practical Test Standards or as may be approved by the TPAA. All items in the following paragraphs are subject to an examination of function.

b. The List of Operations Tasks addressing pilot functions and maneuvers is divided by flight phases. All simulated helicopter systems functions will be assessed for normal and, where appropriate, alternate operations. Normal, abnormal, and emergency operations associated with a flight phase will be assessed during the evaluation of maneuvers or events within that flight phase.

c. Systems to be evaluated are listed separately under ''Any Flight Phase'' to ensure appropriate attention to systems checks. Operational navigation systems (including inertial navigation systems, global positioning systems, or other long-range systems) and the associated electronic display systems will be evaluated if installed. The NSP pilot will include in his report to the TPAA, the effect of the system operation and any system limitation.

d. At the request of the TPAA, the NSP Pilot may assess the FTD for a special aspect of a sponsor's training program during the functions and subjective portion of an evaluation. Such an assessment may include a portion of a Line Oriented Flight Training (LOFT) scenario or special emphasis items in the sponsor's training program. Unless directly related to a requirement for the qualification level, the results of such an evaluation would not necessarily affect the qualification of the FTD.

END INFORMATION

TABLE D3A—TABLE OF FUNCTIONS AND SUBJECTIVE TESTS LEVEL 6 FTD

<<< QPS Requirements >>>	
No.	Operations tasks
Tasks in this table are subject to evaluation if appropriate for the helicopter simulated as indicated in the SOQ Configuration List and/or for a Level 6 FTD. Items not installed or not functional on the FTD and, therefore, not appearing on the SOQ Configuration List, are not required to be listed as exceptions on the SOQ.	
1. Preflight Procedures	
1.a	Preflight Inspection (Cockpit Only) switches, indicators, systems, and equipment.
1.b	APU/Engine start and run-up.
1.b.1	Normal start procedures.
1.b.2	Alternate start procedures.
1.b.3	Abnormal starts and shutdowns.
1.b.4	Rotor engagement.
1.b.5	System checks.
2. Takeoff and Departure Phase	
2.a	instrument
2.b	Takeoff with engine failure after critical decision point (CDP).
3. Climb	
3.a	Normal.
3.b	One engine inoperative.
4. Inflight Maneuvers	
4.	Performance.
4.b	Flying qualities.
4.c	Turns.
4.c.1	Timed.
4.c.2	Normal.
4.c.3	Steep.
4.d	Accelerations and decelerations.
4.e	Abnormal/emergency procedures.

TABLE D3A—TABLE OF FUNCTIONS AND SUBJECTIVE TESTS LEVEL 6 FTD—Continued

<<< QPS Requirements >>>	
No.	Operations tasks
4.e.1	Engine fire.
4.e.2	Engine failure.
4.e.3	In-flight engine shutdown (and restart, if applicable).
4.e.4	Fuel governing system failures (e.g., FADEC malfunction).
4.e.5	Directional control malfunction (restricted to the extent that the maneuver may not terminate in a landing).
4.e.6	Hydraulic failure.
4.e.7	Stability augmentation system failure.
5. Instrument Procedures	
5.a	Holding.
5.b	Precision Instrument Approach.
5.b.1	All engines operating.
5.b.2	One or more engines inoperative.
5.b.3	Approach procedures:
5.b.4	PAR.
5.b.5	ILS.
5.b.6	Manual (raw data).
5.b.7	Flight director only.
5.b.8	Autopilot* and flight director (if appropriate) coupled.
5.c	Non-precision Instrument Approach.
5.c	Normal—All engines operating.
5.c	One or more engines inoperative.
5.c	Approach procedures:
5.c.1	NDB.
5.c.2	VOR, RNAV, TACAN, GPS.
5.c.3	ASR.
5.c.4	Helicopter only.
5.d	Missed Approach.
5.d.1	All engines operating.
5.d.2	One or more engines inoperative.
5.d.3	Stability augmentation system failure.
6. Normal and Abnormal Procedures (any phase of flight)	
6.a	Helicopter and powerplant systems operation (as applicable).
6.a.1	Anti-icing/deicing systems.
6.a.2	Auxiliary power-plant.
6.a.3	Communications.
6.a.4	Electrical system.
6.a.5	Environmental system.
6.a.6	Fire detection and suppression.
6.a.7	Flight control system.
6.a.8	Fuel system.
6.a.9	Engine oil system.
6.a.10	Hydraulic system.
6.a.11	Landing gear.
6.a.12	Oxygen.
6.a.13	Pneumatic.
6.a.14	Powerplant.
6.a.15	Flight control computers.
6.a.16	Stability augmentation and control augmentation system(s).
6.b	Flight management and guidance system (as applicable).
6.b.1	Airborne radar.
6.b.2	Automatic landing aids.
6.b.3	Autopilot*.
6.b.4	Collision avoidance system.
6.b.5	Flight data displays.
6.b.6	Flight management computers.
6.b.7	Navigation systems.
7. Postflight Procedures	
7.a	Parking and Securing.
7.b	Engine and systems operation.
7.c	Parking brake operation.
7.d	Rotor brake operation.
7.e	Abnormal/emergency procedures.
8. Instructor Operating Station (IOS), as appropriate	

TABLE D3A—TABLE OF FUNCTIONS AND SUBJECTIVE TESTS LEVEL 6 FTD—Continued

<<< QPS Requirements >>>	
No.	Operations tasks
8.a	Power Switch(es).
8.b.1	Helicopter conditions.
8.b.2	Gross weight, center of gravity, fuel loading and allocation, etc.
8.b.3	Helicopter system status.
8.b.4	Ground crew functions (e.g., ext. power).
8.c	Airports and landing areas.
8.c.1	Number and selection.
8.c.2	Runway or landing area selection.
8.c.3	Preset positions (e.g., ramp, over FAF).
8.c.4	Lighting controls.
8.d	Environmental controls.
8.d.1	Temperature.
8.d.2	Climate conditions (e.g., ice, rain).
8.d.3	Wind speed and direction.
8.e	Helicopter system malfunctions.
8.e.1	Insertion/deletion.
8.e.2	Problem clear.
8.f	Locks, Freezes, and Repositioning.
8.f.1	Problem (all) freeze/release.
8.f.2	Position (geographic) freeze/release.
8.f.3	Repositioning (locations, freezes, and releases).
8.f.4	Ground speed control.
8.g	Sound Controls. On/off / adjustment.
8.h	Control Loading System (as applicable On/off/emergency stop.)
8.i	Observer Stations.
8.i.1	Position.
8.i.2	Adjustments.

*''Autopilot'' means attitude retention mode of operation.

TABLE D3B—TABLE OF FUNCTIONS AND SUBJECTIVE TESTS
Level 5 FTD

<<< QPS Requirements >>>	
Item No.	Operations tasks
Tasks in this table are subject to evaluation if appropriate for the helicopter simulated as indicated in the SOQ Configuration List and/or for a Level 5 FTD. Items not installed or not functional on the FTD and, therefore, not appearing on the SOQ Configuration List, are not required to be listed as exceptions on the SOQ.	
1. Preflight Procedures	
1.a. Preflight Inspection (Cockpit Only) switches, indicators, systems, and equipment.	
1.b.	APU/Engine start and run-up.
1.b.1.	Normal start procedures.
1.b.2.	Alternate start procedures.
1.b.3.	Abnormal starts and shutdowns.
2. Climb	
2.a. Normal.	
3. Inflight Maneuvers	
3.a. Performance.	
3.b. Turns, Normal.	
4. Instrument Procedures	
4.a. Coupled instrument approach maneuvers (as applicable for the systems installed).	

TABLE D3B—TABLE OF FUNCTIONS AND SUBJECTIVE TESTS—Continued
Level 5 FTD

<<< QPS Requirements >>>	
Item No.	Operations tasks
5. Normal and Abnormal Procedures (any phase of flight)	
5.a. Normal system operation (Installed systems).	
5.b. Abnormal/Emergency system operation (installed systems).	
6. Postflight Procedures	
6.a. Parking and Securing.	
6.b. Engine and systems operation.	
6.c. Parking brake operation.	
6.d. Rotor brake operation.	
6.e. Abnormal/emergency procedures.	
7. Instructor Operating Station (IOS), as appropriate	
7.a. Power Switch(es).	
7.b. Preset positions (ground; air)	
7.c. Helicopter system malfunctions.	
7.c.1.	Insertion / deletion.
7.c.2.	Problem clear.
7.d. Control Loading System (as applicable On / off / emergency stop.	

TABLE D3B—TABLE OF FUNCTIONS AND SUBJECTIVE TESTS—Continued

Level 5 FTD

<<< QPS Requirements >>>	
Item No.	Operations tasks
7.e.	Observer Stations.
7.e1. ..... 7.e.2.	Position. Adjustments.

TABLE D3C—TABLE OF FUNCTIONS AND SUBJECTIVE TESTS

Level 4 FTD

<<< QPS Requirements >>>	
Item number	Operations tasks
Tasks in this table are subject to evaluation if appropriate for the helicopter simulated as indicated in the SOQ Configuration List and/or for a Level 4 FTD. Items not installed or not functional on the FTD and, therefore, not appearing on the SOQ Configuration List, are not required to be listed as exceptions on the SOQ.	
1. Preflight Procedures.	
1.a. Preflight Inspection (Cockpit Only) switches, indicators, systems, and equipment.	
1.b. APU/Engine start and run-up.	
1.b.1. ..... 1.b.2. ..... 1.b.3.	Normal start procedures. Alternate start procedures. Abnormal starts and shutdowns.
2. Normal and Abnormal Procedures (any phase of flight).	
2.a. Normal system operation (Installed systems).	
2.b. Abnormal/Emergency system operation (installed systems).	
3. Postflight Procedures.	

TABLE D3C—TABLE OF FUNCTIONS AND SUBJECTIVE TESTS—Continued

Level 4 FTD

<<< QPS Requirements >>>	
Item number	Operations tasks
3.a. Parking and Securing.	
3.b. Engine and systems operation.	
3.c. Parking brake operation.	
4. Instructor Operating Station (IOS), as appropriate.	
4.a. Power Switch(es).	
4.b. Preset positions (ground; air)	
4.c. Helicopter system malfunctions.	
4.c.1. ..... 4.c.2.	Insertion / deletion. Problem clear.

ATTACHMENT 4 TO APPENDIX D TO PART 60—SAMPLE DOCUMENTS

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Figure D4H—Sample MQTG Index of Effective FSTD Directives

Attachment 4 to Appendix D to Part 60—
Figure D4A – Sample Letter, Request for Initial, Upgrade, or Reinstatement Evaluation
INFORMATION

Date _____

Mr. Charles A. Spillner
Manager, National Simulator Program
Federal Aviation Administration
100 Hartsfield Centre Parkway
Suite 400
Atlanta, GA 30354

Dear Mr. Spillner:

RE: Request for Initial/Upgrade Evaluation Date

This is to advise you of our intent to request an (initial or upgrade) evaluation of our (FSTD Manufacturer), (Aircraft Type/Level) Flight Simulation Training Device (FSTD), (FAA ID Number, if previously qualified), located in (City, State) at the (Facility) on (Proposed Evaluation Date). (The proposed evaluation date shall not be more than 180 days following the date of this letter.) The FSTD will be sponsored by (Name of Training Center/Air Carrier), FAA Designator (4 Letter Code). The FSTD will be sponsored under the following options: (Select One)

☐ The FSTD will be used within the sponsor's FAA approved training program and placed on the sponsor's Training/Operations Specifications; or

☐ The FSTD will be used for dry lease only in accordance with Paragraph 3b, FSTD Guidance Bulletin 03-08.

We agree to provide the formal request for the evaluation (*Ref: Appendix 4, AC 120-40B*) to your staff as follows: (check one)

☐ For QTG tests run at the factory, not later, than 45 days prior to the proposed evaluation date with the additional "l/3 on-site" tests provided not later than 14 days prior to the proposed evaluation date.

☐ For QTG tests run on-site, not later than 30 days prior to the proposed evaluation date.

We understand that the formal request will contain the following documents:

10. Sponsor's Letter of Request (*Company Compliance Letter*).
11. Principal Operations Inspector (POI) or Training Center Program Manager's (TCPM) endorsement.
12. Complete QTG.

If we are unable to meet the above requirements, we understand this may result in a significant delay, perhaps 45 days or more, in rescheduling and completing the evaluation.

(The sponsor should add additional comments as necessary).

Please contact (Name Telephone and Fax Number of Sponsor's Contact) to confirm the date for this initial evaluation. We understand a member of your National Simulator Program staff will respond to this request within 14 days.

A copy of this letter of intent has been provided to (Name), the Principal Operations Inspector (POI) and/or Training Center Program Manager (TCPM).

Sincerely,

Attachment: FSTD Information Form
cc: POI/TCPM

ATTACHMENT 4 TO APPENDIX D TO PART 60—
Figure D4B – Sample Letter , Request for Initial, Upgrade, or Reinstatement Evaluation
Attachment: FSTD Information Form
INFORMATION

Date: ____					
Section 1. FSTD Information and Characteristics					
Sponsor Name:	____		**FSTD Location:**		
Address:	____ ____		**Physical Address:**	____ ____	
City:	____		**City:**	____	
State:	____		**State:**	____	
Country:	____		**Country:**	____	
ZIP:	____		**ZIP:**	____	
Manager	____				
Sponsor ID No: *(Four Letter FAA Designator)*	____		**Nearest Airport:** *(Airport Designator)*	____	
Type of Evaluation Requested:			☐ **Initial** ☐ **Upgrade** ☐ **Recurrent** ☐ **Special** ☐ **Reinstatement**		
Qualification Basis: ____	☐ **A**	☐ **B**	☐ **Interim C**	☐ **C**	☐ **D**
	☐ **6**	☐ **7**	☐ **Provisional Status**		
Initial Qualification: (If Applicable)	**Date:** ____ **Level** ____		**Manufacturer's Identification/Serial No:**	____	
Upgrade Qualification: (If Applicable)	**Date:** ____ **Level** ____ MM/DD/YYYY		☐ **eQTG**		
Other Technical Information:					
FAA FSTD ID No: (If Applicable)	____		**FSTD Manufacturer:**	____	
Convertible FSTD:	☐**Yes:**		**Date of Manufacture:**	____ MM/DD/YYYY	
Related FAA ID No. (If Applicable)	____ ____ ____		**Sponsor FSTD ID No:** ____		
Aircraft model/series: ____			**Source of aerodynamic model:** ____		
Engine model(s) and data revision: ____			**Source of aerodynamic coefficient data:** ____		
FMS identification and revision level: ____			**Aerodynamic data revision number:** ____		
Visual system manufacturer/model: ____			**Visual system display:** ____		
Flight control data revision: ____			**FSTD computer(s) identification:** ____		
Motion system manufacturer/type: ____					
National Aviation Authority (NAA): (If Applicable)	____			____	
NAA FSTD ID No:	____		**Last NAA Evaluation Date:**	____	
NAA Qualification Level:	____				
NAA Qualification Basis:	____				

ATTACHMENT 4 TO APPENDIX D TO PART 60—
Figure D4B – Sample Letter , Request for Initial, Upgrade, or Reinstatement Evaluation
Attachment: FSTD Information Form
INFORMATION

Visual System Manufacturer and Type:	____	**Motion System Manufacturer and Type:**	____
Aircraft Make/Model/Series:	____	**FSTD Seats Available:**	____
Aircraft Equipment	**ENGINE TYPE(S):** ____	**Flight Instrumentation:** ☐ EFIS ☐ HUD ☐ HGS ☐ EFVS ☐ TCAS ☐ GPWS ☐ Plain View ☐ GPS ☐ FMS Type: ____ ☐ WX Radar ☐ Other: ____	Engine Instrumentation: ☐ EICAS ☐ FADEC ☐ Other: ____

Airport Models:	3.6.1 ____ *Airport Designator*	3.6.2 ____ *Airport Designator*	3.6.3 ____ *Airport Designator*
Circle to Land:	3. 7.1 ____ *Airport Designator*	3. 7.2 ____ *Approach*	3. 7.3 ____ *Landing Runway*
Visual Ground Segment	3.8.1 ____ *Airport Designator*	3.8 .2 ____ *Approach*	3. 8.3 ____ *Landing Runway*

Section 2. Supplementary Information

FAA Training Program Approval Authority:		☐ POI ☐ TCPM ☐ Other: ____	
Name:	____	**Office:**	____
Tel:	____	**Fax:**	____
Email:	____		

FSTD Scheduling Person:			
Name:	____		
Address 1:	____	**Address 2**	____
City:	____	**State:**	____
ZIP:	____	**Email:**	____
Tel:	____	**Fax:**	____

FSTD Technical Contact:			
Name:	____		
Address 1:	____	**Address 2**	____
City:	____	**State:**	____
ZIP:	____	**Email:**	____
Tel:	____	**Fax:**	____

ATTACHMENT 4 TO APPENDIX D TO PART 60—
Figure D4B – Sample Letter , Request for Initial, Upgrade, or Reinstatement Evaluation
Attachment: FSTD Information Form
INFORMATION

Section 3. Training, Testing and Checking Considerations		
Area/Function/Maneuver	**Requested**	**Remarks**
Private Pilot - Training / Checks: (142)	☐	____
Commercial Pilot - Training /Checks:(142)	☐	____
Multi-Engine Rating - Training / Checks (142)	☐	____
Instrument Rating -Training / Checks (142)	☐	____
Type Rating - Training / Checks (135/121/142)	☐	____
Proficiency Checks (135/121/142)	☐	____
CAT I: (RVR 2400/1800 ft. DH200 ft)	☐	____
CAT II: (RVR 1200 ft. DH 100 ft)	☐	____
CAT III * (lowest minimum) _____ RVR _____ ft. ** State CAT III (≤ 700 ft.), CAT IIIb (≤ 150 ft.), or CAT IIIc (0 ft.)*	☐	____
Circling Approach	☐	____
Windshear Training: (FSTD GB 03-05)	☐	____
Windshear Training IAW 121.409d (121 Turbojets Only) (FSTD GB 03-05)	☐	____
Generic Unusual Attitudes and Recoveries within the Normal Flight Envelope (FSTD GB 04-03)	☐	____
Specific Unusual Attitudes Recoveries (HBAT 95-10) (FSTD GB 04-03)	☐	____
Auto-coupled Approach/Auto Go Around	☐	____
Auto-land / Roll Out Guidance	☐	____
TCAS/ACAS I / II	☐	____
WX-Radar	☐	____
HUD (FSTD GB 03-02)	☐	____
HGS (FSTD GB 03-02)	☐	
EFVS (FSTD GB 03-03)	☐	
Future Air Navigation Systems (HBAT 98-16A)	☐	____
GPWS / EGPWS	☐	____
ETOPS Capability	☐	____
GPS	☐	____
SMGCS	☐	____
Helicopter Slope Landings	☐	____
Helicopter External Load Operations	☐	____
Helicopter Pinnacle Approach to Landings	☐	____
Helicopter Night Vision Maneuvers	☐	____
Helicopter Category A Takeoffs	☐	____

Attachment 4 to Appendix D to Part 60—
Figure D4C – Sample Qualification Test Guide Cover Page

INFORMATION

SPONSOR NAME

SPONSOR ADDRESS

FAA QUALIFICATION TEST GUIDE

(SPECIFIC HELICOPTER MODEL)

(*for example*)

(Vertiflite AB-320)

(FTD Identification Including Manufacturer, Serial Number, Visual System Used)

(FTD Level)

(Qualification Performance Standard Used)

(FTD Location)

FAA Initial Evaluation

Date: _____

_____ Date: _____
(Sponsor)

_____ Date: _____
Manager, National Simulator Program, FAA

Attachment 4 to Appendix D to Part 60—
Figure D4D – Sample Statement of Qualification - Certificate

INFORMATION

Federal Aviation Administration
National Simulator Program

Statement of Qualification

This is to certify that representatives of the National Simulator Program Completed an evaluation of the

Go-Fast Training Center
Vertiflite AB-320 Flight Training Device
FAA Identification Number 889

And found it to meet the standards set forth in
Part 60, Appendix D
Qualification Performance Standards

The Master Qualification Test Guide and the attached Configuration List and List of Qualified Tasks Provide the Qualification Basis for this device to operate at

Level 6
Until December 31, 2008

Unless sooner rescinded or extended by the National Simulator Program Manager

November 15, 2007 (date)

I. B. Checkin, Jr. (for the NSPM)

Attachment 4 to Appendix D to Part 60—
Figure D4E – Sample Statement of Qualification – Configuration List
INFORMATION

Date: ____				
Section 1. FSTD Information and Characteristics				
Sponsor Name:	____		**FSTD Location:**	
Address:	____		**Physical Address:**	____
City:	____		**City:**	____
State:	____		**State:**	____
Country:	____		**Country:**	____
ZIP:	____		**ZIP:**	____
Manager	____			
Sponsor ID No: *(Four Letter FAA Designator)*	____		**Nearest Airport:** *(Airport Designator)*	____
Type of Evaluation Requested:			☐ **Initial** ☐ **Upgrade** ☐ **Recurrent** ☐ **Special** ☐ **Reinstatement**	
Qualification Basis: ____	☐ **A**	☐ **B**	☐ **Interim C**	☐ **C** ☐ **D**
	☐ **6**	☐ **7**	☐ **Provisional Status**	
Initial Qualification: (If Applicable)	**Date:** ____ **Level** ____		**Manufacturer's Identification/Serial No:**	____
Upgrade Qualification: (If Applicable)	**Date:** ____ **Level** ____ MM/DD/YYYY		☐ **eQTG**	
Other Technical Information:				
FAA FSTD ID No: (If Applicable)	____		**FSTD Manufacturer:**	____
Convertible FSTD:	☐ **Yes:**		**Date of Manufacture:**	____ MM/DD/YYYY
Related FAA ID No. (If Applicable)	____ ____ ____		**Sponsor FSTD ID No:** ____	
Aircraft model/series: ____			**Source of aerodynamic model:** ____	
Engine model(s) and data revision: ____			**Source of aerodynamic coefficient data:** ____	
FMS identification and revision level: ____			**Aerodynamic data revision number:** ____	
Visual system manufacturer/model: ____			**Visual system display:** ____	
Flight control data revision: ____			**FSTD computer(s) identification:** ____	
Motion system manufacturer/type: ____				
National Aviation Authority (NAA): (If Applicable)	____			____
NAA FSTD ID No:	____		**Last NAA Evaluation Date:**	____
NAA Qualification Level:	____			
NAA Qualification Basis:	____			

Attachment 4 to Appendix D to Part 60—
Figure D4E – Sample Statement of Qualification – Configuration List
INFORMATION

Visual System Manufacturer and Type:	____	**Motion System Manufacturer and Type:**	____
Aircraft Make/Model/Series:	____	**FSTD Seats Available:**	____

Aircraft Equipment	**ENGINE TYPE(S):** ____	**Flight Instrumentation:** ☐ EFIS ☐ HUD ☐ HGS ☐ EFVS ☐ TCAS ☐ GPWS ☐ Plain View ☐ GPS ☐ FMS Type: ____ ☐ WX Radar ☐ Other: ____	Engine Instrumentation: ☐ EICAS ☐ FADEC ☐ Other: ____

Airport Models:	3.6.1 ____ *Airport Designator*	3.6.2 ____ *Airport Designator*	3.6.3 ____ *Airport Designator*
Circle to Land:	3. 7.1 ____ *Airport Designator*	3. 7.2 ____ *Approach*	3. 7.3 ____ *Landing Runway*
Visual Ground Segment	3.8.1 ____ *Airport Designator*	3.8 .2 ____ *Approach*	3. 8.3 ____ *Landing Runway*

Section 2. Supplementary Information

FAA Training Program Approval Authority:		☐ **POI** ☐ **TCPM** ☐ **Other:** ____	
Name:	____	**Office:**	____
Tel:	____	**Fax:**	____
Email:	____		

FSTD Scheduling Person:			
Name:	____		
Address 1:	____	**Address 2**	____
City:	____	**State:**	____
ZIP:	____	**Email:**	____
Tel:	____	**Fax:**	____

FSTD Technical Contact:			
Name:	____		
Address 1:	____	**Address 2**	____
City:	____	**State:**	____
ZIP:	____	**Email:**	____
Tel:	____	**Fax:**	____

Section 3. Training, Testing and Checking Considerations

Area/Function/Maneuver	Requested	Remarks
Private Pilot - Training / Checks: (142)	☐	____
Commercial Pilot - Training /Checks:(142)	☐	____
Multi-Engine Rating - Training / Checks (142)	☐	____
Instrument Rating -Training / Checks (142)	☐	____
Type Rating - Training / Checks (135/121/142)	☐	____
Proficiency Checks (135/121/142)	☐	____
CAT I: (RVR 2400/1800 ft. DH200 ft)	☐	____

Attachment 4 to Appendix D to Part 60—
Figure D4E – Sample Statement of Qualification – Configuration List
INFORMATION

CAT III * (lowest minimum) _____ RVR _____ ft. * *State CAT III (≤ 700 ft.), CAT IIIb (≤ 150 ft.), or CAT IIIc (0 ft.)*	☐	____
Circling Approach	☐	____
Windshear Training: (FSTD GB 03-05)	☐	____
Windshear Training IAW 121.409d (121 Turbojets Only) (FSTD GB 03-05)	☐	____
Generic Unusual Attitudes and Recoveries within the Normal Flight Envelope (FSTD GB 04-03)	☐	____
Specific Unusual Attitudes Recoveries (HBAT 95-10) (FSTD GB 04-03)	☐	____
Auto-coupled Approach/Auto Go Around	☐	____
Auto-land / Roll Out Guidance	☐	____
TCAS/ACAS I / II	☐	____
WX-Radar	☐	____
HUD (FSTD GB 03-02)	☐	____
HGS (FSTD GB 03-02)	☐	
EFVS (FSTD GB 03-03)	☐	
Future Air Navigation Systems (HBAT 98-16A)	☐	____
GPWS / EGPWS	☐	____
ETOPS Capability	☐	____
GPS	☐	____
SMGCS	☐	____
Helicopter Slope Landings	☐	____
Helicopter External Load Operations	☐	____
Helicopter Pinnacle Approach to Landings	☐	____
Helicopter Night Vision Maneuvers	☐	____
Helicopter Category A Takeoffs	☐	____

Attachment 4 to Appendix D to Part 60—
Figure D4F – Sample Statement of Qualification – List of Qualified Tasks
INFORMATION

STATEMENT of QUALIFICATION
LIST of QUALIFIED TASKS

Go-Fast Training Center Vertiflite AB-320 -- Level C -- FAA ID# 888

The FTD is qualified to perform all of the Maneuvers, Procedures, Tasks, and Functions Listed in Appendix D, Attachment 1, Table D1B, Minimum FTD Requirements In Effect on [mm/dd/yyyy] except for the following listed Tasks or Functions.

(*Example*)

Excepted Tasks:

6.f. Fire Detection and Extinguisher System.
7.d Ditching.

Excepted Simulator Systems:

Remote IOS

Additional Qualified Tasks or Functions in addition to those listed in appendix D, Attachment 3, Table D1B, Minimum FTD Requirements.

(None)

Recurrent Evaluation Requirements ***Completed at conclusion of Initial Evaluation***	
Recurrent Evaluations to be conducted each _(fill in)__ months Allotting _____ hours of FTD time. Signed: _____ NSPM / Evaluation Team Leader	Recurrent evaluations are due as follows: _(month)__ and __(month)_ and __(month)_ (enter or strike out, as appropriate) _____ Date

Revision: Based on (enter reasoning):	
Recurrent Evaluations are to be conducted each _(fill in)__ months. Allotting _____ hours. Signed: _____ NSPM Evaluation Team Leader	Recurrent evaluations are due as follows: _(month)__ and __(month)_ and __(month)_ (enter or strike out, as appropriate) _____ Date

(Repeat as Necessary)

Index of Effective FSD Directives
Filed in this Section

Notification Number	**Received From: (TPAA/NSPM)**	**Date of Notification**	**Date of Modification Completion**

Continue as Necessary....

APPENDIX E TO PART 60—QUALIFICATION PERFORMANCE STANDARDS FOR QUALITY MANAGEMENT SYSTEMS FOR FLIGHT SIMULATION TRAINING DEVICES

BEGIN QPS REQUIREMENTS

a. Not later than October 30, 2008 each current sponsor of an FSTD must submit to the NSPM a proposed Quality Management System (QMS) program as described in this QPS

appendix. The NSPM will review the program in order of receipt and notify the sponsor within 90 days of beginning the review regarding the acceptability of the program including any required adjustments. Within 6 months of the notification of acceptability, the sponsor must implement the program, conduct internal audit(s), make any required program adjustments as a result of any internal audit, and have the NSPM initial audit scheduled.

b. For first-time FSTD sponsors, not later than 120 days prior to the date scheduled for the initial FSTD evaluation, the sponsor must submit to the NSPM the proposed QMS program as described in this QPS appendix. The NSPM will review the program and notify the sponsor within 90 days of beginning the review regarding the acceptability of the program including any required adjustments. Within 6 months of the notification of acceptability, the sponsor must implement the program, conduct internal audit(s), make any required program adjustments as a result of any internal audit, and have the NSPM initial audit scheduled.

c. The Director of Operations for a Part 119 certificate holder, the Chief Instructor for a Part 141 certificate holder, or the equivalent for a Part 142 or Flight Engineer School sponsor must designate a management representative who has the responsibility and authority to establish and modify the sponsor's policies, practices, and procedures regarding the QMS program for the recurring qualification and the day-to-day use of each FSTD.

d. The minimum content required for an acceptable QMS is found in Table E1. The policies, processes, and/or procedures described in this table must be maintained in a Quality Manual and will serve as the basis for the following:

(1) The sponsor-conducted initial and ongoing periodic assessments;

(2) The NSPM-conducted initial and ongoing periodic assessments; and

(3) The continuing surveillance and analysis by the NSPM of the sponsor's performance and effectiveness in providing a satisfactory FSTD for use on a regular basis.

END QPS REQUIREMENTS

BEGIN INFORMATION

e. When a person sponsors an FSTD maintained by a person other than a U.S. certificate holder, the sponsor remains responsible for the QMS program for that FSTD; however—

(1) If that FSTD is maintained under a qualification by a non-FAA regulatory authority and that authority and the NSPM have agreed to accept each other's simulator evaluations (*e.g.*, under a Bilateral Aviation Safety Agreement (BASA) and associated Simulator Implementation Procedures (SIP), such as the JAA of Europe), no additional requirements are necessary for QMS programs.

(2) If that FSTD is maintained under qualification of a regulatory authority where there is no BASA/SIP or that authority and the NSPM have not agreed to accept each other's qualification programs, the NSPM request additional information regarding those aspects of the sponsor's QMS program for maintaining the qualification standards for the FSTD.

END INFORMATION

BEGIN QPS REQUIREMENTS

TABLE E1—MINIMUM REQUIREMENTS FOR SATISFACTORY FSTD QUALITY MANAGEMENT SYSTEM

Number	QPS requirement	Information (Reference)
E1.1.	A QMS manual that sets out the policies, processes, and/or procedures outlined in this table..	§ 60.5(a).
E1.2.	A policy, process, and/or procedure specifying how the sponsor will identify deficiencies in the QMS.	§ 60.5(b).
E1.3.	A policy, process, and/or procedure specifying how the sponsor will document how the QMS program will be changed to address deficiencies when found.	§ 60.5(b).
E1.4.	A policy, process, and/or procedure specifying how the sponsor will address proposed program changes (for programs that do not meet the minimum requirements as notified by the NSPM) to the NSPM and receive approval prior to their implementation.	§ 60.5(c).
E1.5.	A policy, process, and/or procedure specifying how the sponsor will document that at least one FSTD is used within the sponsor's FAA-approved flight training program for the aircraft or set of aircraft at least once within the 12-month period following the initial/upgrade evaluation conducted by the NSP and at least once within each subsequent 12-month period thereafter.	§ 60.7(b)(5).
E1.6.	A policy, process, and/or procedure specifying how the sponsor will document that at least one FSTD is used within the sponsor's FAA-approved flight training program for the aircraft or set of aircraft at least once within the 12-month period following the first continuing qualification evaluation conducted by the NSP and at least once within each subsequent 12-month period thereafter.	§ 60.7(b)(6).

TABLE E1—MINIMUM REQUIREMENTS FOR SATISFACTORY FSTD QUALITY MANAGEMENT SYSTEM—Continued

Number	QPS requirement	Information (Reference)
E1.7.	A policy, process, and/or procedure specifying how the sponsor will obtain an annual written statement from a qualified pilot (after having flown the subject aircraft or set of aircraft during the preceding 12-month period) that the performance and handling qualities of the subject FSTD represents the subject aircraft or set of aircraft (within the normal operating envelope). Required only if the subject FSTD is not used in the sponsor's FAA-approved flight training program for the aircraft or set of aircraft at least once within the preceding 12-month period.	§ 60.5(b)(7) and § 60.7(d)(2).
E1.8.	A policy, process, and/or procedure specifying how independent feedback(from persons recently completing training, evaluation, or obtaining flight experience; instructors and check airmen using the FSTD for training, evaluation or flight experience sessions; and FSTD technicians and maintenance personnel) will be received and addressed by the sponsor regarding the FSTD and its operation.	§ 60.9(b)(1).
E1.9.	A policy, process, and/or procedure specifying how and where the FSTDStatement of Qualification will be posted, or accessed by an appropriate terminal or display, in or adjacent to the FSTD.	§ 60.9(b)(2).
E1.10.	A policy, process, and/or procedure specifying how the sponsor's management representative (MR) is selected and identified by name to the NSPM.	§ 60.9(c) and appendix E, paragraph(d).
E1.11.	A policy, process, and/or procedure specifying the MR authority and responsibility for the following:	
E1.11.a.	Monitoring the on-going qualification of assigned FSTDs to ensure all matters regarding FSTD qualification are being carried out as provided for in 14 CFR part 60.	
E1.11.b.	Ensuring that the QMS is properly established, implemented, and maintained by overseeing the QMS policies, practices, and/or procedures and by and modifying when and where necessary.	§ 60.9(c)(2), (3), and (4).
E1.11.c.	Regularly briefing sponsor's management on the status of the on-going FSTD qualification program and the effectiveness and efficiency of the QMS.	
E1.11.d.	Serving as the primary contact point for all matters between the sponsor and the NSPM regarding the qualification of assigned FSTDs.	
E1.11.e.	Delegating the MR assigned duties to an individual at each of the sponsor's locations, when/if/where appropriate.	
E1.12.	A policy, process, and/or procedure specifying how the sponsor will:.	
E1.12.a.	Ensure that the data made available to the NSPM (the validation data package) includes the aircraft manufacturer's flight test data (or other data approved by the NSPM) and all relevant data developed after the type certificate was issued (e.g., data developed in response to an airworthiness directive) if such data results from a change in performance, handling qualities, functions, or other characteristics of the aircraft that must be considered for flight crewmember training, evaluation, or for meeting experience requirements of this chapter;	§ 60.13; QPS appendices A, B, C, and D.
E1.12.b.	Notify the NSPM within 10 working days of becoming aware that an addition to or a revision of the flight related data or airplane systems related data is available if this data is used to program and/or operate a qualified FSTD; and	
E1.12.c.	Maintain a liaison with the manufacturer of the aircraft being simulated (or with the holder of the aircraft type certificate for the aircraft being simulated if the manufacturer is no longer in business), and if appropriate, with the person having supplied the aircraft data package for the FFS for the purposes of receiving notification of data package changes.	
E1.13.	A policy, process, and/or procedure specifying how the sponsor will make available all special equipment and qualified personnel needed to accomplish or assist in the accomplishment of tests during initial, continuing qualification, or special evaluations.	§ 60.14.
E1.14.	A policy, process, and/or procedure specifying how the sponsor will submit to the NSPM a request to evaluate the FSTD for initial qualification at a specific level and simultaneously request the TPAA forward a concurring letter to the NSPM; including how the MR will use qualified personnel to confirm the following:	
E1.14.a.	That the performance and handling qualities of the FSTD represents those of the aircraft or set of aircraft within the normal operating envelope;	§ 60.15(a)–(d); § 60.15(b); § 60.15(b)(i); § 60.15(b)(ii); § 60.15(b)(iii).
E1.14.b.	The FSTD systems and sub-systems(including the simulated aircraft systems) functionally represent those in the aircraft or set of aircraft; and	
E1.14.c.	The cockpit represents the configuration of the specific type or aircraft make, model, and series aircraft being simulated, as appropriate.	
E1.15.	A policy, process, and/or procedure specifying how, for an initial evaluation, all of the subjective tests and all of the objective tests are accomplished at the sponsor's training facility, except as provided for in the applicable QPS.	§ 60.15(e).

TABLE E1—MINIMUM REQUIREMENTS FOR SATISFACTORY FSTD QUALITY MANAGEMENT SYSTEM—Continued

Number	QPS requirement	Information (Reference)
E1.16.	A policy, process, and/or procedure specifying how, after the NSPM completes the evaluation for initial qualification, the sponsor will update the QTG with the results of the FAA-witnessed tests and demonstrations together with the results of all the objective tests and demonstrations described in the applicable QPS.	§ 60.15(h).
E1.17.	A policy, process, and/or procedure specifying how the sponsor will make the MQTG available to the NSPM upon request.	§ 60.15(i).
E1.18.	A policy, process, and/or procedure specifying how the sponsor will and apply to the NSPM for additional qualification(s) to the Statement of Qualification.	§ 60.16(a); § 60.16(a)(1)(i); § 60.16(a)(1)(ii).
E1.19.	A policy, process, and/or procedure specifying how the sponsor accomplishes all applicable QPS Attachment 2 objective tests each year in a minimum of four evenly spaced inspections as specified in the applicable QPS.	§ 60.19(a)(1) QPS appendices A, B, C, or D.
E1.20.	A policy, process, and/or procedure specifying how the sponsor completes and records a functional preflight check of the FSTD within the preceding 24 hours of FSTD use, including a description of the functional preflight.	§ 60.19(a)(2) QPS appendices A, B, C, or D.
E1.21.	A policy, process, and/or procedure specifying how the sponsor schedules with the NSPM continuing qualification evaluations not later than 60 days before the evaluation is due.	§ 60.19(b)(2).
E1.22.	A policy, process, and/or procedure specifying how the sponsor ensures that the FSTD has received a continuing qualification evaluation at the interval as described in the respective MQTG, allowing for the 1-month grace period before or after the calendar month required.	§ 60.19(b)(5)–(6).
E1.23.	A policy, process, and/or procedure describing that when a discrepancy is discovered the following is recorded in the FSTD discrepancy log:	
E1.23.a.	A description of each discrepancy is entered and remains in the log until the discrepancy is corrected; and	§ 60.19(c); § 60.19(c)(2)(i); § 60.19(c)(2)(ii).
E1.23.b.	A description of the corrective action taken for each discrepancy, the identity of the individual taking the action, and the date that action is taken.	§ 60.19(c)(2)(iii).
E1.24.	A policy, process, and/or procedure specifying how the discrepancy log is kept in a form and manner acceptable to the Administrator and is kept in or adjacent to the FSTD. (An electronic log that may be accessed by an appropriate terminal or display in or adjacent to the FSTD is satisfactory.)	
E1.25.	A policy, process, and/or procedure that requires each instructor, check airman, or representative of the Administrator conducting training, evaluation, or flight experience, and each person conducting the preflight inspection, who discovers a discrepancy, including any missing, malfunctioning, or inoperative components in the FSTD, to write or cause to be written a description of that discrepancy into the discrepancy log at the end of the FSTD preflight or FSTD use session.	§ 60.20.
E1.26.	A policy, process, and/or procedure specifying how the sponsor will (if operating an FSTD based on an interim qualification), within twelve months of the release of the final aircraft data package by the aircraft manufacturer (but no later than two years after the issuance of the interim qualification status the sponsor) apply for initial qualification based on the final aircraft data package approved by the aircraft manufacturer.	§ 60.21(c).
E1.27.	A policy, process, and/or procedure specifying how the sponsor determines whether an FSTD change qualifies as a modification as described in 14 CFR part 60.	§ 60.23(a)(1)–(2).
E1.28.	A policy, process, and/or procedure specifying how the sponsor will ensure the FSTD is modified in accordance with any FSTD Directive regardless of the original qualification basis.	§ 60.23(b).
E1.29.	A policy, process, and/or procedure specifying how, if an FSTD change is determined to be a modification as defined in 14 CFR part 60, the sponsor will notify the NSPM and TPAA of their intent to use the modified FSTD and to ensure that the modified FSTD will not be used prior to:	
E1.29.a.	Twenty-one days since the sponsor notified the NSPM and the TPAA of the proposed modification and the sponsor has not received any response from either the NSPM or the TPAA; or	§ 60.23(c)(1)(i),(ii), and (iv).
E1.29.b.	Twenty-one days since the sponsor notified the NSPM and the TPAA of the proposed modification and one has approved the proposed modification and the other has not responded; or	
E1.29.c.	The FSTD successfully completing any evaluation the NSPM may require in accordance with the standards for an evaluation for initial qualification or any part thereof before the modified FSTD is placed in service.	
E1.30	A policy, process, and/or procedure specifying how, after an FSTD modification is approved by the NSPM, the sponsor will:	
E1.30.a.	Post an addendum to the Statement of Qualification until such time as a permanent, updated statement is received from the NSPM and posted;	§ 60.23(d)–(e).

TABLE E1—MINIMUM REQUIREMENTS FOR SATISFACTORY FSTD QUALITY MANAGEMENT SYSTEM—Continued

Number	QPS requirement	Information (Reference)
E1.30.b.	Update the MQTG with current objective test results and appropriate objective data for each affected objective test or other MQTG section that is affected by the modification; and	
E1.30.c.	File in the MQTG the direction to make the modification and the record of the modification completion.	
E1.31.	A policy, process, and/or procedure specifying how the sponsor will track the length of time a component has been missing, malfunctioning, or inoperative (MMI), including:	
E1.31.a.	How the sponsor will post a list of MMI components in or adjacent to the FSTD; and	§ 60.25(b)–(c), and QPS appendices A, B, C, or D.
E1.31.b.	How the sponsor will notify the NSPM if the MMI has not been repaired or replaced within 30 days.*	
E1.32.	A policy, process, and/or procedure specifying how the sponsor will notify the NSPM and how the sponsor will seek requalification of the FSTD if the FSTD is moved and reinstalled in a different location.	§ 60.27(a)(3).
E1.33.	A policy, process, and/or procedure specifying how the sponsor will maintain control of the following: (The sponsor must specify how these records are maintained in plain language form or in coded form; but if the coded form is used, the sponsor must specify how the preservation and retrieval of information will be conducted.)	
E1.33.a.	The MQTG and each amendment thereto;	§ 60.31.
E1.33.b.	A record of all FSTD modifications required by this part since the issuance of the original Statement of Qualification;	
E1.33.c.	Results of the qualification evaluations (initial and each upgrade) since the issuance of the original Statement of Qualification;	
E1.33.d.	Results of the objective tests conducted in accordance with this part for a period of 2 years;	
E1.33.e.	Results of the previous three continuing qualification evaluations, or the continuing qualification evaluations from the previous 2 years, whichever covers a longer period;	
E1.33.f.	Comments obtained in accordance with Section 60.9(b);	
E1.33.g.	A record of all discrepancies entered in the discrepancy log over the previous 2 years, including the following:	
E1.33.g.1.	A list of the components or equipment that were or are missing, malfunctioning, or inoperative;	
E1.33.g.2.	The action taken to correct the discrepancy;	
E1.33.g.3.	The date the corrective action was taken; and	
E1.33.g.4.	The identity of the person determining that the discrepancy has been corrected.	

*Note 1. If the sponsor has an approved discrepancy prioritization system, this item is satisfied by describing how discrepancies are prioritized, what actions are taken, and how the sponsor will notify the NSPM if the MMI has not been repaired or replaced within the specified timeframe.

END QPS REQUIREMENTS

BEGIN INFORMATION

f. Table E2 contains a sample Assessment Tool that the NSPM will use when conducting the desk assessment of a sponsor's request for initial evaluation of the required elements of a QMS program.

g. Table E3 contains a sample Assessment Tool that the NSPM will use when conducting the on-site practical evaluation of a sponsor's request for initial and continuing evaluation of the required elements of a QMS program.

h. Table E4 contains a sample Assessment Tool that the NSPM will use when conducting the desk assessment of a sponsor's request for initial evaluation of the voluntary elements of a QMS program.

i. Table E5 contains a sample Assessment Tool that will be used by the NSPM when conducting the on-site practical evaluation of a sponsor's request for initial and continuing evaluation of the voluntary elements of a QMS program.

j. Additional Information.

(1) In addition to specifically designated QMS evaluations, the NSPM will evaluate the sponsor's QMS program as part of regularly scheduled FSTD continuing qualification evaluations and no-notice FSTD evaluations, focusing in part on the effectiveness and viability of the QMS program and its contribution to the overall capability of the FSTD to meet the requirements of this part.

(2) The sponsor, through the MR, may delegate duties associated with maintaining the qualification of the FSTD (*e.g.*, corrective and preventive maintenance, scheduling for

and the conducting of tests and/or inspections, functional preflight checks) but retains the responsibility and authority for the day-to-day qualification of the FSTD. One person may serve in this capacity for more than one FSTD, but one FSTD would not have more than one person serving in this capacity.

(3) The QMS requirements should not be interpreted to preclude a given QMS program from being applicable to more than one certificate holder (*e.g.*, part 119 and part 142 or two part 119 certificate holders) and should not be interpreted to preclude an individual from being a Management Representative (MR) for more than one certificate holder (*e.g.*, part 119 and part 142 or two part 119 certificate holders) as long as the other QMS program requirements and the other MR requirements are respectively met for each such certificate holder.

(4) Standard Measurements for Flight Simulator Quality: A quality system tied to measurement of FSTD performance will improve and maintain training quality. One acceptable means of measuring FSTD performance is ARINC report 433 (as amended), entitled ''Standard Measurements for Flight Simulator Quality. ARINC report 433 is a widely accepted industry standard.

(6) The NSPM will use the results of the assessment(s) of the voluntary portions of the QMS program (as described in Tables E4 and E5) to determine whether or not a sponsor or a FSTD may have the interval between NSPM-conducted evaluations extended and what the extension might be.

k. While the FAA does not mandate any specific QMS program format, the following subparagraphs outline those factors that would be typically found in an acceptable QMS program.

(1) Establishment of a Quality Policy. This is a formal written Quality Policy Statement that is a commitment by the sponsor outlining what the Quality System will achieve.

(2) The selected MR should be someone who has overall authority and responsibility for monitoring the on-going qualification of assigned FSTDs to ensure that all matters regarding FSTD qualification are being carried out as required by this part and ensuring that the QMS program is properly established, implemented, and maintained. The MR should regularly:

(i) Brief the sponsor's management regarding the status of on-going qualification processes; and

(ii) Serve as the primary contact point for all matters between the sponsor and the NSPM regarding the qualification of the assigned FSTDs.

(iii) Oversee the day-to-day quality control.

(3) The system and processes outlined in the QMS should enable the sponsor to monitor compliance with all applicable regulations and ensure correct maintenance and performance of the FSTD.

(4) A QMS program, together with a statement acknowledging completion of a periodic review by the MR, should include the following:

(i) A maintenance facility that provides suitable FSTD hardware and software tests and maintenance capability.

(ii) A recording system in the form of a technical log in which defects, deferred defects, and development projects are listed, assigned and reviewed within a specified time period.

(iii) Routine maintenance of the FSTD and performance of the QTG tests with adequate staffing to cover FSTD operating periods.

(iv) A planned internal assessment schedule and a periodic review should be used to verify that corrective action was complete and effective. The assessor should have adequate knowledge of FSTDs and should be acceptable to the NSPM.

(5) The MR should receive appropriate Quality System training and brief other personnel on the procedures.

TABLE E2—INFORMATION SIMULATION QUALITY MANAGEMENT SYSTEM (SQMS) ASSESSMENT TOOL—INITIAL (DESK)

Element No.	Basic (Part 60 required) elements	Rating see element assessment table			Comments
	Does the sponsor have . . .	N	P	Y	
E.2.1	A QMS program approved by the NSPM including a Quality Management System Manual that sets out the policies, processes, and/or procedures required by 14 CFR part 60 and part 60, appendix E.				
E.2.2	A policy, process, and/or procedure specifying how the sponsor will identify deficiencies in the QMS.				
E.2.3	A policy, process, and/or procedure specifying how the sponsor will document how the QMS program will be changed to address deficiencies when found.				
E.2.4	A policy, process, and/or procedure specifying how the sponsor will propose program changes to the NSPM and receive approval prior to their implementation.				

TABLE E2—INFORMATION SIMULATION QUALITY MANAGEMENT SYSTEM (SQMS) ASSESSMENT TOOL—INITIAL (DESK)—Continued

Element No.	Basic (Part 60 required) elements Does the sponsor have . . .	Rating see element assessment table			Comments
		N	P	Y	
E.2.5	A policy, process, and/or procedure specifying how the sponsor will document that at least one FSTD is used within the sponsor's FAA-approved flight training program for the aircraft or set of aircraft at least once within the 12-month period following the initial/upgrade evaluation conducted by the NSP and at least once within each subsequent 12-month period thereafter.				
E.2.6	A policy, process, and/or procedure specifying how the sponsor will document that at least one FSTD is used within the sponsor's FAA-approved flight training program for the aircraft or set of aircraft at least once within the 12-month period following the first continuing qualification evaluation conducted by the NSP and at least once within each subsequent 12-month period thereafter.				
E.2.7	A policy, process, and/or procedure specifying how the sponsor will obtain an annual written statement from a qualified pilot (after having flown the subject aircraft or set of aircraft during the preceding 12-month period) that the performance and handling qualities of the subject FSTD represents the subject aircraft or set of aircraft (within the normal operating envelope). Required only if the subject FSTD is not used in the sponsor's FAA-approved flight training program for the aircraft or set of aircraft at least once within the preceding 12-month period.				
E.2.8	A policy, process, and/or procedure specifying how independent feedback (from persons recently completing training, evaluation, or obtaining flight experience; instructors and check airmen using the FSTD for training, evaluation or flight experience sessions; and FSTD technicians and maintenance personnel) will be received and addressed by the sponsor regarding the FSTD and its operation.				
E.2.9	A policy, process, and/or procedure specifying how and where the FSTD Statement of Qualification will be posted, or accessed by an appropriate terminal or display, in or adjacent to the FSTD.				
E.2.10	A policy, process, and/or procedure specifying how the sponsor's management representative (MR) is selected and identified by name to the NSPM.				
E.2.11	A policy, process, and/or procedure specifying the MR's authority and responsibility for the following:				
E.2.11.a	Monitoring the on-going qualification of assigned FSTDs to ensure all matters regarding FSTD qualification are being carried out as provided for in 14 CFR part 60.				
E.2.11.b	Ensuring that the QMS is properly established, implemented, and maintained by overseeing the QMS policies, practices, and/or procedures and by and modifying when and where necessary.				
E.2.11.c	Regularly briefing sponsor's management on the status of the on-going FSTD qualification program and the effectiveness and efficiency of the QMS. (designate maximum interval).				
E.2.11.d	Serving as the primary contact point for all matters between the sponsor and the NSPM regarding the qualification of assigned FSTDs.				
E.2.11.e	Delegating the MR assigned duties to an individual at each of the sponsor's locations, when/if/where appropriate.				
E.2.12	A policy, process, and/or procedure specifying how the sponsor will:				

TABLE E2—INFORMATION SIMULATION QUALITY MANAGEMENT SYSTEM (SQMS) ASSESSMENT TOOL—INITIAL (DESK)—Continued

Element No.	Basic (Part 60 required) elements Does the sponsor have . . .	Rating see element assessment table			Comments
		N	P	Y	
E.2.12.a	Ensure that the data made available to the NSPM (the validation data package) includes the aircraft manufacturer's flight test data (or other data approved by the NSPM) and all relevant data developed after the type certificate was issued (e.g., data developed in response to an airworthiness directive) if such data results from a change in performance, handling qualities, functions, or other characteristics of the aircraft that must be considered for flight crew member training, evaluation, or for meeting experience requirements of this chapter.				
E.2.12.b	Immediately notify the NSPM when an addition to or a revision of the flight related data or airplane systems related data is available if this data is used to program and/or operate a qualified FFS, including technical information about this data to the NSPM relative to the data's significance for training, evaluation, or flight experience activities in the FFS.				
E.2.12.c	Maintain a liaison with the manufacturer of the aircraft being simulated (or with the holder of the aircraft type certificate for the aircraft being simulated if the manufacturer is no longer in business), and/or, if appropriate, with the person having supplied the aircraft data package for the FFS for the purposes of receiving notification of data package changes..				
E.2.13.	A policy, process, and/or procedure specifying how the sponsor will make available all special equipment and qualified personnel needed to accomplish or assist in the accomplishment of tests during initial, continuing qualification, or special evaluations.				
E.2.14	A policy, process, and/or procedure specifying how the sponsor will submit to the NSPM a request to evaluate the FSTD for initial qualification at a specific level and simultaneously request the TPAA forward a concurring letter to the NSPM; including how the MR will use qualified personnel to confirm the following:				
E.2.14.a	That the performance and handling qualities of the FSTD represents those of the aircraft or set of aircraft within the normal operating envelope.				
E.2.14.b	The FSTD systems and sub-systems (including the simulated aircraft systems) functionally represent those in the aircraft or set of aircraft.				
E.2.14.c	The cockpit represents the configuration of the specific type; or aircraft make, model, and series aircraft being simulated, as appropriate.				
E.2.15	A policy, process, and/or procedure specifying how, for an initial evaluation, all of the subjective tests and all of the objective tests are accomplished at the sponsor's training facility, except as provided for in the applicable QPS.				
E.2.16	A policy, process, and/or procedure specifying how, after the NSPM completes the evaluation for initial qualification, the sponsor will update the QTG with the results of the FAA-witnessed tests and demonstrations together with the results of all the objective tests and demonstrations described in the applicable QPS.				
E.2.17	A policy, process, and/or procedure specifying how the sponsor will make the MQTG available to the NSPM upon request.				
E.2.18	A policy, process, and/or procedure specifying how the sponsor will apply to the NSPM to add (an) additional qualification(s) to the Statement of Qualification.				
E.2.19	A policy, process, and/or procedure specifying how the sponsor accomplishes all applicable QPS Attachment 2 objective tests each year in a minimum of four evenly spaced inspections as specified in the applicable QPS.				
E.2.20	A policy, process, and/or procedure specifying how the sponsor completes a functional preflight check of the FSTD within the preceding 24 hours of FSTD use.				

TABLE E2—INFORMATION SIMULATION QUALITY MANAGEMENT SYSTEM (SQMS) ASSESSMENT TOOL—INITIAL (DESK)—Continued

Element No.	Basic (Part 60 required) elements Does the sponsor have . . .	Rating see element assessment table			Comments
		N	P	Y	
E.2.21	A policy, process, and/or procedure specifying how the sponsor schedules with the NSPM continuing qualification evaluations not later than 60 days before the evaluation is due.				
E.2.22	A policy, process, and/or procedure specifying how the sponsor ensures that the FSTD has received a continuing qualification evaluation at the interval as described in the respective MQTG, allowing for the 1-month grace period before or after the calendar month required.				
E.2.23	A policy, process, and/or procedure describing that when a discrepancy is discovered the following is recorded in the FSTD discrepancy log:				
E.2.23.a	A description of each discrepancy is entered and remains in the log until the discrepancy is corrected.				
E.2.23.b	A description of the corrective action taken for each discrepancy, the identity of the individual taking the action, and the date that action is taken.				
E.2.24	A policy, process, and/or procedure specifying how the discrepancy log is kept in a form and manner acceptable to the Administrator and is kept in or adjacent to the FSTD. (An electronic log that may be accessed by an appropriate terminal or display in or adjacent to the FSTD is satisfactory.)				
E.2.25	A policy, process, and/or procedure that requires each instructor, check airman, or representative of the Administrator conducting training, evaluation, or flight experience for flight crew members, and each person conducting the preflight inspection, who discovers a discrepancy, including any missing, malfunctioning, or inoperative components in the FSTD, to write or cause to be written a description of that discrepancy into the discrepancy log at the end of the FSTD preflight or FSTD use session.				
E.2.26	A policy, process, and/or procedure specifying how the sponsor will (if operating an FSTD based on an interim qualification), within twelve months of the release of the final aircraft data package by the aircraft manufacturer (but no later than two years after the issuance of the interim qualification status the sponsor) apply for initial qualification based on the final aircraft data package approved by the aircraft manufacturer.				
E.2.27	A policy, process, and/or procedure specifying how the sponsor determines whether an FSTD change qualifies as a modification as described in 14 CFR part 60.				
E.2.28	A policy, process, and/or procedure specifying how the sponsor will ensure the FSTD is modified in accordance with any FSTD Directive regardless of the original qualification basis.				
E.2.29	A policy, process, and/or procedure specifying how, if an FSTD change is determined to be a modification as defined in 14 CFR part 60, the sponsor will notify the NSPM and TPAA of their intent to use the modified FSTD and to ensure that the modified FSTD will not be used prior to:				
E.2.29.a	Twenty-one days since the sponsor notified the NSPM and the TPAA of the proposed modification and the sponsor has not received any response from either the NSPM or the TPAA.				
E.2.29.b	Twenty-one days since the sponsor notified the NSPM and the TPAA of the proposed modification and one has approved the proposed modification and the other has not responded.				
E.2.29.c	The FSTD successfully completing any evaluation the NSPM may require in accordance with the standards for an evaluation for initial qualification or any part thereof before the modified FSTD is placed in service.				

TABLE E2—INFORMATION SIMULATION QUALITY MANAGEMENT SYSTEM (SQMS) ASSESSMENT TOOL—INITIAL (DESK)—Continued

Element No.	Basic (Part 60 required) elements	Rating see element assessment table			Comments
	Does the sponsor have . . .	N	P	Y	
E.2.30	A policy, process, and/or procedure specifying how, after a FSTD modification is approved by the NSPM, the sponsor will:				
E.2.30.a	Post an addendum to the Statement of Qualification until such time as a permanent, updated statement is received from the NSPM and posted.				
E.2.30.b	Update the MQTG with current objective test results and appropriate objective data for each affected objective test or other MQTG section that is affected by the modification.				
E.2.30.c	File in the MQTG the direction to make the modification and the record of the modification completion.				
E.2.31	A policy, process, and/or procedure specifying how the sponsor will track the length of time a component has been missing, malfunctioning, or inoperative (MMI), including:				
E.2.31.a	How the sponsor will post a list of MMI components in or adjacent to the FSTD.				
E.2.31.b	How the sponsor will notify the NSPM if the MMI has not been repaired or replaced within 30 days; or if the sponsor has a discrepancy prioritization system, describe how discrepancies are prioritized and how the sponsor will notify the NSPM if the MMI has not been repaired or replaced within the specified timeframe.				
E.2.32	A policy, process, and/or procedure specifying how the sponsor will notify the NSPM and how the sponsor will seek re-qualification of the FSTD if the FSTD is moved and reinstalled in a different location.				
E.2.33	A policy, process, and/or procedure specifying how the sponsor will maintain control of the following documents: [The sponsor must specify how these records are maintained in plain language form or in coded form; but if the coded form is used, the sponsor must specify how the preservation and retrieval of information will be conducted.]				
E.2.33.a	The MQTG and each amendment thereto.				
E.2.33.b	A record of all FSTD modifications required by this part since the issuance of the original Statement of Qualification.				
E.2.33.c	Results of the qualification evaluations (initial and each upgrade) since the issuance of the original Statement of Qualification..				
E.2.33.d.	Results of the objective tests conducted in accordance with this part for a period of 2 years.				
E.2.33.e	Results of the previous three continuing qualification evaluations, or the continuing qualification evaluations from the previous 2 years, whichever covers a longer period.				
E.2.33.f	Comments obtained in accordance with this part for a period of at least 90 days.				
E.2.33.g	A record of all discrepancies entered in the discrepancy log over the previous 2 years, including the following:				
E.2.33.g.1	A list of the components or equipment that were or are missing, malfunctioning, or inoperative.				
E.2.33.g.2	The action taken to correct the discrepancy.				
E.2.33.g.3	The date the corrective action was taken.				
E.2.33.g.4	The identity of the person determining that the discrepancy has been corrected.				

TABLE E.3—INFORMATION (SQMS) ASSESSMENT TOOL—ON-SITE

Element number	Basic (Part 60 Required) Elements	Rating See Element Assessment Table			Comments
		N	P	Y	
	There is evidence that the element is: (1) Being utilized/applied as is appropriate/necessary; (2) Being utilized/applied *as stated/specified/defined in the QMS;* (3) Achieving/producing effective results.				
E.3.1.	The Quality Management System Manual sets our current QMS policies, processes and/or procedures.				
E.3.2.	The policy, process, and/or procedure specifying how the sponsor will identify deficiencies in the QMS.				
E.3.3.	The policy, process, and/or procedure specifying how the sponsor will document how the QMS program will be changed to address deficiencies when found.				
E.3.4.	The policy, process, and/or procedure specifying how the sponsor will propose program changes to the NSPM and receive approval prior to their implementation.				
E.3.5.	The policy, process, and/or procedure specifying how the sponsor will document that at least one FSTD is used within the sponsor's FAA-approved flight training program for the aircraft or set of aircraft at least once within the 12-month period following the initial/upgrade evaluation conducted by the NSP and at least once within each subsequent 12-month period thereafter.				
E.3.6.	The policy, process, and/or procedure specifying how the sponsor will document that at least one FSTD is used within the sponsor's FAA-approved flight training program for the aircraft or set of aircraft at least once within the 12-month period following the first continuing qualification evaluation conducted by the NSP and at least once within each subsequent 12-month period thereafter.				
E.3.7.	The policy, process, and/or procedure specifying how the sponsor will obtain an annual written statement from a qualified pilot (after having flown the subject aircraft or set of aircraft during the preceding 12-month period) that the performance and handling qualities of the subject FSTD represents the subject aircraft or set of aircraft (within the normal operating envelope). Required only if the subject FSTD is not used in the sponsor's FAA-approved flight training program for the aircraft or set of aircraft at least once within the preceding 12-month period.				
E.3.8.	A policy, process, and/or procedure specifying how independent feedback (from persons recently completing training, evaluation, or obtaining flight experience; instructors and check airmen using the FSTD for training, evaluation or flight experience sessions; and FSTD technicians and maintenance personnel) will be received and addressed by the sponsor regarding the FSTD and its operation.				
E.3.9.	The policy, process, and/or procedure specifying how and where the FSTD Statement of Qualification will be posted, or accessed by an appropriate terminal or display, in or adjacent to the FSTD.				
E.3.10.	The policy, process, and/or procedure specifying how the sponsor's management representative (MR) is selected and identified by name to the NSPM.				
E.3.11.	The policy, process, and/or procedure specifying the MR's authority and responsibility for the following:				
E.3.11.a.	Monitoring the on-going qualification of assigned FSTDs to ensure all matters regarding FSTD qualification are being carried out as provided for in 14 CFR part 60.				
E.3.11.b.	Ensuring that the QMS is properly established, implemented, and maintained by overseeing the QMS policies, practices, and/or procedures and by and modifying when and where necessary.				
E.3.11.c.	Regularly briefing sponsor's management on the status of the on-going FSTD qualification program and the effectiveness and efficiency of the QMS. (designate maximum interval).				
E.3.11.d.	Serving as the primary contact point for all matters between the sponsor and the NSPM regarding the qualification of assigned FSTDs.				
E.3.11.e.	Delegating the MR assigned duties to an individual at each of the sponsor's locations, when/if/where appropriate.				
E.3.12.	A policy, process, and/or procedure specifying how the sponsor will:				

TABLE E.3—INFORMATION (SQMS) ASSESSMENT TOOL—ON-SITE—Continued

Element number	Basic (Part 60 Required) Elements	Rating See Element Assessment Table			Comments
		N	P	Y	
E.3.12.a.	Ensure that the data made available to the NSPM (the validation data package) includes the aircraft manufacturer's flight test data (or other data approved by the NSPM) and all relevant data developed after the type certificate was issued (e.g., data developed in response to an airworthiness directive) if such data results from a change in performance, handling qualities, functions, or other characteristics of the aircraft that must be considered for flight crew member training, evaluation, or for meeting experience requirements of this chapter.				
E.3.12.b.	Immediately notify the NSPM when an addition to or a revision of the flight related data or airplane systems related data is available if this data is used to program and/or operate a qualified FFS, including technical information about this data to the NSPM relative to the data's significance for training, evaluation, or flight experience activities in the FFS.				
E.3.12.c.	Maintain a liaison with the manufacturer of the aircraft being simulated (or with the holder of the aircraft type certificate for the aircraft being simulated if the manufacturer is no longer in business), and/or, if appropriate, with the person having supplied the aircraft data package for the FFS for the purposes of receiving notification of data package changes.				
E.3.13.	A policy, process, and/or procedure specifying how the sponsor will make available all special equipment and qualified personnel needed to accomplish or assist in the accomplishment of tests during initial, continuing qualification, or special evaluations.				
E.3.14.	A policy, process, and/or procedure specifying how the sponsor will submit to the NSPM a request to evaluate the FSTD for initial qualification at a specific level and simultaneously request the TPAA forward a concurring letter to the NSPM; including how the MR will use qualified personnel to confirm the following:				
E.3.14.a.	That the performance and handling qualities of the FSTD represent those of the aircraft or set of aircraft within the normal operating envelope.				
E.3.14.b.	The FSTD systems and sub-systems (including the simulated aircraft systems) functionally represent those in the aircraft or set of aircraft.				
E.3.14.c.	The cockpit represents the configuration of the specific type; or aircraft make, model, and series aircraft being simulated, as appropriate.				
E.3.15.	A policy, process, and/or procedure specifying how, for an initial evaluation, all of the subjective tests and all of the objective tests are accomplished at the sponsor's training facility, except as provided for in the applicable QPS.				
E.3.16.	A policy, process, and/or procedure specifying how, after the NSPM completes the evaluation for initial qualification, the sponsor will update the QTG with the results of the FAA-witnessed tests and demonstrations together with the results of all the objective tests and demonstrations described in the applicable QPS.				
E.3.17.	A policy, process, and/or procedure specifying how the sponsor will make the MQTG available to the NSPM upon request.				
E.3.18.	A policy, process, and/or procedure specifying how the sponsor will apply to the NSPM to add (an) additional qualification(s) to the Statement of Qualification.				
E.3.19.	A policy, process, and/or procedure specifying how the sponsor accomplishes all applicable QPS Attachment 2 objective tests each year in a minimum of four evenly spaced inspections as specified in the applicable QPS.				
E.3.20.	A policy, process, and/or procedure specifying how the sponsor completes a functional preflight check of the FSTD within the preceding 24 hours of FSTD use.				
E.3.21.	A policy, process, and/or procedure specifying how the sponsor schedules with the NSPM continuing qualification evaluations not later than 60 days before the evaluation is due.				
E.3.22.	A policy, process, and/or procedure specifying how the sponsor ensures that the FSTD has received a continuing qualification evaluation at the interval as described in the respective MQTG, allowing for the 1-month grace period before or after the calendar month required.				
E.3.23.	A policy, process, and/or procedure describing that when a discrepancy is discovered the following is recorded in the FSTD discrepancy log:				
E.3.23.a.	A description of each discrepancy is entered and remains in the log until the discrepancy is corrected.				
E.3.23.b.	A description of the corrective action taken for each discrepancy, the identity of the individual taking the action, and the date that action is taken.				

TABLE E.3—INFORMATION (SQMS) ASSESSMENT TOOL—ON-SITE—Continued

Element number	Basic (Part 60 Required) Elements	Rating See Element Assessment Table			Comments
		N	P	Y	
E.3.24	A policy, process, and/or procedure specifying how the discrepancy log is kept in a form and manner acceptable to the Administrator and is kept in or adjacent to the FSTD. (An electronic log that may be accessed by an appropriate terminal or display in or adjacent to the FSTD is satisfactory.).				
E.3.25.	A policy, process, and/or procedure that requires each instructor, check airman, or representative of the Administrator conducting training, evaluation, or flight experience for flight crew members, and each person conducting the preflight inspection, who discovers a discrepancy, including any missing, malfunctioning, or inoperative components in the FSTD, to write or cause to be written a description of that discrepancy into the discrepancy log at the end of the FSTD preflight or FSTD use session.				
E.3.26.	A policy, process, and/or procedure specifying how the sponsor will (if operating an FSTD based on an interim qualification), within twelve months of the release of the final aircraft data package by the aircraft manufacturer (but no later than two years after the issuance of the interim qualification status the sponsor) apply for initial qualification based on the final aircraft data package approved by the aircraft manufacturer.				
E.3.27.	A policy, process, and/or procedure specifying how the sponsor determines whether an FSTD change qualifies as a modification as described in 14 CFR part 60..				
E.3.28.	A policy, process, and/or procedure specifying how the sponsor will ensure the FSTD is modified in accordance with any FSTD Directive regardless of the original qualification basis.				
E.3.29.	A policy, process, and/or procedure specifying how, if an FSTD change is determined to be a modification as defined in 14 CFR part 60, the sponsor will notify the NSPM and TPAA of their intent to use the modified FSTD and to ensure that the modified FSTD will not be used prior to:				
E.3.29.a.	Twenty-one days since the sponsor notified the NSPM and the TPAA of the proposed modification and the sponsor has not received any response from either the NSPM or the TPAA.				
E.3.29.b.	Twenty-one days since the sponsor notified the NSPM and the TPAA of the proposed modification, and one has approved the proposed modification and the other has not responded.				
E.3.29.c.	The FSTD successfully completing any evaluation the NSPM may require in accordance with the standards for an evaluation for initial qualification or any part thereof before the modified FSTD is placed in service.				
E.3.30.	A policy, process, and/or procedure specifying how, after a FSTD modification is approved by the NSPM, the sponsor will:				
E.3.30.a.	Post an addendum to the Statement of Qualification until such time as a permanent, updated statement is received from the NSPM and posted.				
E.3.30.b.	Update the MQTG with current objective test results and appropriate objective data for each affected objective test or other MQTG section that is affected by the modification.				
E.3.30.c.	File in the MQTG the direction to make the modification and the record of the modification completion.				
E.3.31.	A policy, process, and/or procedure specifying how the sponsor will track the length of time a component has been missing, malfunctioning, or inoperative (MMI), including:				
E.3.31.a.	How the sponsor will post a list of MMI components in or adjacent to the FSTD.				
E.3.31.b.	How the sponsor will notify the NSPM if the MMI has not been repaired or replaced within 30 days; or if the sponsor has a discrepancy prioritization system, describe how discrepancies are prioritized and how the sponsor will notify the NSPM if the MMI has not been repaired or replaced within the specified timeframe.				
E.3.32.	A policy, process, and/or procedure specifying how the sponsor will notify the NSPM and how the sponsor will seek re-qualification of the FSTD if the FSTD is moved and reinstalled in a different location.				
E.3.33.	A policy, process, and/or procedure specifying how the sponsor will maintain control of the following documents: The sponsor must specify how these records are maintained in plain language form or in coded form; but if the coded form is used, the sponsor must specify how the preservation and retrieval of information will be conducted.].				
E.3.33.a.	The MQTG and each amendment thereto.				
E.3.33.b.	A record of all FSTD modifications required by this part since the issuance of the original Statement of Qualification.				

TABLE E.3—INFORMATION (SQMS) ASSESSMENT TOOL—ON-SITE—Continued

Element number	Basic (Part 60 Required) Elements	Rating See Element Assessment Table			Comments
		N	P	Y	
E.3.33.c.	Results of the qualification evaluations (initial and each upgrade) since the issuance of the original Statement of Qualification.				
E.3.33.d.	Results of the objective tests conducted in accordance with this part for a period of 2 years.				
E.3.33.e.	Results of the previous three continuing qualification evaluations, or the continuing qualification evaluations from the previous 2 years, whichever covers a longer period.				
E.3.33.f.	Comments obtained in accordance with this part for a period of at least 90 days.				
E.3.33.g.	A record of all discrepancies entered in the discrepancy log over the previous 2 years, including the following:				
E.3.33.g.1.	A list of the components or equipment that were or are missing, malfunctioning, or inoperative.				
E.3.33.g.2.	The action taken to correct the discrepancy.				
E.3.33.g.3.	The date the corrective action was taken.				
E.3.33.g.4.	The identity of the person determining that the discrepancy has been corrected.				

TABLE E.4—INFORMATION SQMS ASSESSMENT TOOL—INITIAL (DESK)

Element number	EXPANDED (voluntary) elements	Rating see element assessment table			Comments
	Does the sponsor have . . .	N	P	Y	
QUALITY MANAGEMENT SYSTEM MANUAL:					
V.4.1.	Quality Management System Manual documentation includes:				
V.4.1.a.	The scope of the SQMS, including:				
V.4.1.a.1.	Responsibilities Matrix, or the equivalent, designating responsibility, by position, name or title, for approval and control of SQMS functions/elements.				
V.4.1.a.2.	Documented SQMS policies, processes and procedures listed in V.4.10, or reference to them.				
V.4.1.a.3.	A description of the sequence and interaction of the documented SQMS processes.				
V.4.2.	Quality Management System Manual established as a controlled document that includes provision for identification of current revision status and the date of last revision imprinted on each page concerned.				
QUALITY POLICY AND QUALITY OBJECTIVES:					
V.4.3.	A quality policy that:				
V.4.3.a.	Is appropriate to the purpose of the organization.				
V.4.3.b.	Includes the concept of continual SQMS improvement.				
V.4.3.c.	Provides a framework for establishing and reviewing quality objectives.				
V.4.4.	Quality objectives that:				
V.4.4.a.	Have been established for relevant SQMS functions at relevant levels within the organization.				
V.4.4.b.	Include the ultimate objective of providing the continuous presentation of a qualified FSTD, or FSTDs, for credible flight training, evaluation and/or meeting experience requirements.				
V.4.4.c.	Are measurable and consistent with the Quality Policy.				
MANAGEMENT COMMITMENT:					
V.4.5.	A policy, process, and/or procedure that specifies how management will:				
V.4.5.a.	Ensure that the quality policy is communicated and understood at appropriate levels of the organization.				
V.4.5.b.	Ensure that employees are aware of the relevance and importance of their activities and how they contribute to the achievement of the quality objectives.				
V.4.5.c.	Ensure that the resources (human and financial) necessary to achieve the quality objectives are identified, planned and available.				
V.4.5.d.	Document management resource planning output.				
V.4.5.e.	Conduct and record periodic management reviews (stated minimum interval required) to:				
	(1) Evaluate planned resource allocation and				
	(2) Take action to ensure continuing suitability and effectiveness of the:.				

TABLE E.4—INFORMATION SQMS ASSESSMENT TOOL—INITIAL (DESK)—Continued

Element number	EXPANDED (voluntary) elements Does the sponsor have . . .	Rating see element assessment table			Comments
		N	P	Y	
V.4.5.e.1.	Quality policy.				
V.4.5.e.2.	Quality objectives.				
V.4.5.f.	Verify implementation of proper corrective action/managed change on assessment deficiencies.				
V.4.5.g.	Record the results of corrective action/managed change on assessment deficiencies and report the results to the NSPM.				
DOCUMENT/RECORD CONTROL					
V.4.6.	A Master List of internal and external documents that are *actively* utilized in the SQMS to ensure effective operation and control of the processes (identified, as applicable, by publisher/originator, title/description, volume no./form no., revision no./version, effective date)..				
	Note: By implementing a policy, process or procedure that categorizes inactive/unused documents as ''archived,'' these documents: (1) May be left off of the Master List, (2) Must be controlled and (3) Must be added to the Master List if/when they are subsequently activated [re: V.4.7.h.]..				
V.4.7.	A policy, process, and/or procedure that specifies how the sponsor will provide for:				
V.4.7.a.	Approval of documents for adequacy prior to use.				
V.4.7.b.	Periodic review, updating, re-approval of documents (where necessary).				
V.4.7.c.	Identification of current document revision status including the date of last revision on each page concerned.				
V.4.7.d.	Ensuring that current relevant versions of applicable documents are available at point-of-use.				
V.4.7.e.	Suitable identification of obsolete documents if they are retained for any purpose.				
V.4.7.f.	Preventing the unintended use of obsolete documents.				
V.4.7.g.	Ensuring that external-origin documents are identified & their distribution/accessibility controlled.				
V.4.7.h.	Protection and storage/archiving of records/documents.				
V.4.8.	A policy, process, and/or procedure specifying how the sponsor will retain the following for a period of two years (The sponsor must specify whether these records are maintained in plain language form or in coded form. If the coded form is used, the sponsor must specify how the preservation retrieval of information will be conducted.):				
V.4.8.a.	A record of training time lost due to FSTD discrepancies.				
V.4.8.b.	A record of the two most recent NSPM assessments.				
V.4.8.c.	A record of the two most recent Sponsor assessments.				
V.4.8.d.	SQMS Corrective Action records and/or Managed Change documentation (Including change pertaining to assessment findings)				
ASSIGNMENT of PERSONNEL/TRAINING					
V.4.9.	A policy, process or procedure specifying how the sponsor will, for those performing inspection, testing, engineering and normal, preventative and corrective maintenance on FSTDs:				
V.4.9.a.	Identify the necessary skill requirements.				
V.4.9.b.	Assign personnel that satisfy the identified skill requirements based upon experience, skills, education or training				
V.4.9.c.	Maintain appropriate ongoing records of skill, experience, education and/or training qualifications for assigned personnel.				
V.4.9.d.	Evaluate the adequacy/appropriateness of the skill requirements and the effectiveness of sponsor-provided training, referencing, in part, the criteria for workmanship specified in V.4.11.d.				
POLICY, PROCESS and/or PROCEDURE CONTROL					
V.4.10.	Documented policies, processes and/or procedures for *essential QMS functions* that directly affect quality, including the relevant/essential sequence and interaction of these processes (Supported by diagrams/flow charts/maps at sponsor's discretion) to include:				
V.4.10.a.	Scheduling and tracking inspection, testing, engineering and normal and preventative maintenance on FSTDs to verify that the specified qualification requirements for the FSTD are met.				
V.4.10.b.	A policy, process, and/or procedure specifying how the sponsor will determine FSTD training, evaluation, and/or flight experience restrictions, including: (1) Implementation, status notification and coordination with the sponsor's training organization, other users and TPAA and (2) Removal of the restrictions.				

TABLE E.4—INFORMATION SQMS ASSESSMENT TOOL—INITIAL (DESK)—Continued

Element number	EXPANDED (voluntary) elements Does the sponsor have . . .	Rating see element assessment table			Comments
		N	P	Y	
V.4.11.	A policy, process, and/or procedure specifying how the sponsor will implement controlled conditions to provide:				
V.4.11.a.	A suitable work environment.				
V.4.11.b.	Approval of equipment.				
V.4.11.c.	Availability of suitable equipment and suitable equipment maintenance.				
V.4.11.d.	Compliance with documented procedures and/or reference standards/codes set out in the Quality Management System Manual.				
V.4.11.e.	Criteria for workmanship (e.g., written standards, representative samples or illustrations).				
V.4.12.	A policy, process, and/or procedure specifying how the sponsor will ensure use of current, valid measuring and monitoring devices, including:				
V.4.12.a.	Recording the basis for their periodic, or prior to use, calibration.				
V.4.12.b.	Protecting them from damage and safeguarding them from adjustments that would invalidate their calibration.				
V.4.13.	A policy, process, and/or procedure that specifies how the sponsor will record NSPM assessments.				
INTERNAL ASSESSMENT					
V.4.14.	A policy, process, and/or procedure that specifies how the sponsor will conduct internal assessments to determine that the SQMS: (1) Has been effectively implemented and maintained, (2) Conforms to regulatory standards and (3) Conforms to SQMS requirements in accordance with documented procedures, as follows:				
V.4.14.a.	Responsibilities and requirements for conducting assessments.]				
V.4.14.b.	Assessment frequency (at least annually).				
V.4.14.c.	Assessment scope.				
V.4.14.d.	How assessments are conducted and recorded.				
V.4.14.e.	Personnel other than those who control/perform the activity, process, procedure or practice being assessed conduct the assessment (Authorization to deviate from this standard may be approved by the NSPM for those sponsors that have limited personnel resources).				
V.4.14.f.	When, how and by whom the results of such assessments and the associated corrective action/managed change are reported to Responsible Management and the NSPM.				
CORRECTIVE ACTION/MANAGED CHANGE (For Other Than FSTD Operational Discrepancies)					
V.4.15.	A policy, process, and/or procedure that specifies how a perceived need for change will:				
V.4.15.a.	Be validated (determined), and if valid, be activated as a Change Initiative.				
	If processed as a **Corrective Action:**				
V.4.15.b.	Determine the cause.				
V.4.15.c.	Determine and implement corrective action.				
V.4.15.d.	Record the action taken.				
V.4.15.e.	Evaluate the effectiveness of the action taken.				
V.4.15.f.	Record the results of this evaluation.				
V.4.15.g.	Evaluate the need for further action to prevent recurrence.				
	If processed as a **Managed Change:**				
V.4.15.h.	Analyze and determine action on the Change Initiative.				
V.4.15.i.	Establish the Scope of Change.				
V.4.15.j.	Develop a Change Plan.				
V.4.15.k.	Review the Change Plan.				
V.4.15.l.	Implement the Approved Change Plan.				
V.4.15.m.	Evaluate the implemented change.				
V.4.15.n.	Review the evaluation.				

TABLE E.5—INFORMATION—SQMS ASSESSMENT TOOL—ON-SITE

Element number	EXPANDED (Voluntary) Elements	Rating—See Element Assessment Table			Comments (Designate N/A Elements)
		N	P	Y	
	There is evidence that the element is: (4) (1) Being utilized/applied as is appropriate/necessary;				

TABLE E.5—INFORMATION—SQMS ASSESSMENT TOOL—ON-SITE—Continued

Element number	EXPANDED (Voluntary) Elements	Rating—See Element Assessment Table			Comments (Designate N/A Elements)
		N	P	Y	
	(4) (2) Being utilized/applied *as stated/specified/defined in the QMS;* (4) (3) Achieving/producing effective results.				
QUALITY MANAGEMENT SYSTEM MANUAL:					
V.5.1.	Quality Management System Manual contains*current:*				
V.5.1.a.	Responsibilities Matrix, or the equivalent, designating responsibility by position, name or title for approval and/or control of essential QMS functions/elements.				
V.5.1.b.	Documented SQMS processes and procedures listed in V.5.10, or reference to them.				
V.5.1.c.	Descriptions of the sequence and interaction of the documented SQMS processes.				
V.5.2.	The Quality Management System Manual is being properly controlled and includes identification of current revision status and the date of last revision imprinted on each page concerned.				
QUALITY POLICY AND QUALITY OBJECTIVES:					
V.5.3.	Currently stated quality policy:				
V.5.3.a.	Is appropriate for the organization.				
V.5.3.b.	Includes the concept of continual SQMS improvement.				
V.5.4.	Current written quality objectives:				
V.5.4.a.	Exist for relevant QMS functions at relevant levels within the organization.				
V.5.4.b.	Include the *''ultimate objective''* of providing continuous presentation of a qualified FSTD, or FSTDs, for credible flight training, evaluation and/or meeting experience requirements.				
V.5.4.c.	Are measurable and consistent with the Quality Policy.				
MANAGEMENT COMMITMENT:					
V.5.5.	Management is using their stated SQMS method(s) to:				
V.5.5.a.	Communicate and ensure that the quality policy is understood at appropriate levels of the organization.				
V.5.5.b.	Ensure that employees are aware of the relevance and importance of their activities and how they contribute to the achievement of the quality objectives.				
V.5.5.c.	Allocate resources (human and financial), using documented resource planning output, and implement action necessary to achieve planned operational results/quality objectives.				
V.5.5.d.	Document resource planning output.				
V.5.5.e.	Conduct periodic recorded management reviews (in compliance with stated minimum interval) to evaluate and take action (corrective action/managed change) to ensure continuing suitability and effectiveness of the:				
v.5.5.e.1.	Quality policy.				
v.5.5.e.2.	Quality objectives.				
V.5.5.f.	Verify implementation of proper corrective action/managed change on assessment deficiencies.				
V.5.5.g.	Record the results of corrective action/managed change on assessment deficiencies and report the results to the NSPM.				
DOCUMENT/RECORD CONTROL					
V.5.6.	Internal and external documents:				
V.5.6.a.	That are *actively* utilized in the SQMS to ensure effective operation and control of the processes are:				
v.5.6.a.1.	On the Master List of Documents, including documents originally categorized as ''archived'' that have been activated.				
V.5.6.a.2.	Adequately identified by publisher/originator, title/description, volume no./form no., revision no./version, or effective date..				
V.5.6.b.	That are *inactive/unused* are being controlled according to the approved ''archiving'' policy [re: V.5.7.h.].				
V.5.7.	Stated SQMS method(s) for:				
V.5.7.a.	Approval of documents for adequacy prior to issue.				
V.5.7.b.	Periodically (where necessary) reviewing documents and records and updating/re-approving them.				

TABLE E.5—INFORMATION—SQMS ASSESSMENT TOOL—ON-SITE—Continued

Element number	EXPANDED (Voluntary) Elements	Rating—See Element Assessment Table			Comments (Designate N/A Elements)
		N	P	Y	
V.5.7.c.	Maintaining current revision(s) and entering revision status and the date of last revision on each page concerned.				
V.5.7.d.	Maintaining current relevant versions of applicable documents at point-of-use.				
V.5.7.e.	Suitably identifying and designating obsolete documents if they are retained for any purpose.				
V.5.7.f.	Preventing unintended use of obsolete documents.				
V.5.7.g.	Identifying and controlling distribution/accessibility of documents of external origin.				
V.5.7.h.	Adequately protecting and storing/archiving records/documents.				
V.5.8.	Documents/records have been retained for *two years*, in plain language form or in coded form, as follows:				
V.5.8.a.	Training time lost due to FSTD discrepancies.				
V.5.8.b.	Two most recent NSPM assessments.				
V.5.8.c.	Two most recent Sponsor assessments.				
V.5.8.d.	SQMS Corrective Action records and/or Managed Change documentation (Including change pertaining to assessment findings).				
V.5.8.e.	Documented Management Resource Planning output and review.				
ASSIGNMENT of PERSONNEL/TRAINING					
V.5.9.	Stated SQMS method(s) for:				
V.5.9.a.	Assignment of personnel to perform inspection, testing, engineering and normal, preventative and corrective maintenance on FSTDs based upon experience, skills, education or training that satisfies the identified skill requirements.				
V.5.9.b.	Maintaining appropriate records of experience, skills, education or training to indicate that the qualifications of the assigned personnel satisfy the stated skill requirements.				
V.5.9.c.	Evaluating the: (1) Adequacy/appropriateness of the identified skill requirements and (2) Effectiveness of sponsor-provided training, utilizing, in part, the criteria for workmanship specified in V.5.11.d.				
POLICY, PROCESS and/or PROCEDURE CONTROL					
V.5.10.	Documented policies, processes and/or procedures for essential SQMS functions, including the relevant/essential sequence and interaction of these processes (Supported by diagrams/flow charts/maps at sponsor's discretion) to include:				
V.5.10.a.	Scheduling and tracking inspection, testing, engineering and normal and preventative maintenance on FSTDs to verify that the specified qualification requirements for the FSTD are met.				
V.5.10.b.	Determination of *FSTD training, evaluation, and/or flight experience restrictions,* including their implementation, status notification and coordination with the sponsor's training organization, other users and TPAA and removal of the restrictions.				
V.5.11.	Implementation of controlled conditions that provide:				
V.5.11.a.	A suitable work environment.				
V.5.11.b.	Approval of equipment.				
V.5.11.c.	Availability of suitable equipment and suitable equipment maintenance.				
V.5.11.d.	Compliance with documented procedures and/or reference standards/codes as set out in the Quality Management System Manual.				
V.5.11.e.	Utilization of criteria for workmanship (*e.g.*, written standards, representative samples/illustrations).				
V.5.12.	Implementation of controlled conditions that provide availability of current, valid measuring/monitoring devices that are consistent with measurement requirements, including:				
V.5.12.a.	Recording the basis for the periodic, or prior to use, calibration of measurement devices.				

TABLE E.5—INFORMATION—SQMS ASSESSMENT TOOL—ON-SITE—Continued

Element number	EXPANDED (Voluntary) Elements	Rating—See Element Assessment Table			Comments (Designate N/A Elements)
		N	P	Y	
V.5.12.b.	Protection of measurement devices from damage and safeguarding them from adjustments that would invalidate their calibration.				
V.5.13.	The method used to record NSPM assessments, including all recommendations and corrective action/managed change taken.				
INTERNAL ASSESSMENT					
V.5.14.	Internal assessments have been conducted to determine that: (1) The SQMS has been effectively implemented and maintained, (2) Conforms to regulatory standards and (3) Conforms to SQMS requirements in accordance with documented procedures, including:.				
V.5.14.a.	Assignment of responsibilities and requirements for conducting assessments.				
V.514.b.	Assessment frequency.				
V.5.14.c.	Adequate assessment scope.				
V.5.14.d.	Assessment methodology and recording.				
V.5.14.e.	Personnel, other than those who control/perform the activity, process, procedure or practice being assessed, conducted the assessment (Note any NSPM approved authorization to deviate from this requirement for sponsors that have limited personnel resources).				
V.5.14.f.	Reporting assessment results to Responsible Management and the NSPM.				
CORRECTIVE ACTION/MANAGED CHANGE (For Other Than FSTD Operational Discrepancies)					
V.5.15.	The policy, process, and/or procedure that specifies how a perceived need for change will:				
V.5.15.a.	Be validated (determined), and if valid, be activated as a Change Initiative.				
	If processed as a Corrective Action:				
V.5.15.b.	Determine the cause.				
V.5.15.c.	Determine and implement corrective action.				
V.5.15.d.	Record the action taken.				
V.5.15.e.	Evaluate the effectiveness of the action taken.				
V.5.15.f.	Record the results of this evaluation.				
V.5.15.g.	Evaluate the need for further action to prevent recurrence.				
—.					
	If processed as a Managed Change:.				
V.5.15.h.	Analyze and determine action on the Change Initiative.				
V.5.15.i.	Establish the Scope of Change.				
V.5.15.j.	Develop a Change Plan.				
V.5.15.k.	Review the Change Plan.				
V.5.15.l.	Implement the Approved Change Plan.				
V.5.15.m.	Evaluate the implemented change.				
V.5.15.n.	Review the evaluation.				

Continuation Sheet

Sponsor _____ Program _____ Date _____ Page No. _____ I or O _____

FAA Element Number	Sponsor Item Number	Action* Status/Category	Action* Date	Comments	Resolved# Status/Category	Resolved# Date

(Continue as Necessary)

*ACTION
Rating / Status Codes:
Rating = Yes (Y); Partial (P); None (N)
Status = Advisory (A); Question (Q); Request (R); Observation (O)

#RESOLVED
Rating / Status Codes:
Rating = Yes (Y)
Status = Corrected or Acceptable (OK)

ELEMENT ASSESSMENT TABLE		
Rating/Measurement Standard		
Criteria: Complete, adequate, appropriate, accurate, clearly defined – flow chart, diagram, description		
NONCOMPLIANCE/NONCONFORMITY (N)	PARTIAL COMPLIANCE/CONFORMITY (P)	ACCEBTABLE COMPLIANCE/CONFORMITY (Y)
Corrective Action Required	Corrective Action Required	No Corrective Action Required
There is no evidence of: A. Compliance/Conformity. B. A written description.	There is evidence of: A. A partial compliance/conformity. B. An incomplete written description.	There is evidence of: A. Adequate compliance/conformity. B. An adequate written description

C. Identification, definition, documentation (flow chart, diagram, description)	*C. The process or procedure is:* *(a) Identified/defined inadequately,* *or* *(b) Documented inadequately.*	*C. The process or procedure is:* *(a) Identified/defined adequately,* *or* *(b) Documented adequately*
D. Implementation of a process or procedure.	*D. The process or procedure is:* *(a) Implemented inadequately/inappropriately,* *or* *(b) Not current as defined/documented.*	*D. The process or procedure is:* *(a) Implemented adequately/appropriately,* *or* *(b) Current as defined/documented.*
E. Effectiveness of a process or procedure.	*E. Of inadequate or partial effectiveness of a process or procedure.*	*E. Of adequate effectiveness of a process or procedure.*
End Information		

APPENDIX F TO PART 60—DEFINITIONS AND ABBREVIATIONS FOR FLIGHT SIMULATION TRAINING DEVICES

BEGIN INFORMATION

1. The definitions presented below in *Italic type face* are repeated from the regulatory definitions found in part 1 or part 60, as indicated. In the event that a discrepancy exists between a definition found here, and one found in part 1 or part 60, the part 1 or part 60 definition prevails.

END INFORMATION

BEGIN QPS REQUIREMENTS

2. DEFINITIONS.

1st Segment—is that portion of the takeoff profile from liftoff to gear retraction.

2nd Segment—is that portion of the takeoff profile from after gear retraction to initial flap/slat retraction.

3rd Segment—is that portion of the takeoff profile after flap/slat retraction is complete.

Aircraft data package—is a combination of the various types of data used to design, program, manufacture, modify, and test the FSTD.

Airspeed—is calibrated airspeed unless otherwise specified and is expressed in terms of nautical miles per hour (knots).

Altitude—is pressure altitude (meters or feet) unless specified otherwise.

Angle of attack—is the angle between the airplane longitudinal axis and the relative wind vector projected onto the airplane plane of symmetry.

Automatic Testing—is FSTD testing wherein all stimuli are under computer control.

Bank—is the airplane attitude with respect to or around the longitudinal axis, or roll angle (degrees).

Breakout—is the force required at the pilot's primary controls to achieve initial movement of the control position.

Certificate holder—A person issued a certificate under parts 119, 141, or 142 of this chapter or a person holding an approved course of training for flight engineers in accordance with part 63 of this chapter. (Part 60)

Closed Loop Testing—is a test method for which the input stimuli are generated by controllers, which drive the FSTD to follow a pre-defined target response.

Computer Controlled Airplane—is an airplane where all pilot inputs to the control surfaces are transferred and augmented by computers.

Control Sweep—is movement of the appropriate pilot controller from neutral to an extreme limit in one direction (Forward, Aft, Right, or Left), a continuous movement back through neutral to the opposite extreme position, and then a return to the neutral position.

Convertible FSTD—is an FSTD in which hardware and software can be changed so that the FSTD becomes a replica of a different model, usually of the same type aircraft. The same FSTD platform, cockpit shell, motion system, visual system, computers, and necessary peripheral equipment can thus be used in more than one simulation.

Critical Engine Parameter—is the parameter, which is the most accurate measure of propulsive force.

Deadband—is the amount of movement of the input for a system for which there is no reaction in the output or state of the system observed.

Distance—is the length of space between two points and is expressed in terms of nautical miles unless specified otherwise.

Discrepancy—as used in this part, means an aspect of the FSTD that is not correct with respect to the aircraft being simulated. This includes missing, malfunctioning, and/or inoperative components that are required to be present and operate correctly for training, evaluation, and experience functions to be creditable. It also includes errors in the documentation used to support the FSTD (*e.g.*, errors in, or information missing from, the MQTG, required statements from appropriately qualified personnel).

Downgrade—is a permanent change in the qualification level of an FSTD to a lower level.

Driven—is a test method where the input stimulus or variable is positioned by automatic means, generally a computer input.

Electronic Copy of the MQTG—an electronic copy of the MQTG provided by an electronic scan presented in a Portable Document File (PDF), or similar format, acceptable to the NSPM.

Electronic Master Qualification Test Guide—is an electronic version of the MQTG (eMQTG), where all objective data obtained from airplane testing, or another approved source, together with correlating objective test results obtained from the performance of the FSTD and a description of the equipment necessary to perform the evaluation for the initial and the continuing qualification evaluations is stored, archived, or presented in either reformatted or digitized electronic format.

Engine—as used in this part, means the appliance or structure that supplies propulsive force for movement of the aircraft: *i.e.,* the turbine engine for turbine powered aircraft; the turbine engine and propeller assembly for turbo-propeller powered aircraft; and the reciprocating engine and propeller assembly for reciprocating engine powered aircraft. For purposes of this part, engine failure is

the failure of either the engine, or propeller assembly, to provide thrust higher than idle power thrust due to a failure of either the engine or the propeller assembly.

Evaluation—With respect to an individual, the checking, testing, or review associated with flight crewmember qualification, training, and certification under parts 61, 63, 121, or 135 of this chapter. With respect to an FSTD, the qualification activities (*e.g.*, the objective and subjective tests, the inspections, or the continuing qualification evaluations) associated with the requirements of this part. (Part 60)

Fictional Airport—is a visual model of an airport that is a collection of non-''real world'' terrain, instrument approach procedures, navigation aids, maps, and visual modeling detail sufficient to enable completion of an Airline Transport Pilot Certificate or Type Rating.

Flight experience—Flight experience means recency of flight experience for landing credit purposes. (Part 60)

Flight simulation training device (FSTD) means a full flight simulator (FFS) or a flight training device (FTD). (Part 1)

Flight test data—(a subset of Objective data) Aircraft data collected by the aircraft manufacturer (or other supplier of data that are acceptable to the NSPM) during an aircraft flight test program. (Part 60)

Flight training device (FTD) means a replica of aircraft instruments, equipment, panels, and controls in an open flight deck area or an enclosed aircraft cockpit replica. It includes the equipment and computer programs necessary to represent aircraft (or set of aircraft) operations in ground and flight conditions having the full range of capabilities of the systems installed in the device as described in part 60 of this chapter and the qualification performance standard (QPS) for a specific FTD qualification level. (Part 1)

Free Response—is the response of the FSTD after completion of a control input or disturbance.

Frozen—is a test condition where one or more variables are held constant with time.

FSTD Approval—is the extent to which an FSTD may be used by a certificate holder as authorized by the FAA. It takes into account aircraft to FSTD differences and the training ability of the organization.

FSTD Directive—A document issued by the FAA to an FSTD sponsor, requiring a modification to the FSTD due to a recognized safety-of-flight issue and amending the qualification basis for the FSTD. (Part 60)

FSTD Latency—is the additional time beyond that of the response time of the aircraft due to the response of the FSTD.

FSTD Performance—The overall performance of the FSTD includes aircraft performance (*e.g.*, thrust/drag relationships, climb, range) as well as flight and ground handling. (Part 60)

Full flight simulator (FFS) means a replica of a specific type; or make, model, and series aircraft cockpit. It includes the assemblage of equipment and computer programs necessary to represent aircraft operations in ground and flight conditions, a visual system providing an out-of-the-cockpit view, a system that provides cues at least equivalent to those of a three-degree-of-freedom motion system, and has the full range of capabilities of the systems installed in the device as described in part 60 of this chapter and the qualification performance standards (QPS) for a specific FFS qualification level. (Part 1)

Generic Airport—is a Class III visual model that combines correct navigation aids for a real world airport with a visual model which does not correctly depict that same airport.

Grandfathering—as used in this part, means the practice of assigning a qualification basis for an FSTD, based on the period of time during which a published set of standards governed the requirements for the initial and continuing qualification of FSTDs. Each FSTD manufactured during this specified period of time is ''grandfathered,'' or is ''held to the standards'' that are, or were, in effect during that time period. The grandfathered standards remain applicable to each FSTD manufactured during the stated time period, regardless of any subsequent modification to those standards and regardless of the sponsor, as long as the FSTD remains continuously qualified or is maintained in a non-qualified status in accordance with the specific requirements and time periods set out in this part. Each FSTD manufactured prior to the beginning date (or manufactured after the ending date) of a designated grandfather time period would have as its qualification basis, the standards in effect during the time period prior to, or subsequent to, the designated period.

Gross Weight—For objective test purposes:

Basic Operating Weight—(BOW) is the empty weight of the aircraft plus the weight of the following: normal oil quantity; lavatory servicing fluid; potable water; required crewmembers and their baggage; and emergency equipment.

Near Maximum Gross Weight—is a weight chosen by the sponsor or data provider that is not less than the basic operating weight (BOW) of the airplane being simulated plus 80% of the difference between the maximum certificated gross weight (either takeoff weight or landing weight, as appropriate for the test) and the BOW.

Light Gross Weight—is a weight chosen by the sponsor or data provider that is not more than 120% of the BOW of the airplane being simulated or as limited by the minimum practical operating weight of the test airplane.

Medium Gross Weight—is a weight chosen by the sponsor or data provider that is approximately ±10% of the average of the numerical values of the BOW and the maximum certificated gross weight.

Ground Effect—is the change in aerodynamic characteristics due to modification of the airflow past the aircraft caused by the proximity of the Earth's surface to the airplane.

Hands Off—is a test maneuver conducted without pilot control inputs.

Hands On—is a test maneuver conducted with pilot control inputs as required.

Heave—is FSTD movement with respect to or along the vertical axis.

Height—is the height above ground level (or AGL) expressed in meters or feet.

''*In Use*'' *Runway*—as used in this part, means the runway that is ''active,'' (is currently ''selected'' and able to be used for takeoffs and landings) and has the surface lighting and markings required by this part.

Integrated Testing—is testing of the FSTD such that all aircraft system models are active and contribute appropriately to the results where none of the models used are substituted with models or other algorithms intended for testing only.

Irreversible Control System—is a control system in which movement of the control surface will not backdrive the pilot's control in the cockpit.

Locked—is a test condition where one or more variables are held constant with time.

Manual Testing—is FSTD testing conducted without computer inputs except for initial setup and all modules of the simulation are active.

Master Qualification Test Guide (MQTG)—The FAA-approved Qualification Test Guide with the addition of the FAA-witnessed test results, applicable to each individual FSTD. (Part 60)

Medium—is the normal operational weight for a given flight segment.

National Simulator Program Manager (NSPM)—The FAA manager responsible for the overall administration and direction of the National Simulator Program (NSP), or a person approved by that FAA manager. (Part 60)

Nominal—is the normal operating configuration, atmospheric conditions, and flight parameters for the flight segment specified.

Non-Normal Control—is a term used in reference to Computer Controlled Airplanes and is the state where one or more of the intended control, augmentation, or protection functions are not fully working. NOTE: Specific terms such as ALTERNATE, DIRECT, SECONDARY, or BACKUP may be used to define an actual level of degradation.

Normal Control—is a term used in reference to Computer Controlled Airplanes and is the state where the intended control, augmentation, and protection functions are fully working.

Objective data—Quantitative data, acceptable to the NSPM, used to evaluate the FSTD.

Objective test—A quantitative measurement and evaluation of FSTD performance. (Part 60)

Pitch—is the airplane attitude with respect to, or around, the lateral axis expressed in degrees.

Power Lever Angle (PLA)—is the angle of the pilot's primary engine control lever(s) in the cockpit. This may also be referred to as THROTTLE or POWER LEVER.

Predicted data—Estimations or extrapolations of either existing flight test data or data from other simulation models using engineering analyses, engineering simulations, design data, and/or wind tunnel data. (Part 60)

Protection Functions—are systems functions designed to protect an airplane from exceeding its flight maneuver limitations.

Pulse Input—is a step input to a control followed by an immediate return to the initial position.

Qualification level—The categorization of an FSTD established by the NSPM, based on the FSTDs demonstrated technical and operational capabilities as set out in this part. (Part 60)

Qualification Performance Standard (QPS)—The collection of procedures and criteria published by the FAA to be used when conducting objective tests and subjective tests, including general FSTD requirements, for establishing FSTD qualification levels. The QPS are published in the appendices to this part, as follows: Appendix A, for Airplane Simulators; Appendix B, for Airplane Flight Training Devices; Appendix C, for Helicopter Simulators; Appendix D, for Helicopter Flight Training Devices; Appendix E, for Quality Management Systems for Flight Simulation Training Devices; and Appendix F, for Definitions and Abbreviations for Flight Simulation Training Devices. (Part 60)

Qualification Test Guide (QTG)—The primary reference document used for evaluating an aircraft FSTD. It contains test results, statements of compliance and capability, the configuration of the aircraft simulated, and other information for the evaluator to assess the FSTD against the applicable regulatory criteria. (Part 60)

Quality Management System (QMS)—the aviation standard for flight simulation quality-systems that can be used for external quality-assurance purposes. It is a collection of generic and independent requirements unrelated to any specific industry or economic sector. It is not designed to enforce uniformity of quality systems, but to identify the processes needed, determine the sequence and interaction of these processes,

determine criteria and methods required to ensure the effective operation and control of these processes, ensure the availability of information necessary to support the operation and monitoring of these processes, measure, monitor and analyze these processes, and implement the actions necessary to achieve planned results. The design and implementation of a specific quality management system is influenced by the varying needs of the individual sponsor, their particular objectives, the flight simulation products and services supplied, and the processes and specific practices employed.

Real-World Airport—as used in this part in reference to airport visual models, means a computer generated visual depiction of an airport that exists in reality.

Representative—When used as an adjective in this part, means typical, demonstrative, or characteristic of, or with respect to, the feature being described. For example:

1. ''Representative sampling of tests'' means a sub-set of the complete set of all tests such that the sample includes one or more of the tests in each of the major categories, the results of which would provide the evaluator a typical, or overall, understanding of the performance and/or handling characteristics of the FSTD.

2. ''Representative airport model'' (or ''ground/airborne traffic,'' ''lights,'' ''runway/taxiway markings,'' ''terrain,'' ''weather phenomena'') means a computer generated visual depiction of a real-world or fictional airport (or traffic, lights, markings, terrain, weather phenomena.) that is typical or characteristic of an airport (or traffic, lights, markings, terrain, weather phenomena) regularly used or seen by the sponsor, or the sponsor's client using the FSTD, in normal operations.

Reversible Control System—is a control system in which movement of the control surface will backdrive the pilot's control in the cockpit.

Roll—is the airplane attitude with respect to, or around, the longitudinal axis expressed in degrees.

Set of aircraft—Aircraft that share similar handling and operating characteristics and similar operating envelopes and have the same number and type of engines or power plants. (Part 60)

Sideslip Angle—is the angle between the relative wind vector and the airplane plane of symmetry. (note: this definition replaces the current definition of ''sideslip.'')

Simulation Quality Management System (SQMS)—consists of the required and voluntary elements of a quality management system for FSTD continuing qualification.

Snapshot—is a presentation of one or more variables at a given instant of time.

Special Evaluation—is an evaluation of the FSTD for purposes other than initial, upgrade, or continuing qualification. Circumstances that might indicate the need for a special evaluation would include, but not necessarily be limited to, the following: after the FSTD is moved and reinstalled at another location; after an update to FSTD software or hardware that might affect performance or flying qualities; after a substantial update to FSTD avionics packages (e.g., autopilot, flight management systems); after substantial modifications to FSTD configuration; after a complaint is received from a credible source indicating that the FSTD does not perform or handle like the aircraft it simulates.

Sponsor—A certificate holder who seeks or maintains FSTD qualification and is responsible for the prescribed actions as set out in this part and the QPS for the appropriate FSTD and qualification level. (Part 60)

Statement of Compliance and Capability (SOC)—is a declaration that specific requirements have been met. It must declare that compliance with the requirement is achieved and explain how the requirement is met (e.g., gear modeling approach, coefficient of friction sources). It must also describe the capability of the FSTD to meet the requirement (e.g., computer speed, visual system refresh rate). In doing this, the statement must provide references to needed sources of information for showing compliance, rationale to explain how the referenced material is used, mathematical equations and parameter values used, and conclusions reached.

Step Input—is an abrupt control input held at a constant value.

Subjective test—A qualitative assessment of the performance and operation of the FSTD. (Part 60)

Surge—is FSTD movement with respect to or along the longitudinal axis.

Sway—is FSTD movement with respect to or along the lateral axis.

Time History—is a presentation of the change of a variable with respect to time.

Training Program Approval Authority (TPAA)—A person authorized by the Administrator to approve the aircraft flight training program in which the FSTD will be used. (Part 60)

Training Restriction—is a temporary condition where, due to a Missing, Malfunctioning, or Inoperative (MMI) Component condition, the FSTD may continue to be used at the qualification level indicated on its SOQ but restricted from accomplishing the task for which the correct function of the MMI component is required.

Transport Delay or ''Throughput''—is the total FSTD system processing time required for an input signal from a pilot primary flight control until motion system, visual system, or instrument response. It is the overall time delay incurred from signal input until output response. It does not include the characteristic delay of the airplane simulated.

Upgrade—The improvement or enhancement of an FSTD for the purpose of achieving a higher qualification level. (Part 60)

Validation Data—Objective data used to determine if the FSTD performance is within the tolerances prescribed in the QPS.

Validation Test—An objective test whereby FSTD parameters are compared to the relevant validation data to ensure that the FSTD performance is within the tolerances prescribed in the QPS.

Visual Data Base—is a display that may include one or more visual models.

Visual Model—is a collection of one or more visual scenes of an airport or portion(s) of an airport.

Visual System Response Time—is the interval from a control input to the completion of the visual display scan of the first video field containing the resulting different information.

Yaw—is airplane attitude with respect to, or around, the vertical axis expressed in degrees.

3. ABBREVIATIONS.

AFM Approved Flight Manual.
AlL Above Ground Level (meters or feet).
AOA Angle of Attack (degrees).
APD Aircrew Program Designee.
CCA Computer Controlled Airplane.
cd/m^2 candela/$meter^2$, 3.4263 candela/m^2 = 1 ft-Lambert.
CFR Code of Federal Regulations.
cm(s) centimeter, centimeters.
daN decaNewtons, one (1) decaNewton = 2.27 pounds.
deg(s) degree, degrees.
DOF Degrees-of-freedom.
eMQTG Electronic Master Qualification Test Guide.
EPR Engine Pressure Ratio.
FAA Federal Aviation Administration (U.S.).
fpm feet per minute.
ft foot/feet, 1 foot = 0.304801 meters.
ft-Lambert foot-Lambert, 1 ft-Lambert = 3.4263 candela/m^2.
g Acceleration due to Gravity (meters or feet/sec^2); 1 g = 9.81 m/sec^2 or 32.2 feet/sec^2.
G/S Glideslope.
IATA International Airline Transport Association.
ICAO International Civil Aviation Organization.
IGE In ground effect.
ILS Instrument Landing System.
IQTG International Qualification Test Guide.
km Kilometers 1 km = 0.62137 Statute Miles.
kPa KiloPascal (Kilo Newton/Meters2). 1 psi = 6.89476 kPa.
kts Knots calibrated airspeed unless otherwise specified, 1 knot = 0.5148 m/sec or 1.689 ft/sec.
lb(s) pound(s), one (1) pound = 0.44 decaNewton.
LDP Landing decision point.
M,m Meters, 1 Meter = 3.28083 feet.
Min(s) Minute, minutes.
MLG Main Landing Gear.
Mpa MegaPascals (1 psi = 6894.76 pascals).
ms millisecond(s).
N NORMAL CONTROL Used in reference to Computer Controlled Airplanes.
nm Nautical Mile(s) 1 Nautical Mile = 6,080 feet.
NN NON-NORMAL CONTROL Used in reference to Computer Controlled Airplanes.
N1 Low Pressure Rotor revolutions per minute, expressed in percent of maximum.
N2 High Pressure Rotor revolutions per minute, expressed in percent of maximum.
N3 High Pressure Rotor revolutions per minute, expressed in percent of maximum.
NWA Nosewheel Angle (degrees).
OGE Out of ground effect.
PAPI Precision Approach Path Indicator System.
Pf Impact or Feel Pressure, often expressed as ''q.''
PLA Power Lever Angle.
PLF Power for Level Flight.
psi pounds per square inch.
QPS Qualification Performance Standard.
RAE Royal Aerospace Establishment.
R/C Rate of Climb (meters/sec or feet/min).
R/D Rate of Descent (meters/sec or feet/min).
REIL Runway End Identifier Lights.
RVR Runway Visual Range (meters or feet).
s second(s).
sec(s) second, seconds.
sm Statute Mile(s) 1 Statute Mile = 5,280 feet.
SOC Statement of Compliance and Capability.
Tf Total time of the flare maneuver duration.
Ti Total time from initial throttle movement until a 10% response of a critical engine parameter.
TIR Type Inspection Report.
T/O Takeoff.
Tt Total time from Ti to a 90% increase or decrease in the power level specified.
VASI Visual Approach Slope Indicator System.
VGS Visual Ground Segment.
V_1 Decision speed.
V_2 Takeoff safety speed.
Vmc Minimum Control Speed.
Vmca Minimum Control Speed in the air.
Vmcg Minimum Control Speed on the ground.
Vmcl Minimum Control Speed—Landing.
Vmu The speed at which the last main landing gear leaves the ground.
V_R Rotate Speed.
V_s Stall Speed or minimum speed in the stall.

WAT Weight, Altitude, Temperature.

END QPS REQUIREMENTS

PART 61—CERTIFICATION: PILOTS, FLIGHT INSTRUCTORS, AND GROUND INSTRUCTORS

SPECIAL FEDERAL AVIATION REGULATION NO. 73
SPECIAL FEDERAL AVIATION REGULATION NO. 93
SPECIAL FEDERAL AVIATION REGULATION NO. 100–1

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SPECIAL FEDERAL AVIATION REGULATION NO. 73—ROBINSON R–22/R–44 SPECIAL TRAINING AND EXPERIENCE REQUIREMENTS

Sections

1. Applicability.
2. Required training, aeronautical experience, endorsements, and flight review.
3. Expiration date.

1. Applicability. Under the procedures prescribed herein, this SFAR applies to all persons who seek to manipulate the controls or act as pilot in command of a Robinson model R–22 or R–44 helicopter. The requirements stated in this SFAR are in addition to the current requirements of part 61.

2. Required training, aeronautical experience, endorsements, and flight review.

(a) Awareness Training:

(1) Except as provided in paragraph (a)(2) of this section, no person may manipulate the controls of a Robinson model R–22 or R–44 helicopter after March 27, 1995, for the purpose of flight unless the awareness training specified in paragraph (a)(3) of this section is completed and the person's logbook has been endorsed by a certified flight instructor authorized under paragraph (b)(5) of this section.

(2) A person who holds a rotorcraft category and helicopter class rating on that person's pilot certificate and meets the experience requirements of paragraph (b)(1) or paragraph (b)(2) of this section may not manipulate the controls of a Robinson model R–22 or R–44 helicopter for the purpose of flight after April 26, 1995, unless the awareness training specified in paragraph (a)(3) of this section is completed and the person's logbook has been endorsed by a certified flight instructor authorized under paragraph (b)(5) of this section.

(3) Awareness training must be conducted by a certified flight instructor who has been endorsed under paragraph (b)(5) of this section and consists of instruction in the following general subject areas:

(i) Energy management;

(ii) Mast bumping;

(iii) Low rotor RPM (blade stall);

(iv) Low G hazards; and

(v) Rotor RPM decay.

(4) A person who can show satisfactory completion of the manufacturer's safety course after January 1, 1994, may obtain an endorsement from an FAA aviation safety inspector in lieu of completing the awareness training required in paragraphs (a)(1) and (a)(2) of this section.

(b) Aeronautical Experience:

(1) No person may act as pilot in command of a Robinson model R–22 unless that person:

(i) Has had at least 200 flight hours in helicopters, at least 50 flight hours of which were in the Robinson R–22; or

(ii) Has had at least 10 hours dual instruction in the Robinson R–22 and has received an endorsement from a certified flight instructor authorized under paragraph (b)(5) of this section that the individual has been given the training required by this paragraph and is proficient to act as pilot in command of an R–22. Beginning 12 calendar months after the date of the endorsement, the individual may not act as pilot in command unless the individual has completed a flight review in an R–22 within the preceding 12 calendar months and obtained an endorsement for that flight review. The dual instruction must include at least the following abnormal and emergency procedures flight training:

(A) Enhanced training in autorotation procedures,

(B) Engine rotor RPM control without the use of the governor,

(C) Low rotor RPM recognition and recovery, and

(D) Effects of low G maneuvers and proper recovery procedures.

(2) No person may act as pilot in command of a Robinson R–44 unless that person—

(i) Has had at least 200 flight hours in helicopters, at least 50 flight hours of which were in the Robinson R–44. The pilot in command may credit up to 25 flight hours in the Robinson R–22 toward the 50 hour requirement in the Robinson R–44; or

(ii) Has had at least 10 hours dual instruction in a Robinson helicopter, at least 5 hours of which must have been accomplished in the Robinson R–44 helicopter and has received an endorsement from a certified flight instructor authorized under paragraph (b)(5) of this section that the individual has been given the training required by this paragraph and is proficient to act as pilot in command of an R–44. Beginning 12 calendar months after the date of the endorsement, the individual may not act as pilot in command unless the individual has completed a flight review in a Robinson R–44 within the preceding 12 calendar months and obtained an endorsement for that flight review. The dual instruction must include at least the following abnormal and emergency procedures flight training—

(A) Enhanced training in autorotation procedures;

(B) Engine rotor RPM control without the use of the governor;

(C) Low rotor RPM recognition and recovery; and

(D) Effects of low G maneuvers and proper recovery procedures.

(3) A person who does not hold a rotorcraft category and helicopter class rating must have had at least 20 hours of dual instruction in a Robinson R–22 helicopter prior to operating it in solo flight. In addition, the person must obtain an endorsement from a certified flight instructor authorized under paragraph (b)(5) of this section that instruction has been given in those maneuvers and procedures, and the instructor has found the applicant proficient to solo a Robinson R–22. This endorsement is valid for a period of 90 days. The dual instruction must include at least the following abnormal and emergency procedures flight training:

(i) Enhanced training in autorotation procedures,

(ii) Engine rotor RPM control without the use of the governor,

(iii) Low rotor RPM recognition and recovery, and

(iv) Effects of low G maneuvers and proper recovery procedures.

(4) A person who does not hold a rotorcraft category and helicopter class rating must have had at least 20 hours of dual instruction in a Robinson R–44 helicopter prior to operating it in solo flight. In addition, the person must obtain an endorsement from a certified flight instructor authorized under paragraph (b)(5) of this section that instruction has been given in those maneuvers and procedures, and the instructor has found the applicant proficient to solo a Robinson R–44. This endorsement is valid for a period of 90 days. The dual instruction must include at least the following abnormal and emergency procedures flight training:

(i) Enhanced training in autorotation procedures,

(ii) Engine rotor RPM control without the use of the governor,

(iii) Low rotor RPM recognition and recovery, and

(iv) Effects of low G maneuvers and proper recovery procedures.

(5) No certificated flight instructor may provide instruction or conduct a flight review in a Robinson R–22 or R–44 unless that instructor—

(i) Completes the awareness training in paragraph 2(a) of this SFAR.

(ii) For the Robinson R–22, has had at least 200 flight hours in helicopters, at least 50 flight hours of which were in the Robinson R–22, or for the Robinson R–44, has had at least 200 flight hours in helicopters, 50 flight hours of which were in Robinson helicopters. Up to 25 flight hours of Robinson R–22 flight time may be credited toward the 50 hour requirement.

(iii) Has completed flight training in a Robinson R–22, R–44, or both, on the following abnormal and emergency procedures—

(A) Enhanced training in autorotation procedures;

(B) Engine rotor RPM control without the use of the governor;

(C) Low rotor RPM recognition and recovery; and

(D) Effects of low G maneuvers and proper recovery procedures.

(iv) Has been authorized by endorsement from an FAA aviation safety inspector or authorized designated examiner that the instructor has completed the appropriate training, meets the experience requirements and has satisfactorily demonstrated an ability to provide instruction on the general subject areas of paragraph 2(a)(3) of this SFAR, and the flight training identified in paragraph 2(b)(5)(iii) of this SFAR.

(c) Flight Review:

(1) No flight review completed to satisfy §61.56 by an individual after becoming eligible to function as pilot in command in a Robinson R–22 helicopter shall be valid for the operation of R–22 helicopter unless that flight review was taken in an R–22.

(2) No flight review completed to satisfy §61.56 by individual after becoming eligible to function as pilot in command in a Robinson R–44 helicopter shall be valid for the operation of R–44 helicopter unless that flight review was taken in the R–44.

(3) The flight review will include a review of the awareness training subject areas of paragraph 2(a)(3) of this SFAR and the flight training identified in paragraph 2(b) of this SFAR.

(d) Currency Requirements: No person may act as pilot in command of a Robinson model R–22 or R–44 helicopter carrying passengers unless the pilot in command has met the recency of flight experience requirements of §61.57 in an R–22 or R–44, as appropriate.

3. *Expiration date.* This SFAR terminates on March 31, 2008, unless sooner superceded or rescinded.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997, as amended by SFAR 73–1, 63 FR 666, Jan. 7, 1998; 68 FR 43, Jan. 2, 2003]

SPECIAL FEDERAL AVIATION REGULATION NO. 93—TEMPORARY EXTENSION OF TIME TO ALLOW FOR CERTAIN TRAINING AND TESTING

1. *Applicability.* This SFAR applies to all part 121 and 135 check airmen (simulator) and flight instructors (simulator), part 121 aircraft dispatchers, and part 142 training center instructors who were required to complete qualification requirements, an inflight line observation program, or operating familiarization in September 2001 to become qualified, or remain qualified, to perform their assigned duties. It also applies to persons who have satisfactorily accomplished the part 61 aeronautical knowledge test or the part 63 written test, either one of which has an expiration date of September 2001 for pilot, flight instructor, or flight engineer certification.

2. *Special Qualification Requirements.* The sections of 14 CFR that prescribes these requirements are sections 61.39(a)(1); 63.35(d); 121.411(f); 121.412(f); 121.463(a)(2); 121.463(c); 135.337(f); 135.338(f); 142.53(b)(2) and (b)(3).

3. *Extension of Time to Fulfill Certain Qualification Requirements.* Persons identified in paragraph 1 of this SFAR who had until the end of September 2001 to complete the specified qualification requirements in September 2001 will be deemed to have completed those requirements in September 2001 provided they satisfactorily complete those requirements by November 30, 2001. For those persons identified in paragraph 1, who are qualifying for the first time to be a check airmen (simulator), flight instructor (simulator), aircraft dispatcher, or training center instructor, they must fulfill the applicable qualification requirements before they may serve as a check airmen (simulator), flight instructor (simulator), aircraft dispatcher, or training center instructor, as appropriate. This extension does not change the 12-calendar-month requirement for aircraft dispatchers or the anniversary month for check airmen, flight instructors and training center instructors. Therefore, if you were due for qualification in September 2001 you will be due for qualification September 2002, regardless of this extension for 2001.

4. *Termination Date.* This Special Federal Aviation Regulation expires November 30, 2001.

[Doc. No. FAA–2001–10797, 66 FR 52279, Oct. 12, 2001]

SPECIAL FEDERAL AVIATION REGULATION NO. 100–1—RELIEF FOR U.S. MILITARY AND CIVILIAN PERSONNEL WHO ARE ASSIGNED OUTSIDE THE UNITED STATES IN SUPPORT OF U.S. ARMED FORCES OPERATIONS

1. *Applicability.* Flight Standards District Offices are authorized to accept from an eligible person, as described in paragraph 2 of this SFAR, the following:

(a) An expired flight instructor certificate to show eligibility for renewal of a flight instructor certificate under §61.197, or an expired written test report to show eligibility under part 61 to take a practical test;

(b) An expired written test report to show eligibility under §§63.33 and 63.57 to take a practical test; and

(c) An expired written test report to show eligibility to take a practical test required under part 65 or an expired inspection authorization to show eligibility for renewal under §65.93.

2. *Eligibility.* A person is eligible for the relief described in paragraph 1 of this SFAR if:

(a) The person served in a U.S. military or civilian capacity outside the United States in support of the U.S. Armed Forces' operation during some period of time from September 11, 2001, through June 20, 2010;

(b) The person's flight instructor certificate, airman written test report, or inspection authorization expired some time between September 11, 2001, and 6 calendar months after returning to the United States, or June 20, 2010, whichever is earlier; and

(c) The person complies with §§61.197 or 65.93 of this chapter, as appropriate, or completes the appropriate practical test within 6 calendar months after returning to the United States, or June 20, 2010, whichever is earlier.

3. *Required documents*. The person must send the Airman Certificate and/or Rating Application (FAA Form 8710–1) to the appropriate Flight Standards District Office. The person must include with the application one of the following documents, which must show the date of assignment outside the United States and the date of return to the United States:

(a) An official U.S. Government notification of personnel action, or equivalent document, showing the person was a civilian on official duty for the U.S. Government outside the United States and was assigned to a U.S. Armed Forces' operation some time between September 11, 2001, through June 20, 2010;

(b) Military orders showing the person was assigned to duty outside the United States and was assigned to a U.S. Armed Forces' operation some time between September 11, 2001 through June 20, 2010; or

(c) A letter from the person's military commander or civilian supervisor providing the dates during which the person served outside the United States and was assigned to a U.S. Armed Forces' operation some time between September 11, 2001 through June 20, 2010.

4. *Expiration date*. This Special Federal Aviation Regulation No.100–1 expires June 20, 2010, unless sooner superseded or rescinded.

[Doc. No. FAA–2005–15431, 70 FR 37948, June 30, 2005]

EFFECTIVE DATE NOTE: By Doc. No. FAA–2005–15431, 70 FR 37948, June 30, 2005, SFAR No. 100–1 was added, effective June 30, 2005 through June 20, 2010.

Subpart A—General

§61.1 Applicability and definitions.

(a) This part prescribes:

(1) The requirements for issuing pilot, flight instructor, and ground instructor certificates and ratings; the conditions under which those certificates and ratings are necessary; and the privileges and limitations of those certificates and ratings.

(2) The requirements for issuing pilot, flight instructor, and ground instructor authorizations; the conditions under which those authorizations are necessary; and the privileges and limitations of those authorizations.

(3) The requirements for issuing pilot, flight instructor, and ground instructor certificates and ratings for persons who have taken courses approved by the Administrator under other parts of this chapter.

(b) For the purpose of this part:

(1) *Aeronautical experience* means pilot time obtained in an aircraft, flight simulator, or flight training device for meeting the appropriate training and flight time requirements for an airman certificate, rating, flight review, or recency of flight experience requirements of this part.

(2) *Authorized instructor* means—

(i) A person who holds a valid ground instructor certificate issued under part 61 or part 143 of this chapter when conducting ground training in accordance with the privileges and limitations of his or her ground instructor certificate;

(ii) A person who holds a current flight instructor certificate issued under part 61 of this chapter when conducting ground training or flight training in accordance with the privileges and limitations of his or her flight instructor certificate; or

(iii) A person authorized by the Administrator to provide ground training or flight training under SFAR No. 58, or part 61, 121, 135, or 142 of this chapter when conducting ground training or flight training in accordance with that authority.

(3) *Cross-country time* means—

(i) Except as provided in paragraphs (b)(3)(ii) through (b)(3)(vi) of this section, time acquired during flight—

(A) Conducted by a person who holds a pilot certificate;

(B) Conducted in an aircraft;

(C) That includes a landing at a point other than the point of departure; and

(D) That involves the use of dead reckoning, pilotage, electronic navigation aids, radio aids, or other navigation systems to navigate to the landing point.

(ii) For the purpose of meeting the aeronautical experience requirements

(except for a rotorcraft category rating), for a private pilot certificate (except for a powered parachute category rating), a commercial pilot certificate, or an instrument rating, or for the purpose of exercising recreational pilot privileges (except in a rotorcraft) under §61.101 (c), time acquired during a flight—

(A) Conducted in an appropriate aircraft;

(B) That includes a point of landing that was at least a straight-line distance of more than 50 nautical miles from the original point of departure; and

(C) That involves the use of dead reckoning, pilotage, electronic navigation aids, radio aids, or other navigation systems to navigate to the landing point.

(iii) For the purpose of meeting the aeronautical experience requirements for a sport pilot certificate (except for powered parachute privileges), time acquired during a flight conducted in an appropriate aircraft that—

(A) Includes a point of landing at least a straight line distance of more than 25 nautical miles from the original point of departure; and

(B) Involves, as applicable, the use of dead reckoning; pilotage; electronic navigation aids; radio aids; or other navigation systems to navigate to the landing point.

(iv) For the purpose of meeting the aeronautical experience requirements for a sport pilot certificate with powered parachute privileges or a private pilot certificate with a powered parachute category rating, time acquired during a flight conducted in an appropriate aircraft that—

(A) Includes a point of landing at least a straight line distance of more than 15 nautical miles from the original point of departure; and

(B) Involves, as applicable, the use of dead reckoning; pilotage; electronic navigation aids; radio aids; or other navigation systems to navigate to the landing point.

(v) For the purpose of meeting the aeronautical experience requirements for any pilot certificate with a rotorcraft category rating or an instrument-helicopter rating, or for the purpose of exercising recreational pilot privileges, in a rotorcraft, under §61.101(c), time acquired during a flight—

(A) Conducted in an appropriate aircraft;

(B) That includes a point of landing that was at least a straight-line distance of more than 25 nautical miles from the original point of departure; and

(C) That involves the use of dead reckoning, pilotage, electronic navigation aids, radio aids, or other navigation systems to navigate to the landing point.

(vi) For the purpose of meeting the aeronautical experience requirements for an airline transport pilot certificate (except with a rotorcraft category rating), time acquired during a flight—

(A) Conducted in an appropriate aircraft;

(B) That is at least a straight-line distance of more than 50 nautical miles from the original point of departure; and

(C) That involves the use of dead reckoning, pilotage, electronic navigation aids, radio aids, or other navigation systems.

(vii) For a military pilot who qualifies for a commercial pilot certificate (except with a rotorcraft category rating) under §61.73 of this part, time acquired during a flight—

(A) Conducted in an appropriate aircraft;

(B) That is at least a straight-line distance of more than 50 nautical miles from the original point of departure; and

(C) That involves the use of dead reckoning, pilotage, electronic navigation aids, radio aids, or other navigation systems.

(4) *Examiner* means any person who is authorized by the Administrator to conduct a pilot proficiency test or a practical test for an airman certificate or rating issued under this part, or a person who is authorized to conduct a knowledge test under this part.

(5) *Flight simulator* means a device that—

(i) Is a full-size aircraft cockpit replica of a specific type of aircraft, or make, model, and series of aircraft;

(ii) Includes the hardware and software necessary to represent the aircraft in ground operations and flight operations;

(iii) Uses a force cueing system that provides cues at least equivalent to those cues provided by a 3 degree freedom of motion system;

(iv) Uses a visual system that provides at least a 45 degree horizontal field of view and a 30 degree vertical field of view simultaneously for each pilot; and

(v) Has been evaluated, qualified, and approved by the Administrator.

(6) *Flight training* means that training, other than ground training, received from an authorized instructor in flight in an aircraft.

(7) *Flight training device* means a device that—

(i) Is a full-size replica of the instruments, equipment, panels, and controls of an aircraft, or set of aircraft, in an open flight deck area or in an enclosed cockpit, including the hardware and software for the systems installed, that is necessary to simulate the aircraft in ground and flight operations;

(ii) Need not have a force (motion) cueing or visual system; and

(iii) Has been evaluated, qualified, and approved by the Administrator.

(8) *Ground training* means that training, other than flight training, received from an authorized instructor.

(9) *Instrument approach* means an approach procedure defined in part 97 of this chapter.

(10) *Instrument training* means that time in which instrument training is received from an authorized instructor under actual or simulated instrument conditions.

(11) *Knowledge test* means a test on the aeronautical knowledge areas required for an airman certificate or rating that can be administered in written form or by a computer.

(12) *Pilot time* means that time in which a person—

(i) Serves as a required pilot flight crewmember;

(ii) Receives training from an authorized instructor in an aircraft, flight simulator, or flight training device; or

(iii) Gives training as an authorized instructor in an aircraft, flight simulator, or flight training device.

(13) *Practical test* means a test on the areas of operations for an airman certificate, rating, or authorization that is conducted by having the applicant respond to questions and demonstrate maneuvers in flight, in a flight simulator, or in a flight training device.

(14) *Set of aircraft* means aircraft that share similar performance characteristics, such as similar airspeed and altitude operating envelopes, similar handling characteristics, and the same number and type of propulsion systems.

(15) *Student pilot seeking a sport pilot certificate* means a person who has received an endorsement—

(i) To exercise student pilot privileges from a certificated flight instructor with a sport pilot rating; or

(ii) That includes a limitation for the operation of a light-sport aircraft specified in §61.89(c) issued by a certificated flight instructor with other than a sport pilot rating.

(16) *Training time* means training received—

(i) In flight from an authorized instructor;

(ii) On the ground from an authorized instructor; or

(iii) In a flight simulator or flight training device from an authorized instructor.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40893, July 30, 1997; Amdt. 61–110, 69 FR 44864, July 27, 2004]

§61.3 Requirement for certificates, ratings, and authorizations.

(a) *Pilot certificate.* A person may not act as pilot in command or in any other capacity as a required pilot flight crewmember of a civil aircraft of U.S. registry, unless that person—

(1) Has a valid pilot certificate or special purpose pilot authorization issued under this part in that person's physical possession or readily accessible in the aircraft when exercising the privileges of that pilot certificate or authorization. However, when the aircraft is operated within a foreign country, a current pilot license issued by the country in which the aircraft is operated may be used; and

(2) Has a photo identification that is in that person's physical possession or readily accessible in the aircraft when

exercising the privileges of that pilot certificate or authorization. The photo identification must be a:

(i) Valid driver's license issued by a State, the District of Columbia, or territory or possession of the United States;

(ii) Government identification card issued by the Federal government, a State, the District of Columbia, or a territory or possession of the United States;

(iii) U.S. Armed Forces' identification card;

(iv) Official passport;

(v) Credential that authorizes unescorted access to a security identification display area at an airport regulated under 49 CFR part 1542; or

(vi) Other form of identification that the Administrator finds acceptable.

(b) *Required pilot certificate for operating a foreign-registered aircraft.* A person may not act as pilot in command or in any other capacity as a required pilot flight crewmember of a civil aircraft of foreign registry within the United States, unless that person's pilot certificate:

(1) Is valid and in that person's physical possession, or readily accessible in the aircraft when exercising the privileges of that pilot certificate; and

(2) Has been issued under this part, or has been issued or validated by the country in which the aircraft is registered.

(c) *Medical certificate.* (1) Except as provided for in paragraph (c)(2) of this section, a person may not act as pilot in command or in any other capacity as a required pilot flight crewmember of an aircraft, under a certificate issued to that person under this part, unless that person has a current and appropriate medical certificate that has been issued under part 67 of this chapter, or other documentation acceptable to the Administrator, which is in that person's physical possession or readily accessible in the aircraft.

(2) A person is not required to meet the requirements of paragraph (c)(1) of this section if that person—

(i) Is exercising the privileges of a student pilot certificate while seeking a pilot certificate with a glider category rating, a balloon class rating, or glider or balloon privileges;

(ii) Is exercising the privileges of a student pilot certificate while seeking a sport pilot certificate with other than glider or balloon privileges and holds a current and valid U.S. driver's license;

(iii) Is exercising the privileges of a student pilot certificate while seeking a pilot certificate with a weight-shift-control aircraft category rating or a powered parachute category rating and holds a current and valid U.S. driver's license;

(iv) Is exercising the privileges of a sport pilot certificate with glider or balloon privileges;

(v) Is exercising the privileges of a sport pilot certificate with other than glider or balloon privileges and holds a current and valid U.S. driver's license. A person who has applied for or held a medical certificate may exercise the privileges of a sport pilot certificate using a current and valid U.S. driver's license only if that person—

(A) Has been found eligible for the issuance of at least a third-class airman medical certificate at the time of his or her most recent application; and

(B) Has not had his or her most recently issued medical certificate suspended or revoked or most recent Authorization for a Special Issuance of a Medical Certificate withdrawn.

(vi) Is holding a pilot certificate with a balloon class rating and is piloting or providing training in a balloon as appropriate;

(vii) Is holding a pilot certificate or a flight instructor certificate with a glider category rating, and is piloting or providing training in a glider, as appropriate;

(viii) Except as provided in paragraph (c)(2)(vii) of this section, is exercising the privileges of a flight instructor certificate, provided the person is not acting as pilot in command or as a required pilot flight crewmember;

(ix) Is exercising the privileges of a ground instructor certificate;

(x) Is operating an aircraft within a foreign country using a pilot license issued by that country and possesses evidence of current medical qualification for that license; or

(xi) Is operating an aircraft with a U.S. pilot certificate, issued on the basis of a foreign pilot license, issued

under §61.75 of this part, and holds a current medical certificate issued by the foreign country that issued the foreign pilot license, which is in that person's physical possession or readily accessible in the aircraft when exercising the privileges of that airman certificate.

(d) *Flight instructor certificate.* (1) A person who holds a flight instructor certificate issued under this part must have that certificate, or other documentation acceptable to the Administrator, in that person's physical possession or readily accessible in the aircraft when exercising the privileges of that flight instructor certificate.

(2) Except as provided in paragraph (d)(3) of this section, no person other than the holder of a flight instructor certificate issued under this part with the appropriate rating on that certificate may—

(i) Give training required to qualify a person for solo flight and solo cross-country flight;

(ii) Endorse an applicant for a—

(A) Pilot certificate or rating issued under this part;

(B) Flight instructor certificate or rating issued under this part; or

(C) Ground instructor certificate or rating issued under this part;

(iii) Endorse a pilot logbook to show training given; or

(iv) Endorse a student pilot certificate and logbook for solo operating privileges.

(3) A flight instructor certificate issued under this part is not necessary—

(i) Under paragraph (d)(2) of this section, if the training is given by the holder of a commercial pilot certificate with a lighter-than-air rating, provided the training is given in accordance with the privileges of the certificate in a lighter-than-air aircraft;

(ii) Under paragraph (d)(2) of this section, if the training is given by the holder of an airline transport pilot certificate with a rating appropriate to the aircraft in which the training is given, provided the training is given in accordance with the privileges of the certificate and conducted in accordance with an approved air carrier training program approved under part 121 or part 135 of this chapter;

(iii) Under paragraph (d)(2) of this section, if the training is given by a person who is qualified in accordance with subpart C of part 142 of this chapter, provided the training is conducted in accordance with an approved part 142 training program;

(iv) Under paragraphs (d)(2)(i), (d)(2)(ii)(C), and (d)(2)(iii) of this section, if the training is given by the holder of a ground instructor certificate in accordance with the privileges of the certificate; or

(v) Under paragraph (d)(2)(iii) of this section, if the training is given by an authorized flight instructor under §61.41 of this part.

(e) *Instrument rating.* No person may act as pilot in command of a civil aircraft under IFR or in weather conditions less than the minimums prescribed for VFR flight unless that person holds:

(1) The appropriate aircraft category, class, type (if required), and instrument rating on that person's pilot certificate for any airplane, helicopter, or powered-lift being flown;

(2) An airline transport pilot certificate with the appropriate aircraft category, class, and type rating (if required) for the aircraft being flown;

(3) For a glider, a pilot certificate with a glider category rating and an airplane instrument rating; or

(4) For an airship, a commercial pilot certificate with a lighter-than-air category rating and airship class rating.

(f) *Category II pilot authorization.* Except for a pilot conducting Category II operations under part 121 or part 135, a person may not:

(1) Act as pilot in command of a civil aircraft during Category II operations unless that person—

(i) Holds a current Category II pilot authorization for that category or class of aircraft, and the type of aircraft, if applicable; or

(ii) In the case of a civil aircraft of foreign registry, is authorized by the country of registry to act as pilot in command of that aircraft in Category II operations.

(2) Act as second in command of a civil aircraft during Category II operations unless that person—

(i) Holds a valid pilot certificate with category and class ratings for that aircraft and a current instrument rating for that category aircraft;

(ii) Holds an airline transport pilot certificate with category and class ratings for that aircraft; or

(iii) In the case of a civil aircraft of foreign registry, is authorized by the country of registry to act as second in command of that aircraft during Category II operations.

(g) *Category III pilot authorization.* Except for a pilot conducting Category III operations under part 121 or part 135, a person may not:

(1) Act as pilot in command of a civil aircraft during Category III operations unless that person—

(i) Holds a current Category III pilot authorization for that category or class of aircraft, and the type of aircraft, if applicable; or

(ii) In the case of a civil aircraft of foreign registry, is authorized by the country of registry to act as pilot in command of that aircraft in Category III operations.

(2) Act as second in command of a civil aircraft during Category III operations unless that person—

(i) Holds a valid pilot certificate with category and class ratings for that aircraft and a current instrument rating for that category aircraft;

(ii) Holds an airline transport pilot certificate with category and class ratings for that aircraft; or

(iii) In the case of a civil aircraft of foreign registry, is authorized by the country of registry to act as second in command of that aircraft during Category III operations.

(h) *Category A aircraft pilot authorization.* The Administrator may issue a certificate of authorization for a Category II or Category III operation to the pilot of a small aircraft that is a Category A aircraft, as identified in § 97.3(b)(1) of this chapter if:

(1) The Administrator determines that the Category II or Category III operation can be performed safely by that pilot under the terms of the certificate of authorization; and

(2) The Category II or Category III operation does not involve the carriage of persons or property for compensation or hire.

(i) *Ground instructor certificate.* (1) Each person who holds a ground instructor certificate issued under this part or part 143 must have that certificate in that person's physical possession or immediately accessible when exercising the privileges of that certificate.

(2) Except as provided in paragraph (i)(3) of this section, no person other than the holder of a ground instructor certificate, issued under this part or part 143, with the appropriate rating on that certificate may—

(i) Give ground training required to qualify a person for solo flight and solo cross-country flight;

(ii) Endorse an applicant for a knowledge test required for a pilot, flight instructor, or ground instructor certificate or rating issued under this part; or

(iii) Endorse a pilot logbook to show ground training given.

(3) A ground instructor certificate issued under this part is not necessary—

(i) Under paragraph (i)(2) of this section, if the training is given by the holder of a flight instructor certificate issued under this part in accordance with the privileges of that certificate;

(ii) Under paragraph (i)(2) of this section, if the training is given by the holder of a commercial pilot certificate with a lighter-than-air rating, provided the training is given in accordance with the privileges of the certificate in a lighter-than-air aircraft;

(iii) Under paragraph (i)(2) of this section, if the training is given by the holder of an airline transport pilot certificate with a rating appropriate to the aircraft in which the training is given, provided the training is given in accordance with the privileges of the certificate and conducted in accordance with an approved air carrier training program approved under part 121 or part 135 of this chapter;

(iv) Under paragraph (i)(2) of this section, if the training is given by a person who is qualified in accordance with subpart C of part 142 of this chapter, provided the training is conducted in accordance with an approved part 142 training program; or

(v) Under paragraph (i)(2)(iii) of this section, if the training is given by an

authorized flight instructor under §61.41 of this part.

(j) *Age limitation for certain operations*—(1) *Age limitation*. Except as provided in paragraph (j)(3) of this section, no person who holds a pilot certificate issued under this part shall serve as a pilot on a civil airplane of U.S. registry in the following operations if the person has reached his or her 60th birthday—

(i) Scheduled international air services carrying passengers in turbojet-powered airplanes;

(ii) Scheduled international air services carrying passengers in airplanes having a passenger-seat configuration of more than nine passenger seats, excluding each crewmember seat;

(iii) Nonscheduled international air transportation for compensation or hire in airplanes having a passenger-seat configuration of more than 30 passenger seats, excluding each crewmember seat; or

(iv) Scheduled international air services, or nonscheduled international air transportation for compensation or hire, in airplanes having a payload capacity of more than 7,500 pounds.

(2) *Definitions.* (i) ''International air service,'' as used in paragraph (j) of this section, means scheduled air service performed in airplanes for the public transport of passengers, mail, or cargo, in which the service passes through the airspace over the territory of more than one country.

(ii) ''International air transportation,'' as used in paragraph (j) of this section, means air transportation performed in airplanes for the public transport of passengers, mail, or cargo, in which the service passes through the airspace over the territory of more than one country.

(3) *Delayed pilot age limitation*. Until December 20, 1999, a person may serve as a pilot in operations covered by this paragraph after that person has reached his or her 60th birthday if, on March 20, 1997, that person was employed as a pilot in operations covered by this paragraph.

(k) *Special purpose pilot authorization*. Any person that is required to hold a special purpose pilot authorization, issued in accordance with §61.77 of this part, must have that authorization and the person's foreign pilot license in that person's physical possession or have it readily accessible in the aircraft when exercising the privileges of that authorization.

(l) *Inspection of certificate*. Each person who holds an airman certificate, medical certificate, authorization, or license required by this part must present it and their photo identification as described in paragraph (a)(2) of this section for inspection upon a request from:

(1) The Administrator;

(2) An authorized representative of the National Transportation Safety Board;

(3) Any Federal, State, or local law enforcement officer; or

(4) An authorized representative of the Transportation Security Administration.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40894, July 30, 1997; Amdt. 61–111, 67 FR 65861, Oct. 28, 2002; Amdt. 61–110, 69 FR 44864, July 27, 2004]

§61.4 Qualification and approval of flight simulators and flight training devices.

(a) Except as specified in paragraph (b) or (c) of this section, each flight simulator and flight training device used for training, and for which an airman is to receive credit to satisfy any training, testing, or checking requirement under this chapter, must be qualified and approved by the Administrator for—

(1) The training, testing, and checking for which it is used;

(2) Each particular maneuver, procedure, or crewmember function performed; and

(3) The representation of the specific category and class of aircraft, type of aircraft, particular variation within the type of aircraft, or set of aircraft for certain flight training devices.

(b) Any device used for flight training, testing, or checking that has been determined to be acceptable to or approved by the Administrator prior to August 1, 1996, which can be shown to function as originally designed, is considered to be a flight training device,

provided it is used for the same purposes for which it was originally accepted or approved and only to the extent of such acceptance or approval.

(c) The Administrator may approve a device other than a flight simulator or flight training device for specific purposes.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40895, July 30, 1997]

§ 61.5 Certificates and ratings issued under this part.

(a) The following certificates are issued under this part to an applicant who satisfactorily accomplishes the training and certification requirements for the certificate sought:

(1) Pilot certificates—

(i) Student pilot.

(ii) Sport pilot.

(iii) Recreational pilot.

(iv) Private pilot.

(v) Commercial pilot.

(vi) Airline transport pilot.

(2) Flight instructor certificates.

(3) Ground instructor certificates.

(b) The following ratings are placed on a pilot certificate (other than student pilot) when an applicant satisfactorily accomplishes the training and certification requirements for the rating sought:

(1) Aircraft category ratings—

(i) Airplane.

(ii) Rotorcraft.

(iii) Glider.

(iv) Lighter-than-air.

(v) Powered-lift.

(vi) Powered parachute.

(vii) Weight-shift-control aircraft.

(2) Airplane class ratings—

(i) Single-engine land.

(ii) Multiengine land.

(iii) Single-engine sea.

(iv) Multiengine sea.

(3) Rotorcraft class ratings—

(i) Helicopter.

(ii) Gyroplane.

(4) Lighter-than-air class ratings—

(i) Airship.

(ii) Balloon.

(5) Weight-shift-control aircraft class ratings—

(i) Weight-shift-control aircraft land.

(ii) Weight-shift-control aircraft sea.

(6) Powered parachute class ratings—

(i) Powered parachute land.

(ii) Powered parachute sea.

(7) Aircraft type ratings—

(i) Large aircraft other than lighter-than-air.

(ii) Turbojet-powered airplanes.

(iii) Other aircraft type ratings specified by the Administrator through the aircraft type certification procedures.

(iv) Second-in-command pilot type rating for aircraft that is certificated for operations with a minimum crew of at least two pilots.

(8) Instrument ratings (on private and commercial pilot certificates only)—

(i) Instrument—Airplane.

(ii) Instrument—Helicopter.

(iii) Instrument—Powered-lift.

(c) The following ratings are placed on a flight instructor certificate when an applicant satisfactorily accomplishes the training and certification requirements for the rating sought:

(1) Aircraft category ratings—

(i) Airplane.

(ii) Rotorcraft.

(iii) Glider.

(iv) Powered-lift.

(2) Airplane class ratings—

(i) Single-engine.

(ii) Multiengine.

(3) Rotorcraft class ratings—

(i) Helicopter.

(ii) Gyroplane.

(4) Instrument ratings—

(i) Instrument—Airplane.

(ii) Instrument—Helicopter.

(iii) Instrument—Powered-lift.

(5) Sport pilot rating.

(d) The following ratings are placed on a ground instructor certificate when an applicant satisfactorily accomplishes the training and certification requirements for the rating sought:

(1) Basic.

(2) Advanced.

(3) Instrument.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997, as amended by Amdt. 61–110, 69 FR 44864, July 27, 2004; Amdt. 61–113, 70 FR 45271, Aug. 4, 2005]

§ 61.7 Obsolete certificates and ratings.

(a) The holder of a free-balloon pilot certificate issued before November 1, 1973, may not exercise the privileges of that certificate.

(b) The holder of a pilot certificate that bears any of the following category ratings without an associated class rating may not exercise the privileges of that category rating:

(1) Rotorcraft.

(2) Lighter-than-air.

(3) Helicopter.

(4) Autogyro.

§ 61.9 [Reserved]

§ 61.11 Expired pilot certificates and reissuance.

(a) No person who holds an expired pilot certificate or rating may:

(1) Exercise the privileges of that pilot certificate or rating; or

(2) Act as pilot in command or as a required pilot flight crewmember of an aircraft of the same category and class specified on the expired pilot certificate or rating.

(b) The following pilot certificates and ratings have expired and will not be reissued:

(1) An airline transport pilot certificate issued before May 1, 1949, or an airline transport pilot certificate that contains a horsepower limitation;

(2) A private or commercial pilot certificate issued before July 1, 1945; and

(3) A pilot certificate with a lighter-than-air or free-balloon rating issued before July 1, 1945.

(c) A pilot certificate issued on the basis of a foreign pilot license will expire on the date the foreign license expires unless otherwise specified on the U.S. pilot certificate. A certificate without an expiration date is issued to the holder of the expired certificate only if that person meets the requirements of § 61.75 for the issuance of a pilot certificate based on a foreign pilot license.

(d) An airline transport pilot certificate issued after April 30, 1949, that bears an expiration date but does not contain a horsepower limitation may be reissued without an expiration date.

(e) A private or commercial pilot certificate issued after June 30, 1945, that bears an expiration date may be reissued without an expiration date.

(f) A pilot certificate with a lighter-than-air or free-balloon rating issued after June 30, 1945, that bears an expiration date may be reissued without an expiration date.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40895, July 30, 1997]

§ 61.13 Issuance of airman certificates, ratings, and authorizations.

(a) *Application.* (1) An applicant for an airman certificate, rating, or authorization under this part must make that application on a form and in a manner acceptable to the Administrator.

(2) An applicant—

(i) Must show evidence that the appropriate fee prescribed in appendix A to part 187 of this chapter has been paid when that person applies for airmen certification services administered outside the United States.

(A) Student pilot certificate that is issued outside the United States; or

(B) Knowledge test or practical test for an airman certificate or rating issued under this part, if the test is administered outside the United States.

(ii) May be refused issuance of any U.S. airman certificate, rating, or authorization by the Administrator.

(3) Except as provided in paragraph (a)(2)(ii) of this section, an applicant who satisfactorily accomplishes the training and certification requirements for the certificate, rating, or authorization sought is entitled to receive that airman certificate, rating, or authorization.

(b) *Limitations.* (1) An applicant who cannot comply with certain areas of operation required on the practical test because of physical limitations may be issued an airman certificate, rating, or authorization with the appropriate limitation placed on the applicant's airman certificate provided the—

(i) Applicant is able to meet all other certification requirements for the airman certificate, rating, or authorization sought;

(ii) Physical limitation has been recorded with the FAA on the applicant's medical records; and

(iii) Administrator determines that the applicant's inability to perform the particular area of operation will not adversely affect safety.

(2) A limitation placed on a person's airman certificate may be removed, provided that person demonstrates for

an examiner satisfactory proficiency in the area of operation appropriate to the airman certificate, rating, or authorization sought.

(c) *Additional requirements for Category II and Category III pilot authorizations.* (1) A Category II or Category III pilot authorization is issued by a letter of authorization as part of an applicant's instrument rating or airline transport pilot certificate.

(2) Upon original issue, the authorization contains the following limitations:

(i) For Category II operations, the limitation is 1,600 feet RVR and a 150-foot decision height; and

(ii) For Category III operations, each initial limitation is specified in the authorization document.

(3) The limitations on a Category II or Category III pilot authorization may be removed as follows:

(i) In the case of Category II limitations, a limitation is removed when the holder shows that, since the beginning of the sixth preceding month, the holder has made three Category II ILS approaches with a 150-foot decision height to a landing under actual or simulated instrument conditions.

(ii) In the case of Category III limitations, a limitation is removed as specified in the authorization.

(4) To meet the experience requirements of paragraph (c)(3) of this section, and for the practical test required by this part for a Category II or a Category III pilot authorization, a flight simulator or flight training device may be used if it is approved by the Administrator for such use.

(d) *Application during suspension or revocation.* (1) Unless otherwise authorized by the Administrator, a person whose pilot, flight instructor, or ground instructor certificate has been suspended may not apply for any certificate, rating, or authorization during the period of suspension.

(2) Unless otherwise authorized by the Administrator, a person whose pilot, flight instructor, or ground instructor certificate has been revoked may not apply for any certificate, rating, or authorization for 1 year after the date of revocation.

[Doc. No. 25910, 62 FR 40895, July 30, 1997, as amended by Amdt. 61–116, 72 FR 18558, Apr. 12, 2007]

§ 61.14 Refusal to submit to a drug or alcohol test.

(a) This section applies to an individual who holds a certificate under this part and is subject to the types of testing required under appendix I to part 121 or appendix J to part 121 of this chapter.

(b) Refusal by the holder of a certificate issued under this part to take a drug test required under the provisions of appendix I to part 121 or an alcohol test required under the provisions of appendix J to part 121 is grounds for:

(1) Denial of an application for any certificate, rating, or authorization issued under this part for a period of up to 1 year after the date of such refusal; and

(2) Suspension or revocation of any certificate, rating, or authorization issued under this part.

[Doc. 25910, 62 FR 16298, Apr. 4, 1997, as amended by Amdt. 61–114, 71 FR 35763, June 21, 2006]

§ 61.15 Offenses involving alcohol or drugs.

(a) A conviction for the violation of any Federal or State statute relating to the growing, processing, manufacture, sale, disposition, possession, transportation, or importation of narcotic drugs, marijuana, or depressant or stimulant drugs or substances is grounds for:

(1) Denial of an application for any certificate, rating, or authorization issued under this part for a period of up to 1 year after the date of final conviction; or

(2) Suspension or revocation of any certificate, rating, or authorization issued under this part.

(b) Committing an act prohibited by § 91.17(a) or § 91.19(a) of this chapter is grounds for:

(1) Denial of an application for a certificate, rating, or authorization issued under this part for a period of up to 1 year after the date of that act; or

(2) Suspension or revocation of any certificate, rating, or authorization issued under this part.

(c) For the purposes of paragraphs (d), (e), and (f) of this section, a motor vehicle action means:

(1) A conviction after November 29, 1990, for the violation of any Federal or State statute relating to the operation of a motor vehicle while intoxicated by alcohol or a drug, while impaired by alcohol or a drug, or while under the influence of alcohol or a drug;

(2) The cancellation, suspension, or revocation of a license to operate a motor vehicle after November 29, 1990, for a cause related to the operation of a motor vehicle while intoxicated by alcohol or a drug, while impaired by alcohol or a drug, or while under the influence of alcohol or a drug; or

(3) The denial after November 29, 1990, of an application for a license to operate a motor vehicle for a cause related to the operation of a motor vehicle while intoxicated by alcohol or a drug, while impaired by alcohol or a drug, or while under the influence of alcohol or a drug.

(d) Except for a motor vehicle action that results from the same incident or arises out of the same factual circumstances, a motor vehicle action occurring within 3 years of a previous motor vehicle action is grounds for:

(1) Denial of an application for any certificate, rating, or authorization issued under this part for a period of up to 1 year after the date of the last motor vehicle action; or

(2) Suspension or revocation of any certificate, rating, or authorization issued under this part.

(e) Each person holding a certificate issued under this part shall provide a written report of each motor vehicle action to the FAA, Civil Aviation Security Division (AMC–700), P.O. Box 25810, Oklahoma City, OK 73125, not later than 60 days after the motor vehicle action. The report must include:

(1) The person's name, address, date of birth, and airman certificate number;

(2) The type of violation that resulted in the conviction or the administrative action;

(3) The date of the conviction or administrative action;

(4) The State that holds the record of conviction or administrative action; and

(5) A statement of whether the motor vehicle action resulted from the same incident or arose out of the same factual circumstances related to a previously reported motor vehicle action.

(f) Failure to comply with paragraph (e) of this section is grounds for:

(1) Denial of an application for any certificate, rating, or authorization issued under this part for a period of up to 1 year after the date of the motor vehicle action; or

(2) Suspension or revocation of any certificate, rating, or authorization issued under this part.

§ 61.16 Refusal to submit to an alcohol test or to furnish test results.

A refusal to submit to a test to indicate the percentage by weight of alcohol in the blood, when requested by a law enforcement officer in accordance with § 91.17(c) of this chapter, or a refusal to furnish or authorize the release of the test results requested by the Administrator in accordance with § 91.17(c) or (d) of this chapter, is grounds for:

(a) Denial of an application for any certificate, rating, or authorization issued under this part for a period of up to 1 year after the date of that refusal; or

(b) Suspension or revocation of any certificate, rating, or authorization issued under this part.

§ 61.17 Temporary certificate.

(a) A temporary pilot, flight instructor, or ground instructor certificate or rating is issued for up to 120 days, at which time a permanent certificate will be issued to a person whom the Administrator finds qualified under this part.

(b) A temporary pilot, flight instructor, or ground instructor certificate or rating expires:

(1) On the expiration date shown on the certificate;

(2) Upon receipt of the permanent certificate; or

(3) Upon receipt of a notice that the certificate or rating sought is denied or revoked.

§ 61.18 Security disqualification.

(a)*Eligibility standard.* No person is eligible to hold a certificate, rating, or authorization issued under this part when the Transportation Security Administration (TSA) has notified the FAA in writing that the person poses a security threat.

(b) *Effect of the issuance by the TSA of an Initial Notification of Threat Assessment.* (1) The FAA will hold in abeyance pending the outcome of the TSA's final threat assessment review an application for any certificate, rating, or authorization under this part by any person who has been issued an Initial Notification of Threat Assessment by the TSA.

(2) The FAA will suspend any certificate, rating, or authorization issued under this part after the TSA issues to the holder an Initial Notification of Threat Assessment.

(c) *Effect of the issuance by the TSA of a Final Notification of Threat Assessment.* (1) The FAA will deny an application for any certificate, rating, or authorization under this part to any person who has been issued a Final Notification of Threat Assessment.

(2) The FAA will revoke any certificate, rating, or authorization issued under this part after the TSA has issued to the holder a Final Notification of Threat Assessment.

[Doc. FAA–2003–14293, 68 FR 3774, Jan. 24, 2003]

§ 61.19 Duration of pilot and instructor certificates.

(a) *General.* The holder of a certificate with an expiration date may not, after that date, exercise the privileges of that certificate.

(b) *Student pilot certificate.* A student pilot certificate expires 24 calendar months from the month in which it is issued.

(c) *Other pilot certificates.* A pilot certificate (other than a student pilot certificate) issued under this part is issued without a specific expiration date. The holder of a pilot certificate issued on the basis of a foreign pilot license may exercise the privileges of that certificate only while that person's foreign pilot license is effective.

(d) *Flight instructor certificate.* A flight instructor certificate:

(1) Is effective only while the holder has a current pilot certificate; and

(2) Except as specified in § 61.197(b) of this part, expires 24 calendar months from the month in which it was issued or renewed.

(e) *Ground instructor certificate.* A ground instructor certificate issued under this part is issued without a specific expiration date.

(f) *Surrender, suspension, or revocation.* Any certificate issued under this part ceases to be effective if it is surrendered, suspended, or revoked.

(g) *Return of certificates.* The holder of any certificate issued under this part that has been suspended or revoked must return that certificate to the FAA when requested to do so by the Administrator.

§ 61.21 Duration of a Category II and a Category III pilot authorization (for other than part 121 and part 135 use).

(a) A Category II pilot authorization or a Category III pilot authorization expires at the end of the sixth calendar month after the month in which it was issued or renewed.

(b) Upon passing a practical test for a Category II or Category III pilot authorization, the authorization may be renewed for each type of aircraft for which the authorization is held.

(c) A Category II or Category III pilot authorization for a specific type aircraft for which an authorization is held will not be renewed beyond 12 calendar months from the month the practical test was accomplished in that type aircraft.

(d) If the holder of a Category II or Category III pilot authorization passes the practical test for a renewal in the month before the authorization expires, the holder is considered to have passed it during the month the authorization expired.

§ 61.23 Medical certificates: Requirement and duration.

(a) *Operations requiring a medical certificate.* Except as provided in paragraphs (b) and (c) of this section, a person—

(1) Must hold a first-class medical certificate when exercising the privileges of an airline transport pilot certificate;

(2) Must hold at least a second-class medical certificate when exercising the privileges of a commercial pilot certificate; or

(3) Must hold at least a third-class medical certificate—

(i) When exercising the privileges of a private pilot certificate;

(ii) When exercising the privileges of a recreational pilot certificate;

(iii) When exercising the privileges of a student pilot certificate;

(iv) When exercising the privileges of a flight instructor certificate, except for a flight instructor certificate with a glider category rating or sport pilot rating, if the person is acting as pilot in command or is serving as a required flight crewmember; or

(v) Except for a glider category rating or a balloon class rating, prior to taking a practical test that is performed in an aircraft for a certificate or rating at the recreational, private, commercial, or airline transport pilot certificate level.

(b) *Operations not requiring a medical certificate.* A person is not required to hold a valid medical certificate—

(1) When exercising the privileges of a student pilot certificate while seeking—

(i) A sport pilot certificate with glider or balloon privileges; or

(ii) A pilot certificate with a glider category rating or balloon class rating;

(2) When exercising the privileges of a sport pilot certificate with privileges in a glider or balloon;

(3) When exercising the privileges of a pilot certificate with a glider category or balloon class rating;

(4) When exercising the privileges of a flight instructor certificate with—

(i) A sport pilot rating in a glider or balloon; or

(ii) A glider category rating;

(5) When exercising the privileges of a flight instructor certificate if the person is not acting as pilot in command or serving as a required pilot flight crewmember;

(6) When exercising the privileges of a ground instructor certificate;

(7) When serving as an examiner or check airman during the administration of a test or check for a certificate, rating, or authorization conducted in a flight simulator or flight training device; or

(8) When taking a test or check for a certificate, rating, or authorization conducted in a flight simulator or flight training device.

(c) *Operations requiring either a medical certificate or U.S. driver's license.* (1) A person must hold and possess either a valid medical certificate issued under part 67 of this chapter or a current and valid U.S. driver's license when exercising the privileges of—

(i) A student pilot certificate while seeking sport pilot privileges in a light-sport aircraft other than a glider or balloon;

(ii) A sport pilot certificate in a light-sport aircraft other than a glider or balloon; or

(iii) A flight instructor certificate with a sport pilot rating while acting as pilot in command or serving as a required flight crewmember of a light-sport aircraft other than a glider or balloon.

(2) A person using a current and valid U.S. driver's license to meet the requirements of this paragraph must—

(i) Comply with each restriction and limitation imposed by that person's U.S. driver's license and any judicial or administrative order applying to the operation of a motor vehicle;

(ii) Have been found eligible for the issuance of at least a third-class airman medical certificate at the time of his or her most recent application (if the person has applied for a medical certificate);

(iii) Not have had his or her most recently issued medical certificate (if the person has held a medical certificate) suspended or revoked or most recent Authorization for a Special Issuance of a Medical Certificate withdrawn; and

(iv) Not know or have reason to know of any medical condition that would make that person unable to operate a light-sport aircraft in a safe manner.

(d) *Duration of a medical certificate.* (1) A first-class medical certificate expires at the end of the last day of—

(i) The sixth month after the month of the date of examination shown on

the certificate for operations requiring an airline transport pilot certificate;

(ii) The 12th month after the month of the date of examination shown on the certificate for operations requiring a commercial pilot certificate or an air traffic control tower operator certificate; and

(iii) The period specified in paragraph (c)(3) of this section for operations requiring a recreational pilot certificate, a private pilot certificate, a flight instructor certificate (when acting as pilot in command or a required pilot flight crewmember in operations other than glider or balloon), or a student pilot certificate.

(2) A second-class medical certificate expires at the end of the last day of—

(i) The 12th month after the month of the date of examination shown on the certificate for operations requiring a commercial pilot certificate or an air traffic control tower operator certificate; and

(ii) The period specified in paragraph (c)(3) of this section for operations requiring a recreational pilot certificate, a private pilot certificate, a flight instructor certificate (when acting as pilot in command or a required pilot flight crewmember in operations other than glider or balloon), or a student pilot certificate.

(3) A third-class medical certificate for operations requiring a recreational pilot certificate, a private pilot certificate, a flight instructor certificate (when acting as pilot in command or a required pilot flight crewmember in operations other than glider or balloon), or a student pilot certificate issued—

(i) Before September 16, 1996, expires at the end of the 24th month after the month of the date of examination shown on the certificate; or

(ii) On or after September 16, 1996, expires at the end of:

(A) The 36th month after the month of the date of the examination shown on the certificate if the person has not reached his or her 40th birthday on or before the date of examination; or

(B) The 24th month after the month of the date of the examination shown on the certificate if the person has reached his or her 40th birthday on or before the date of the examination.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40895, July 30, 1997; Amdt. 61–110, 69 FR 44864, July 27, 2004]

§ 61.25 Change of name.

(a) An application to change the name on a certificate issued under this part must be accompanied by the applicant's:

(1) Current airman certificate; and

(2) A copy of the marriage license, court order, or other document verifying the name change.

(b) The documents in paragraph (a) of this section will be returned to the applicant after inspection.

§ 61.27 Voluntary surrender or exchange of certificate.

(a) The holder of a certificate issued under this part may voluntarily surrender it for:

(1) Cancellation;

(2) Issuance of a lower grade certificate; or

(3) Another certificate with specific ratings deleted.

(b) Any request made under paragraph (a) of this section must include the following signed statement or its equivalent: ''This request is made for my own reasons, with full knowledge that my (insert name of certificate or rating, as appropriate) may not be reissued to me unless I again pass the tests prescribed for its issuance.''

§ 61.29 Replacement of a lost or destroyed airman or medical certificate or knowledge test report.

(a) A request for the replacement of a lost or destroyed airman certificate issued under this part must be made by letter to the Department of Transportation, FAA, Airman Certification Branch, P.O. Box 25082, Oklahoma City, OK 73125, and must be accompanied by a check or money order for the appropriate fee payable to the FAA.

(b) A request for the replacement of a lost or destroyed medical certificate must be made by letter to the Department of Transportation, FAA, Aeromedical Certification Branch, P.O. Box 25082, Oklahoma City, OK 73125, and must be accompanied by a check or

money order for the appropriate fee payable to the FAA.

(c) A request for the replacement of a lost or destroyed knowledge test report must be made by letter to the Department of Transportation, FAA, Airman Certification Branch, P.O. Box 25082, Oklahoma City, OK 73125, and must be accompanied by a check or money order for the appropriate fee payable to the FAA.

(d) The letter requesting replacement of a lost or destroyed airman certificate, medical certificate, or knowledge test report must state:

(1) The name of the person;

(2) The permanent mailing address (including ZIP code), or if the permanent mailing address includes a post office box number, then the person's current residential address;

(3) The social security number;

(4) The date and place of birth of the certificate holder; and

(5) Any available information regarding the—

(i) Grade, number, and date of issuance of the certificate, and the ratings, if applicable;

(ii) Date of the medical examination, if applicable; and

(iii) Date the knowledge test was taken, if applicable.

(e) A person who has lost an airman certificate, medical certificate, or knowledge test report may obtain a facsimile from the FAA Aeromedical Certification Branch or the Airman Certification Branch, as appropriate, confirming that it was issued and the:

(1) Facsimile may be carried as an airman certificate, medical certificate, or knowledge test report, as appropriate, for up to 60 days pending the person's receipt of a duplicate under paragraph (a), (b), or (c) of this section, unless the person has been notified that the certificate has been suspended or revoked.

(2) Request for such a facsimile must include the date on which a duplicate certificate or knowledge test report was previously requested.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40896, July 30, 1997]

§ 61.31 Type rating requirements, additional training, and authorization requirements.

(a) *Type ratings required.* A person who acts as a pilot in command of any of the following aircraft must hold a type rating for that aircraft:

(1) Large aircraft (except lighter-than-air).

(2) Turbojet-powered airplanes.

(3) Other aircraft specified by the Administrator through aircraft type certificate procedures.

(b) *Authorization in lieu of a type rating.* A person may be authorized to operate without a type rating for up to 60 days an aircraft requiring a type rating, provided—

(1) The Administrator has authorized the flight or series of flights;

(2) The Administrator has determined that an equivalent level of safety can be achieved through the operating limitations on the authorization;

(3) The person shows that compliance with paragraph (a) of this section is impracticable for the flight or series of flights; and

(4) The flight—

(i) Involves only a ferry flight, training flight, test flight, or practical test for a pilot certificate or rating;

(ii) Is within the United States;

(iii) Does not involve operations for compensation or hire unless the compensation or hire involves payment for the use of the aircraft for training or taking a practical test; and

(iv) Involves only the carriage of flight crewmembers considered essential for the flight.

(5) If the flight or series of flights cannot be accomplished within the time limit of the authorization, the Administrator may authorize an additional period of up to 60 days to accomplish the flight or series of flights.

(c) *Aircraft category, class, and type ratings: Limitations on the carriage of persons, or operating for compensation or hire.* Unless a person holds a category, class, and type rating (if a class and type rating is required) that applies to the aircraft, that person may not act as pilot in command of an aircraft that is carrying another person, or is operated for compensation or hire. That person also may not act as pilot in

command of that aircraft for compensation or hire.

(d) *Aircraft category, class, and type ratings: Limitations on operating an aircraft as the pilot in command.* To serve as the pilot in command of an aircraft, a person must—

(1) Hold the appropriate category, class, and type rating (if a class rating and type rating are required) for the aircraft to be flown;

(2) Be receiving training for the purpose of obtaining an additional pilot certificate and rating that are appropriate to that aircraft, and be under the supervision of an authorized instructor; or

(3) Have received training required by this part that is appropriate to the aircraft category, class, and type rating (if a class or type rating is required) for the aircraft to be flown, and have received the required endorsements from an instructor who is authorized to provide the required endorsements for solo flight in that aircraft.

(e) *Additional training required for operating complex airplanes.* (1) Except as provided in paragraph (e)(2) of this section, no person may act as pilot in command of a complex airplane (an airplane that has a retractable landing gear, flaps, and a controllable pitch propeller; or, in the case of a seaplane, flaps and a controllable pitch propeller), unless the person has—

(i) Received and logged ground and flight training from an authorized instructor in a complex airplane, or in a flight simulator or flight training device that is representative of a complex airplane, and has been found proficient in the operation and systems of the airplane; and

(ii) Received a one-time endorsement in the pilot's logbook from an authorized instructor who certifies the person is proficient to operate a complex airplane.

(2) The training and endorsement required by paragraph (e)(1) of this section is not required if the person has logged flight time as pilot in command of a complex airplane, or in a flight simulator or flight training device that is representative of a complex airplane prior to August 4, 1997.

(f) *Additional training required for operating high-performance airplanes.* (1) Except as provided in paragraph (f)(2) of this section, no person may act as pilot in command of a high-performance airplane (an airplane with an engine of more than 200 horsepower), unless the person has—

(i) Received and logged ground and flight training from an authorized instructor in a high-performance airplane, or in a flight simulator or flight training device that is representative of a high-performance airplane, and has been found proficient in the operation and systems of the airplane; and

(ii) Received a one-time endorsement in the pilot's logbook from an authorized instructor who certifies the person is proficient to operate a high-performance airplane.

(2) The training and endorsement required by paragraph (f)(1) of this section is not required if the person has logged flight time as pilot in command of a high-performance airplane, or in a flight simulator or flight training device that is representative of a high-performance airplane prior to August 4, 1997.

(g) *Additional training required for operating pressurized aircraft capable of operating at high altitudes.* (1) Except as provided in paragraph (g)(3) of this section, no person may act as pilot in command of a pressurized aircraft (an aircraft that has a service ceiling or maximum operating altitude, whichever is lower, above 25,000 feet MSL), unless that person has received and logged ground training from an authorized instructor and obtained an endorsement in the person's logbook or training record from an authorized instructor who certifies the person has satisfactorily accomplished the ground training. The ground training must include at least the following subjects:

(i) High-altitude aerodynamics and meteorology;

(ii) Respiration;

(iii) Effects, symptoms, and causes of hypoxia and any other high-altitude sickness;

(iv) Duration of consciousness without supplemental oxygen;

(v) Effects of prolonged usage of supplemental oxygen;

(vi) Causes and effects of gas expansion and gas bubble formation;

(vii) Preventive measures for eliminating gas expansion, gas bubble formation, and high-altitude sickness;

(viii) Physical phenomena and incidents of decompression; and

(ix) Any other physiological aspects of high-altitude flight.

(2) Except as provided in paragraph (g)(3) of this section, no person may act as pilot in command of a pressurized aircraft unless that person has received and logged training from an authorized instructor in a pressurized aircraft, or in a flight simulator or flight training device that is representative of a pressurized aircraft, and obtained an endorsement in the person's logbook or training record from an authorized instructor who found the person proficient in the operation of a pressurized aircraft. The flight training must include at least the following subjects:

(i) Normal cruise flight operations while operating above 25,000 feet MSL;

(ii) Proper emergency procedures for simulated rapid decompression without actually depressurizing the aircraft; and

(iii) Emergency descent procedures.

(3) The training and endorsement required by paragraphs (g)(1) and (g)(2) of this section are not required if that person can document satisfactory accomplishment of any of the following in a pressurized aircraft, or in a flight simulator or flight training device that is representative of a pressurized aircraft:

(i) Serving as pilot in command before April 15, 1991;

(ii) Completing a pilot proficiency check for a pilot certificate or rating before April 15, 1991;

(iii) Completing an official pilot-in-command check conducted by the military services of the United States; or

(iv) Completing a pilot-in-command proficiency check under part 121, 125, or 135 of this chapter conducted by the Administrator or by an approved pilot check airman.

(h) *Additional aircraft type-specific training.* No person may serve as pilot in command of an aircraft that the Administrator has determined requires aircraft type-specific training unless that person has—

(1) Received and logged type-specific training in the aircraft, or in a flight simulator or flight training device that is representative of that type of aircraft; and

(2) Received a logbook endorsement from an authorized instructor who has found the person proficient in the operation of the aircraft and its systems.

(i) *Additional training required for operating tailwheel airplanes.* (1) Except as provided in paragraph (i)(2) of this section, no person may act as pilot in command of a tailwheel airplane unless that person has received and logged flight training from an authorized instructor in a tailwheel airplane and received an endorsement in the person's logbook from an authorized instructor who found the person proficient in the operation of a tailwheel airplane. The flight training must include at least the following maneuvers and procedures:

(i) Normal and crosswind takeoffs and landings;

(ii) Wheel landings (unless the manufacturer has recommended against such landings); and

(iii) Go-around procedures.

(2) The training and endorsement required by paragraph (i)(1) of this section is not required if the person logged pilot-in-command time in a tailwheel airplane before April 15, 1991.

(j) *Additional training required for operating a glider.* (1) No person may act as pilot in command of a glider—

(i) Using ground-tow procedures, unless that person has satisfactorily accomplished ground and flight training on ground-tow procedures and operations, and has received an endorsement from an authorized instructor who certifies in that pilot's logbook that the pilot has been found proficient in ground-tow procedures and operations;

(ii) Using aerotow procedures, unless that person has satisfactorily accomplished ground and flight training on aerotow procedures and operations, and has received an endorsement from an authorized instructor who certifies in that pilot's logbook that the pilot has been found proficient in aerotow procedures and operations; or

(iii) Using self-launch procedures, unless that person has satisfactorily accomplished ground and flight training

on self-launch procedures and operations, and has received an endorsement from an authorized instructor who certifies in that pilot's logbook that the pilot has been found proficient in self-launch procedures and operations.

(2) The holder of a glider rating issued prior to August 4, 1997, is considered to be in compliance with the training and logbook endorsement requirements of this paragraph for the specific operating privilege for which the holder is already qualified.

(k) *Exceptions.* (1) This section does not require a category and class rating for aircraft not type-certificated as airplanes, rotorcraft, gliders, lighter-than-air aircraft, powered-lifts, powered parachutes, or weight-shift-control aircraft.

(2) The rating limitations of this section do not apply to—

(i) An applicant when taking a practical test given by an examiner;

(ii) The holder of a student pilot certificate;

(iii) The holder of a pilot certificate when operating an aircraft under the authority of—

(A) A provisional type certificate; or

(B) An experimental certificate, unless the operation involves carrying a passenger;

(iv) The holder of a pilot certificate with a lighter-than-air category rating when operating a balloon;

(v) The holder of a recreational pilot certificate operating under the provisions of § 61.101(h); or

(vi) The holder of a sport pilot certificate when operating a light-sport aircraft.

[Doc. No. 25910, 62 FR 40896, July 30, 1997, as amended by Amdt. 61–104, 63 FR 20286, Apr. 23, 1998; Amdt. 61–110, 69 FR 44865, July 27, 2004]

§ 61.33 Tests: General procedure.

Tests prescribed by or under this part are given at times and places, and by persons designated by the Administrator.

§ 61.35 Knowledge test: Prerequisites and passing grades.

(a) An applicant for a knowledge test must have:

(1) Received an endorsement, if required by this part, from an authorized instructor certifying that the applicant accomplished the appropriate ground-training or a home-study course required by this part for the certificate or rating sought and is prepared for the knowledge test; and

(2) Proper identification at the time of application that contains the applicant's—

(i) Photograph;

(ii) Signature;

(iii) Date of birth, which shows the applicant meets or will meet the age requirements of this part for the certificate sought before the expiration date of the airman knowledge test report; and

(iv) Actual residential address, if different from the applicant's mailing address.

(b) The Administrator shall specify the minimum passing grade for the knowledge test.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997, as amended by Amdt. 61–104, 63 FR 20286, Apr. 23, 1998]

§ 61.37 Knowledge tests: Cheating or other unauthorized conduct.

(a) An applicant for a knowledge test may not:

(1) Copy or intentionally remove any knowledge test;

(2) Give to another applicant or receive from another applicant any part or copy of a knowledge test;

(3) Give assistance on, or receive assistance on, a knowledge test during the period that test is being given;

(4) Take any part of a knowledge test on behalf of another person;

(5) Be represented by, or represent, another person for a knowledge test;

(6) Use any material or aid during the period that the test is being given, unless specifically authorized to do so by the Administrator; and

(7) Intentionally cause, assist, or participate in any act prohibited by this paragraph.

(b) An applicant who the Administrator finds has committed an act prohibited by paragraph (a) of this section is prohibited, for 1 year after the date of committing that act, from:

(1) Applying for any certificate, rating, or authorization issued under this chapter; and

(2) Applying for and taking any test under this chapter.

(c) Any certificate or rating held by an applicant may be suspended or revoked if the Administrator finds that person has committed an act prohibited by paragraph (a) of this section.

§ 61.39 Prerequisites for practical tests.

(a) Except as provided in paragraphs (b) and (c) of this section, to be eligible for a practical test for a certificate or rating issued under this part, an applicant must:

(1) Pass the required knowledge test within the 24-calendar-month period preceding the month the applicant completes the practical test, if a knowledge test is required;

(2) Present the knowledge test report at the time of application for the practical test, if a knowledge test is required;

(3) Have satisfactorily accomplished the required training and obtained the aeronautical experience prescribed by this part for the certificate or rating sought;

(4) Hold at least a current third-class medical certificate, if a medical certificate is required;

(5) Meet the prescribed age requirement of this part for the issuance of the certificate or rating sought;

(6) Have an endorsement, if required by this part, in the applicant's logbook or training record that has been signed by an authorized instructor who certifies that the applicant—

(i) Has received and logged training time within 60 days preceding the date of application in preparation for the practical test;

(ii) Is prepared for the required practical test; and

(iii) Has demonstrated satisfactory knowledge of the subject areas in which the applicant was deficient on the airman knowledge test; and

(7) Have a completed and signed application form.

(b) Notwithstanding the provisions of paragraphs (a)(1) and (2) of this section, an applicant for an airline transport pilot certificate or an additional rating to an airline transport certificate may take the practical test for that certificate or rating with an expired knowledge test report, provided that the applicant:

(1) Is employed as a flight crewmember by a certificate holder under part 121, 125, or 135 of this chapter at the time of the practical test and has satisfactorily accomplished that operator's approved—

(i) Pilot in command aircraft qualification training program that is appropriate to the certificate and rating sought; and

(ii) Qualification training requirements appropriate to the certificate and rating sought; or

(2) Is employed as a flight crewmember in scheduled U.S. military air transport operations at the time of the practical test, and has accomplished the pilot in command aircraft qualification training program that is appropriate to the certificate and rating sought.

(c) A person is not required to comply with the provisions of paragraph (a)(6) of this section if that person:

(1) Holds a foreign-pilot license issued by a contracting State to the Convention on International Civil Aviation that authorizes at least the pilot privileges of the airman certificate sought;

(2) Is applying for a type rating only, or a class rating with an associated type rating; or

(3) Is applying for an airline transport pilot certificate or an additional rating to an airline transport pilot certificate in an aircraft that does not require an aircraft type rating practical test.

(d) If all increments of the practical test for a certificate or rating are not completed on one date, all remaining increments of the test must be satisfactorily completed not more than 60 calendar days after the date on which the applicant began the test.

(e) If all increments of the practical test for a certificate or a rating are not satisfactorily completed within 60 calendar days after the date on which the applicant began the test, the applicant must retake the entire practical test,

including those increments satisfactorily completed.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40897, July 30, 1997, as amended by Amdt. 61–104, 63 FR 20286, Apr. 23, 1998]

§ 61.41 Flight training received from flight instructors not certificated by the FAA.

(a) A person may credit flight training toward the requirements of a pilot certificate or rating issued under this part, if that person received the training from:

(1) A flight instructor of an Armed Force in a program for training military pilots of either—

(i) The United States; or

(ii) A foreign contracting State to the Convention on International Civil Aviation.

(2) A flight instructor who is authorized to give such training by the licensing authority of a foreign contracting State to the Convention on International Civil Aviation, and the flight training is given outside the United States.

(b) A flight instructor described in paragraph (a) of this section is only authorized to give endorsements to show training given.

§ 61.43 Practical tests: General procedures.

(a) Except as provided in paragraph (b) of this section, the ability of an applicant for a certificate or rating issued under this part to perform the required tasks on the practical test is based on that applicant's ability to safely:

(1) Perform the tasks specified in the areas of operation for the certificate or rating sought within the approved standards;

(2) Demonstrate mastery of the aircraft with the successful outcome of each task performed never seriously in doubt;

(3) Demonstrate satisfactory proficiency and competency within the approved standards;

(4) Demonstrate sound judgment; and

(5) Demonstrate single-pilot competence if the aircraft is type certificated for single-pilot operations.

(b) If an applicant does not demonstrate single pilot proficiency, as required in paragraph (a)(5) of this section, a limitation of ''Second in Command Required'' will be placed on the applicant's airman certificate. The limitation may be removed if the applicant passes the appropriate practical test by demonstrating single-pilot competency in the aircraft in which single-pilot privileges are sought.

(c) If an applicant fails any area of operation, that applicant fails the practical test.

(d) An applicant is not eligible for a certificate or rating sought until all the areas of operation are passed.

(e) The examiner or the applicant may discontinue a practical test at any time:

(1) When the applicant fails one or more of the areas of operation; or

(2) Due to inclement weather conditions, aircraft airworthiness, or any other safety-of-flight concern.

(f) If a practical test is discontinued, the applicant is entitled credit for those areas of operation that were passed, but only if the applicant:

(1) Passes the remainder of the practical test within the 60-day period after the date the practical test was discontinued;

(2) Presents to the examiner for the retest the original notice of disapproval form or the letter of discontinuance form, as appropriate;

(3) Satisfactorily accomplishes any additional training needed and obtains the appropriate instructor endorsements, if additional training is required; and

(4) Presents to the examiner for the retest a properly completed and signed application.

§ 61.45 Practical tests: Required aircraft and equipment.

(a) *General.* Except as provided in paragraph (a)(2) of this section or when permitted to accomplish the entire flight increment of the practical test in a flight simulator or a flight training device, an applicant for a certificate or rating issued under this part must furnish:

(1) An aircraft of U.S. registry for each required test that—

(i) Is of the category, class, and type, if applicable, for which the applicant is applying for a certificate or rating; and

(ii) Has a current standard airworthiness certificate or special airworthiness certificate in the limited, primary, or light-sport category.

(2) At the discretion of the examiner who administers the practical test, the applicant may furnish—

(i) An aircraft that has a current airworthiness certificate other than a standard airworthiness certificate or special airworthiness certificate in the limited, primary, or light-sport category, but that otherwise meets the requirements of paragraph (a)(1) of this section;

(ii) An aircraft of the same category, class, and type, if applicable, of foreign registry that is properly certificated by the country of registry; or

(iii) A military aircraft of the same category, class, and type, if applicable, for which the applicant is applying for a certificate or rating.

(b) *Required equipment (other than controls).* (1) Except as provided in paragraph (b)(2) of this section, an aircraft used for a practical test must have—

(i) The equipment for each area of operation required for the practical test;

(ii) No prescribed operating limitations that prohibit its use in any of the areas of operation required for the practical test;

(iii) Except as provided in paragraphs (e) and (f) of this section, at least two pilot stations with adequate visibility for each person to operate the aircraft safely; and

(iv) Cockpit and outside visibility adequate to evaluate the performance of the applicant when an additional jump seat is provided for the examiner.

(2) An applicant for a certificate or rating may use an aircraft with operating characteristics that preclude the applicant from performing all of the tasks required for the practical test. However, the applicant's certificate or rating, as appropriate, will be issued with an appropriate limitation.

(c) *Required controls.* An aircraft (other than a lighter-than-air aircraft) used for a practical test must have engine power controls and flight controls that are easily reached and operable in a conventional manner by both pilots, unless the examiner determines that the practical test can be conducted safely in the aircraft without the controls being easily reached.

(d) *Simulated instrument flight equipment.* An applicant for a practical test that involves maneuvering an aircraft solely by reference to instruments must furnish:

(1) Equipment on board the aircraft that permits the applicant to pass the areas of operation that apply to the rating sought; and

(2) A device that prevents the applicant from having visual reference outside the aircraft, but does not prevent the examiner from having visual reference outside the aircraft, and is otherwise acceptable to the Administrator.

(e) *Aircraft with single controls.* A practical test may be conducted in an aircraft having a single set of controls, provided the:

(1) Examiner agrees to conduct the test;

(2) Test does not involve a demonstration of instrument skills; and

(3) Proficiency of the applicant can be observed by an examiner who is in a position to observe the applicant.

(f) *Light-sport aircraft with a single seat.* A practical test for a sport pilot certificate may be conducted in a light-sport aircraft having a single seat provided that the—

(1) Examiner agrees to conduct the test;

(2) Examiner is in a position to observe the operation of the aircraft and evaluate the proficiency of the applicant; and

(3) Pilot certificate of an applicant successfully passing the test is issued a pilot certificate with a limitation ''No passenger carriage and flight in a single-seat light-sport aircraft only.''

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40897, July 30, 1997; Amdt. 61–104, 63 FR 20286, Apr. 23, 1998; Amdt. 61–110, 69 FR 44865, July 27, 2004]

§61.47 Status of an examiner who is authorized by the Administrator to conduct practical tests.

(a) An examiner represents the Administrator for the purpose of conducting practical tests for certificates and ratings issued under this part and

to observe an applicant's ability to perform the areas of operation on the practical test.

(b) The examiner is not the pilot in command of the aircraft during the practical test unless the examiner agrees to act in that capacity for the flight or for a portion of the flight by prior arrangement with:

(1) The applicant; or

(2) A person who would otherwise act as pilot in command of the flight or for a portion of the flight.

(c) Notwithstanding the type of aircraft used during the practical test, the applicant and the examiner (and any other occupants authorized to be on board by the examiner) are not subject to the requirements or limitations for the carriage of passengers that are specified in this chapter.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40897, July 30, 1997]

§ 61.49 Retesting after failure.

(a) An applicant for a knowledge or practical test who fails that test may reapply for the test only after the applicant has received:

(1) The necessary training from an authorized instructor who has determined that the applicant is proficient to pass the test; and

(2) An endorsement from an authorized instructor who gave the applicant the additional training.

(b) An applicant for a flight instructor certificate with an airplane category rating or, for a flight instructor certificate with a glider category rating, who has failed the practical test due to deficiencies in instructional proficiency on stall awareness, spin entry, spins, or spin recovery must:

(1) Comply with the requirements of paragraph (a) of this section before being retested;

(2) Bring an aircraft to the retest that is of the appropriate aircraft category for the rating sought and is certificated for spins; and

(3) Demonstrate satisfactory instructional proficiency on stall awareness, spin entry, spins, and spin recovery to an examiner during the retest.

§ 61.51 Pilot logbooks.

(a) *Training time and aeronautical experience.* Each person must document and record the following time in a manner acceptable to the Administrator:

(1) Training and aeronautical experience used to meet the requirements for a certificate, rating, or flight review of this part.

(2) The aeronautical experience required for meeting the recent flight experience requirements of this part.

(b) *Logbook entries.* For the purposes of meeting the requirements of paragraph (a) of this section, each person must enter the following information for each flight or lesson logged:

(1) General—

(i) Date.

(ii) Total flight time or lesson time.

(iii) Location where the aircraft departed and arrived, or for lessons in a flight simulator or flight training device, the location where the lesson occurred.

(iv) Type and identification of aircraft, flight simulator, or flight training device, as appropriate.

(v) The name of a safety pilot, if required by § 91.109(b) of this chapter.

(2) Type of pilot experience or training—

(i) Solo.

(ii) Pilot in command.

(iii) Second in command.

(iv) Flight and ground training received from an authorized instructor.

(v) Training received in a flight simulator or flight training device from an authorized instructor.

(3) Conditions of flight—

(i) Day or night.

(ii) Actual instrument.

(iii) Simulated instrument conditions in flight, a flight simulator, or a flight training device.

(c) *Logging of pilot time.* The pilot time described in this section may be used to:

(1) Apply for a certificate or rating issued under this part or a privilege authorized under this part; or

(2) Satisfy the recent flight experience requirements of this part.

(d) *Logging of solo flight time.* Except for a student pilot performing the duties of pilot in command of an airship requiring more than one pilot flight crewmember, a pilot may log as solo flight time only that flight time when

the pilot is the sole occupant of the aircraft.

(e) *Logging pilot-in-command flight time.* (1) A sport, recreational, private, or commercial pilot may log pilot-in-command time only for that flight time during which that person—

(i) Is the sole manipulator of the controls of an aircraft for which the pilot is rated or has privileges;

(ii) Is the sole occupant of the aircraft; or

(iii) Except for a recreational pilot, is acting as pilot in command of an aircraft on which more than one pilot is required under the type certification of the aircraft or the regulations under which the flight is conducted.

(2) An airline transport pilot may log as pilot-in-command time all of the flight time while acting as pilot-in-command of an operation requiring an airline transport pilot certificate.

(3) An authorized instructor may log as pilot-in-command time all flight time while acting as an authorized instructor.

(4) A student pilot may log pilot-in-command time only when the student pilot—

(i) Is the sole occupant of the aircraft or is performing the duties of pilot of command of an airship requiring more than one pilot flight crewmember;

(ii) Has a current solo flight endorsement as required under §61.87 of this part; and

(iii) Is undergoing training for a pilot certificate or rating.

(f) *Logging second-in-command flight time.* A person may log second-in-command time only for that flight time during which that person:

(1) Is qualified in accordance with the second-in-command requirements of §61.55 of this part, and occupies a crewmember station in an aircraft that requires more than one pilot by the aircraft's type certificate; or

(2) Holds the appropriate category, class, and instrument rating (if an instrument rating is required for the flight) for the aircraft being flown, and more than one pilot is required under the type certification of the aircraft or the regulations under which the flight is being conducted.

(g) *Logging instrument flight time.* (1) A person may log instrument time only for that flight time when the person operates the aircraft solely by reference to instruments under actual or simulated instrument flight conditions.

(2) An authorized instructor may log instrument time when conducting instrument flight instruction in actual instrument flight conditions.

(3) For the purposes of logging instrument time to meet the recent instrument experience requirements of §61.57(c) of this part, the following information must be recorded in the person's logbook—

(i) The location and type of each instrument approach accomplished; and

(ii) The name of the safety pilot, if required.

(4) A flight simulator or approved flight training device may be used by a person to log instrument time, provided an authorized instructor is present during the simulated flight.

(h) *Logging training time.* (1) A person may log training time when that person receives training from an authorized instructor in an aircraft, flight simulator, or flight training device.

(2) The training time must be logged in a logbook and must:

(i) Be endorsed in a legible manner by the authorized instructor; and

(ii) Include a description of the training given, the length of the training lesson, and the authorized instructor's signature, certificate number, and certificate expiration date.

(i) *Presentation of required documents.* (1) Persons must present their pilot certificate, medical certificate, logbook, or any other record required by this part for inspection upon a reasonable request by—

(i) The Administrator;

(ii) An authorized representative from the National Transportation Safety Board; or

(iii) Any Federal, State, or local law enforcement officer.

(2) A student pilot must carry the following items in the aircraft on all solo cross-country flights as evidence of the required authorized instructor clearances and endorsements—

(i) Pilot logbook;

(ii) Student pilot certificate; and

(iii) Any other record required by this section.

(3) A sport pilot must carry his or her logbook or other evidence of required authorized instructor endorsements on all flights.

(4) A recreational pilot must carry his or her logbook with the required authorized instructor endorsements on all solo flights—

(i) That exceed 50 nautical miles from the airport at which training was received;

(ii) Within airspace that requires communication with air traffic control;

(iii) Conducted between sunset and sunrise; or

(iv) In an aircraft for which the pilot does not hold an appropriate category or class rating.

(5) A flight instructor with a sport pilot rating must carry his or her logbook or other evidence of required authorized instructor endorsements on all flights when providing flight training.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40897, July 30, 1997; Amdt. 61–104, 63 FR 20286, Apr. 23, 1998; Amdt. 61–110, 69 FR 44865, July 27, 2004]

§ 61.52 Use of aeronautical experience obtained in ultralight vehicles.

(a) A person may use aeronautical experience obtained in an ultralight vehicle to meet the requirements for the following certificates and ratings issued under this part:

(1) A sport pilot certificate.

(2) A flight instructor certificate with a sport pilot rating;

(3) A private pilot certificate with a weight-shift-control or powered parachute category rating.

(b) A person may use aeronautical experience obtained in an ultralight vehicle to meet the provisions of §§ 61.69 and 61.415(e).

(c) A person using aeronautical experience obtained in an ultralight vehicle to meet the requirements for a certificate or rating specified in paragraph (a) of this section or the requirements of paragraph (b) of this section must—

(1) Have been a registered ultralight pilot with an FAA-recognized ultralight organization when that aeronautical experience was obtained;

(2) Document and log that aeronautical experience in accordance with the provisions for logging aeronautical experience specified by an FAA-recognized ultralight organization and in accordance with provisions for logging pilot time in aircraft as specified in § 61.51; and

(3) Obtain the experience in a category and class of vehicle corresponding to the rating or privileges sought.

[Doc. No. FAA–2001–11133, 69 FR 44865, July 27, 2004]

§ 61.53 Prohibition on operations during medical deficiency.

(a) *Operations that require a medical certificate.* Except as provided for in paragraph (b) of this section, a person who holds a current medical certificate issued under part 67 of this chapter shall not act as pilot in command, or in any other capacity as a required pilot flight crewmember, while that person:

(1) Knows or has reason to know of any medical condition that would make the person unable to meet the requirements for the medical certificate necessary for the pilot operation; or

(2) Is taking medication or receiving other treatment for a medical condition that results in the person being unable to meet the requirements for the medical certificate necessary for the pilot operation.

(b) *Operations that do not require a medical certificate.* For operations provided for in § 61.23(b) of this part, a person shall not act as pilot in command, or in any other capacity as a required pilot flight crewmember, while that person knows or has reason to know of any medical condition that would make the person unable to operate the aircraft in a safe manner.

(c) *Operations requiring a medical certificate or a U.S. driver's license.* For operations provided for in § 61.23(c), a person must meet the provisions of—

(1) Paragraph (a) of this section if that person holds a valid medical certificate issued under part 67 of this chapter and does not hold a current and valid U.S. driver's license.

(2) Paragraph (b) of this section if that person holds a current and valid U.S. driver's license.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997, as amended by Amdt. 61–110, 69 FR 44866, July 27, 2004]

§ 61.55 Second-in-command qualifications.

(a) A person may serve as a second-in-command of an aircraft type certificated for more than one required pilot flight crewmember or in operations requiring a second-in-command pilot flight crewmember only if that person holds:

(1) At least a current private pilot certificate with the appropriate category and class rating; and

(2) An instrument rating or privilege that applies to the aircraft being flown if the flight is under IFR; and

(3) The appropriate pilot type rating for the aircraft unless the flight will be conducted as domestic flight operations within United States airspace.

(b) Except as provided in paragraph (e) of this section, no person may serve as a second-in-command of an aircraft type certificated for more than one required pilot flight crewmember or in operations requiring a second-in-command unless that person has within the previous 12 calendar months:

(1) Become familiar with the following information for the specific type aircraft for which second-in-command privileges are requested—

(i) Operational procedures applicable to the powerplant, equipment, and systems.

(ii) Performance specifications and limitations.

(iii) Normal, abnormal, and emergency operating procedures.

(iv) Flight manual.

(v) Placards and markings.

(2) Except as provided in paragraph (g) of this section, performed and logged pilot time in the type of aircraft or in a flight simulator that represents the type of aircraft for which second-in-command privileges are requested, which includes—

(i) Three takeoffs and three landings to a full stop as the sole manipulator of the flight controls;

(ii) Engine-out procedures and maneuvering with an engine out while executing the duties of pilot in command; and

(iii) Crew resource management training.

(c) If a person complies with the requirements in paragraph (b) of this section in the calendar month before or the calendar month after the month in which compliance with this section is required, then that person is considered to have accomplished the training and practice in the month it is due.

(d) A person may receive a second-in-command pilot type rating for an aircraft after satisfactorily completing the second-in-command familiarization training requirements under paragraph (b) of this section in that type of aircraft provided the training was completed within the 12 calendar months before the month of application for the SIC pilot type rating. The person must comply with the following application and pilot certification procedures:

(1) The person who provided the training must sign the applicant's logbook or training record after each lesson in accordance with § 61.51(h)(2) of this part. In lieu of the trainer, it is permissible for a qualified management official within the organization to sign the applicant's training records or logbook and make the required endorsement. The qualified management official must hold the position of Chief Pilot, Director of Training, Director of Operations, or another comparable management position within the organization that provided the training and must be in a position to verify the applicant's training records and that the training was given.

(2) The trainer or qualified management official must make an endorsement in the applicant's logbook that states ''[Applicant's Name and Pilot Certificate Number] has demonstrated the skill and knowledge required for the safe operation of the [Type of Aircraft], relevant to the duties and responsibilities of a second in command.''

(3) If the applicant's flight experience and/or training records are in an electronic form, the applicant must present a paper copy of those records containing the signature of the trainer or qualified management official to an FAA Flight Standards District Office or Examiner.

(4) The applicant must complete and sign an Airman Certificate and/or Rating Application, FAA Form 8710–1, and present the application to an FAA Flight Standards District Office or to an Examiner.

(5) The person who provided the ground and flight training to the applicant must sign the ''Instructor's Recommendation'' section of the Airman Certificate and/or Rating Application, FAA Form 8710–1. In lieu of the trainer, it is permissible for a qualified management official within the organization to sign the applicant's FAA Form 8710–1.

(6) The applicant must appear in person at a FAA Flight Standards District Office or to an Examiner with his or her logbook/training records and with the completed and signed FAA Form 8710–1.

(7) There is no practical test required for the issuance of the ''SIC Privileges Only'' pilot type rating.

(e) A person may receive a second-in-command pilot type rating for the type of aircraft after satisfactorily completing an approved second-in-command training program, proficiency check, or competency check under subpart K of part 91, part 121, part 125, or part 135, as appropriate, in that type of aircraft provided the training was completed within the 12 calendar months before the month of application for the SIC pilot type rating. The person must comply with the following application and pilot certification procedures:

(1) The person who provided the training must sign the applicant's logbook or training record after each lesson in accordance with §61.51(h)(2) of this part. In lieu of the trainer, it is permissible for a qualified management official within the organization to sign the applicant's training records or logbook and make the required endorsement. The qualified management official must hold the position of Chief Pilot, Director of Training, Director of Operations, or another comparable management position within the organization that provided the training and must be in a position to verify the applicant's training records and that the training was given.

(2) The trainer or qualified management official must make an endorsement in the applicant's logbook that states ''[Applicant's Name and Pilot Certificate Number] has demonstrated the skill and knowledge required for the safe operation of the [Type of Aircraft], relevant to the duties and responsibilities of a second in command.''

(3) If the applicant's flight experience and/or training records are in an electronic form, the applicant must provide a paper copy of those records containing the signature of the trainer or qualified management official to an FAA Flight Standards District Office, an Examiner, or an Aircrew Program Designee.

(4) The applicant must complete and sign an Airman Certificate and/or Rating Application, FAA Form 8710–1, and present the application to an FAA Flight Standards District Office or to an Examiner or to an authorized Aircrew Program Designee.

(5) The person who provided the ground and flight training to the applicant must sign the ''Instructor's Recommendation'' section of the Airman Certificate and/or Rating Application, FAA Form 8710–1. In lieu of the trainer, it is permissible for a qualified management official within the organization to sign the applicant's FAA Form 8710–1.

(6) The applicant must appear in person at an FAA Flight Standards District Office or to an Examiner or to an authorized Aircrew Program Designee with his or her logbook/training records and with the completed and signed FAA Form 8710–1.

(7) There is no practical test required for the issuance of the ''SIC Privileges Only'' pilot type rating.

(f) The familiarization training requirements of paragraph (b) of this section do not apply to a person who is:

(1) Designated and qualified as pilot in command under subpart K of part 91, part 121, 125, or 135 of this chapter in that specific type of aircraft;

(2) Designated as the second in command under subpart K of part 91, part 121, 125, or 135 of this chapter in that specific type of aircraft;

(3) Designated as the second in command in that specific type of aircraft for the purpose of receiving flight training required by this section, and no passengers or cargo are carried on the aircraft; or

(4) Designated as a safety pilot for purposes required by §91.109(b) of this chapter.

(g) The holder of a commercial or airline transport pilot certificate with the appropriate category and class rating is not required to meet the requirements of paragraph (b)(2) of this section, provided the pilot:

(1) Is conducting a ferry flight, aircraft flight test, or evaluation flight of an aircraft's equipment; and

(2) Is not carrying any person or property on board the aircraft, other than necessary for conduct of the flight.

(h) For the purpose of meeting the requirements of paragraph (b) of this section, a person may serve as second in command in that specific type aircraft, provided:

(1) The flight is conducted under day VFR or day IFR; and

(2) No person or property is carried on board the aircraft, other than necessary for conduct of the flight.

(i) The training under paragraphs (b) and (d) of this section and the training, proficiency check, and competency check under paragraph (e) of this section may be accomplished in a flight simulator that is used in accordance with an approved training course conducted by a training center certificated under part 142 of this chapter or under subpart K of part 91, part 121 or part 135 of this chapter.

(j) When an applicant for an initial second-in-command qualification for a particular type of aircraft receives all the training in a flight simulator, that applicant must satisfactorily complete one takeoff and one landing in an aircraft of the same type for which the qualification is sought. This requirement does not apply to an applicant who completes a proficiency check under part 121 or competency check under subpart K, part 91, part 125, or part 135 for the particular type of aircraft.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40898, July 30, 1997; Amdt. 61–109, 68 FR 54559, Sept. 17, 2003; Amdt. 61–113, 70 FR 45271, Aug. 4, 2005; Amdt. 61–109, 70 FR 61890, Oct. 27, 2005]

§ 61.56 Flight review.

(a) Except as provided in paragraphs (b) and (f) of this section, a flight review consists of a minimum of 1 hour of flight training and 1 hour of ground training. The review must include:

(1) A review of the current general operating and flight rules of part 91 of this chapter; and

(2) A review of those maneuvers and procedures that, at the discretion of the person giving the review, are necessary for the pilot to demonstrate the safe exercise of the privileges of the pilot certificate.

(b) Glider pilots may substitute a minimum of three instructional flights in a glider, each of which includes a flight to traffic pattern altitude, in lieu of the 1 hour of flight training required in paragraph (a) of this section.

(c) Except as provided in paragraphs (d), (e), and (g) of this section, no person may act as pilot in command of an aircraft unless, since the beginning of the 24th calendar month before the month in which that pilot acts as pilot in command, that person has—

(1) Accomplished a flight review given in an aircraft for which that pilot is rated by an authorized instructor and

(2) A logbook endorsed from an authorized instructor who gave the review certifying that the person has satisfactorily completed the review.

(d) A person who has, within the period specified in paragraph (c) of this section, passed a pilot proficiency check conducted by an examiner, an approved pilot check airman, or a U.S. Armed Force, for a pilot certificate, rating, or operating privilege need not accomplish the flight review required by this section.

(e) A person who has, within the period specified in paragraph (c) of this section, satisfactorily accomplished one or more phases of an FAA-sponsored pilot proficiency award program need not accomplish the flight review required by this section.

(f) A person who holds a current flight instructor certificate who has, within the period specified in paragraph (c) of this section, satisfactorily completed a renewal of a flight instructor certificate under the provisions in § 61.197 need not accomplish the 1 hour of ground training specified in paragraph (a) of this section.

(g) A student pilot need not accomplish the flight review required by this

section provided the student pilot is undergoing training for a certificate and has a current solo flight endorsement as required under § 61.87 of this part.

(h) The requirements of this section may be accomplished in combination with the requirements of § 61.57 and other applicable recent experience requirements at the discretion of the authorized instructor conducting the flight review.

(i) A flight simulator or flight training device may be used to meet the flight review requirements of this section subject to the following conditions:

(1) The flight simulator or flight training device must be used in accordance with an approved course conducted by a training center certificated under part 142 of this chapter.

(2) Unless the flight review is undertaken in a flight simulator that is approved for landings, the applicant must meet the takeoff and landing requirements of § 61.57(a) or § 61.57(b) of this part.

(3) The flight simulator or flight training device used must represent an aircraft or set of aircraft for which the pilot is rated.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40898, July 30, 1997; Amdt. 61–104, 63 FR 20287, Apr. 23, 1998]

§ 61.57 Recent flight experience: Pilot in command.

(a) *General experience.* (1) Except as provided in paragraph (e) of this section, no person may act as a pilot in command of an aircraft carrying passengers or of an aircraft certificated for more than one pilot flight crewmember unless that person has made at least three takeoffs and three landings within the preceding 90 days, and—

(i) The person acted as the sole manipulator of the flight controls; and

(ii) The required takeoffs and landings were performed in an aircraft of the same category, class, and type (if a type rating is required), and, if the aircraft to be flown is an airplane with a tailwheel, the takeoffs and landings must have been made to a full stop in an airplane with a tailwheel.

(2) For the purpose of meeting the requirements of paragraph (a)(1) of this section, a person may act as a pilot in command of an aircraft under day VFR or day IFR, provided no persons or property are carried on board the aircraft, other than those necessary for the conduct of the flight.

(3) The takeoffs and landings required by paragraph (a)(1) of this section may be accomplished in a flight simulator or flight training device that is—

(i) Approved by the Administrator for landings; and

(ii) Used in accordance with an approved course conducted by a training center certificated under part 142 of this chapter.

(b) *Night takeoff and landing experience.* (1) Except as provided in paragraph (e) of this section, no person may act as pilot in command of an aircraft carrying passengers during the period beginning 1 hour after sunset and ending 1 hour before sunrise, unless within the preceding 90 days that person has made at least three takeoffs and three landings to a full stop during the period beginning 1 hour after sunset and ending 1 hour before sunrise, and—

(i) That person acted as sole manipulator of the flight controls; and

(ii) The required takeoffs and landings were performed in an aircraft of the same category, class, and type (if a type rating is required).

(2) The takeoffs and landings required by paragraph (b)(1) of this section may be accomplished in a flight simulator that is—

(i) Approved by the Administrator for takeoffs and landings, if the visual system is adjusted to represent the period described in paragraph (b)(1) of this section; and

(ii) Used in accordance with an approved course conducted by a training center certificated under part 142 of this chapter.

(c) *Instrument experience.* Except as provided in paragraph (e) of this section, no person may act as pilot in command under IFR or in weather conditions less than the minimums prescribed for VFR, unless within the preceding 6 calendar months, that person has:

(1) For the purpose of obtaining instrument experience in an aircraft (other than a glider), performed and

logged under actual or simulated instrument conditions, either in flight in the appropriate category of aircraft for the instrument privileges sought or in a flight simulator or flight training device that is representative of the aircraft category for the instrument privileges sought—

(i) At least six instrument approaches;

(ii) Holding procedures; and

(iii) Intercepting and tracking courses through the use of navigation systems.

(2) For the purpose of obtaining instrument experience in a glider, performed and logged under actual or simulated instrument conditions—

(i) At least 3 hours of instrument time in flight, of which 1½ hours may be acquired in an airplane or a glider if no passengers are to be carried; or

(ii) 3 hours of instrument time in flight in a glider if a passenger is to be carried.

(d) *Instrument proficiency check.* Except as provided in paragraph (e) of this section, a person who does not meet the instrument experience requirements of paragraph (c) of this section within the prescribed time, or within 6 calendar months after the prescribed time, may not serve as pilot in command under IFR or in weather conditions less than the minimums prescribed for VFR until that person passes an instrument proficiency check consisting of a representative number of tasks required by the instrument rating practical test.

(1) The instrument proficiency check must be—

(i) In an aircraft that is appropriate to the aircraft category;

(ii) For other than a glider, in a flight simulator or flight training device that is representative of the aircraft category; or

(iii) For a glider, in a single-engine airplane or a glider.

(2) The instrument proficiency check must be given by—

(i) An examiner;

(ii) A person authorized by the U.S. Armed Forces to conduct instrument flight tests, provided the person being tested is a member of the U.S. Armed Forces;

(iii) A company check pilot who is authorized to conduct instrument flight tests under part 121, 125, or 135 of this chapter or subpart K of part 91 of this chapter, and provided that both the check pilot and the pilot being tested are employees of that operator or fractional ownership program manager, as applicable;

(iv) An authorized instructor; or

(v) A person approved by the Administrator to conduct instrument practical tests.

(e) *Exceptions.* (1) Paragraphs (a) and (b) of this section do not apply to a pilot in command who is employed by a certificate holder under part 125 and engaged in a flight operation for that certificate holder if the pilot is in compliance with §§125.281 and 125.285 of this chapter.

(2) This section does not apply to a pilot in command who is employed by an air carrier certificated under part 121 or 135 and is engaged in a flight operation under part 91, 121, or 135 for that air carrier if the pilot is in compliance with §§121.437 and 121.439, or §§135.243 and 135.247 of this chapter, as appropriate.

(3) Paragraph (b) of this section does not apply to a pilot in command of a turbine-powered airplane that is type certificated for more than one pilot crewmember, provided that pilot has complied with the requirements of paragraph (e)(3)(i) or (ii) of this section:

(i) The pilot in command must hold at least a commercial pilot certificate with the appropriate category, class, and type rating for each airplane that is type certificated for more than one pilot crewmember that the pilot seeks to operate under this alternative, and:

(A) That pilot must have logged at least 1,500 hours of aeronautical experience as a pilot;

(B) In each airplane that is type certificated for more than one pilot crewmember that the pilot seeks to operate under this alternative, that pilot must have accomplished and logged the daytime takeoff and landing recent flight experience of paragraph (a) of this section, as the sole manipulator of the flight controls;

(C) Within the preceding 90 days prior to the operation of that airplane that

is type certificated for more than one pilot crewmember, the pilot must have accomplished and logged at least 15 hours of flight time in the type of airplane that the pilot seeks to operate under this alternative; and

(D) That pilot has accomplished and logged at least 3 takeoffs and 3 landings to a full stop, as the sole manipulator of the flight controls, in a turbine-powered airplane that requires more than one pilot crewmember. The pilot must have performed the takeoffs and landings during the period beginning 1 hour after sunset and ending 1 hour before sunrise within the preceding 6 months prior to the month of the flight.

(ii) The pilot in command must hold at least a commercial pilot certificate with the appropriate category, class, and type rating for each airplane that is type certificated for more than one pilot crewmember that the pilot seeks to operate under this alternative, and:

(A) That pilot must have logged at least 1,500 hours of aeronautical experience as a pilot;

(B) In each airplane that is type certificated for more than one pilot crewmember that the pilot seeks to operate under this alternative, that pilot must have accomplished and logged the daytime takeoff and landing recent flight experience of paragraph (a) of this section, as the sole manipulator of the flight controls;

(C) Within the preceding 90 days prior to the operation of that airplane that is type certificated for more than one pilot crewmember, the pilot must have accomplished and logged at least 15 hours of flight time in the type of airplane that the pilot seeks to operate under this alternative; and

(D) Within the preceding 12 months prior to the month of the flight, the pilot must have completed a training program that is approved under part 142 of this chapter. The approved training program must have required and the pilot must have performed, at least 6 takeoffs and 6 landings to a full stop as the sole manipulator of the controls in a flight simulator that is representative of a turbine-powered airplane that requires more than one pilot crewmember. The flight simulator's visual system must have been adjusted to represent the period beginning 1 hour after sunset and ending 1 hour before sunrise.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40898, July 30, 1997; Amdt. 61–106, 64 FR 23529, Apr. 30, 1999; Amdt. 61–109, 68 FR 54559, Sept. 17, 2003]

§ 61.58 Pilot-in-command proficiency check: Operation of aircraft requiring more than one pilot flight crewmember.

(a) Except as otherwise provided in this section, to serve as pilot in command of an aircraft that is type certificated for more than one required pilot flight crewmember, a person must—

(1) Within the preceding 12 calendar months, complete a pilot-in-command proficiency check in an aircraft that is type certificated for more than one required pilot flight crewmember; and

(2) Within the preceding 24 calendar months, complete a pilot-in-command proficiency check in the particular type of aircraft in which that person will serve as pilot in command.

(b) This section does not apply to persons conducting operations under subpart K of part 91, part 121, 125, 133, 135, or 137 of this chapter, or persons maintaining continuing qualification under an Advanced Qualification program approved under subpart Y of part 121 of this chapter.

(c) The pilot-in-command proficiency check given in accordance with the provisions of subpart K of part 91, part 121, 125, or 135 of this chapter may be used to satisfy the requirements of this section.

(d) The pilot-in-command proficiency check required by paragraph (a) of this section may be accomplished by satisfactory completion of one of the following:

(1) A pilot-in-command proficiency check conducted by a person authorized by the Administrator, consisting of the maneuvers and procedures required for a type rating, in an aircraft type certificated for more than one required pilot flight crewmember;

(2) The practical test required for a type rating, in an aircraft type certificated for more than one required pilot flight crewmember;

(3) The initial or periodic practical test required for the issuance of a pilot

examiner or check airman designation, in an aircraft type certificated for more than one required pilot flight crewmember; or

(4) A military flight check required for a pilot in command with instrument privileges, in an aircraft that the military requires to be operated by more than one pilot flight crewmember.

(e) A check or test described in paragraphs (d)(1) through (d)(4) of this section may be accomplished in a flight simulator under part 142 of this chapter, subject to the following:

(1) Except as provided for in paragraphs (e)(2) and (e)(3) of this section, if an otherwise qualified and approved flight simulator used for a pilot-in-command proficiency check is not qualified and approved for a specific required maneuver—

(i) The training center must annotate, in the applicant's training record, the maneuver or maneuvers omitted; and

(ii) Prior to acting as pilot in command, the pilot must demonstrate proficiency in each omitted maneuver in an aircraft or flight simulator qualified and approved for each omitted maneuver.

(2) If the flight simulator used pursuant to paragraph (e) of this section is not qualified and approved for circling approaches—

(i) The applicant's record must include the statement, ''Proficiency in circling approaches not demonstrated''; and

(ii) The applicant may not perform circling approaches as pilot in command when weather conditions are less than the basic VFR conditions described in §91.155 of this chapter, until proficiency in circling approaches has been successfully demonstrated in a flight simulator qualified and approved for circling approaches or in an aircraft to a person authorized by the Administrator to conduct the check required by this section.

(3) If the flight simulator used pursuant to paragraph (e) of this section is not qualified and approved for landings, the applicant must—

(i) Hold a type rating in the airplane represented by the simulator; and

(ii) Have completed within the preceding 90 days at least three takeoffs and three landings (one to a full stop) as the sole manipulator of the flight controls in the type airplane for which the pilot-in-command proficiency check is sought.

(f) For the purpose of meeting the pilot-in-command proficiency check requirements of paragraph (a) of this section, a person may act as pilot in command of a flight under day VFR conditions or day IFR conditions if no person or property is carried, other than as necessary to demonstrate compliance with this part.

(g) If a pilot takes the pilot-in-command proficiency check required by this section in the calendar month before or the calendar month after the month in which it is due, the pilot is considered to have taken it in the month in which it was due for the purpose of computing when the next pilot-in-command proficiency check is due.

[Doc. No. 25910, 62 FR 40899, July 30, 1997, as amended by Amdt. 61–109, 68 FR 54559, Sept. 17, 2003; Amdt. 61–112, 70 FR 54814, Sept. 16, 2005]

§ 61.59 Falsification, reproduction, or alteration of applications, certificates, logbooks, reports, or records.

(a) No person may make or cause to be made:

(1) Any fraudulent or intentionally false statement on any application for a certificate, rating, authorization, or duplicate thereof, issued under this part;

(2) Any fraudulent or intentionally false entry in any logbook, record, or report that is required to be kept, made, or used to show compliance with any requirement for the issuance or exercise of the privileges of any certificate, rating, or authorization under this part;

(3) Any reproduction for fraudulent purpose of any certificate, rating, or authorization, under this part; or

(4) Any alteration of any certificate, rating, or authorization under this part.

(b) The commission of an act prohibited under paragraph (a) of this section is a basis for suspending or revoking any airman certificate, rating, or authorization held by that person.

§ 61.60 Change of address.

The holder of a pilot, flight instructor, or ground instructor certificate who has made a change in permanent mailing address may not, after 30 days from that date, exercise the privileges of the certificate unless the holder has notified in writing the FAA, Airman Certification Branch, P.O. Box 25082, Oklahoma City, OK 73125, of the new permanent mailing address, or if the permanent mailing address includes a post office box number, then the holder's current residential address.

Subpart B—Aircraft Ratings and Pilot Authorizations

§ 61.61 Applicability.

This subpart prescribes the requirements for the issuance of additional aircraft ratings after a pilot certificate is issued, and the requirements for and limitations of pilot authorizations issued by the Administrator.

§ 61.63 Additional aircraft ratings (other than on an airline transport pilot certificate).

(a) *General.* To be eligible for an additional aircraft rating to a pilot certificate, for other than an airline transport pilot certificate, an applicant must meet the appropriate requirements of this section for the additional aircraft rating sought.

(b) *Additional category rating.* An applicant who holds a pilot certificate and applies to add a category rating to that pilot certificate:

(1) Must have received the required training and possess the aeronautical experience prescribed by this part that applies to the pilot certificate for the aircraft category and, if applicable, class rating sought;

(2) Must have an endorsement in his or her logbook or training record from an authorized instructor, and that endorsement must attest that the applicant has been found competent in the aeronautical knowledge areas appropriate to the pilot certificate for the aircraft category and, if applicable, class rating sought;

(3) Must have an endorsement in his or her logbook or training record from an authorized instructor, and that endorsement must attest that the applicant has been found proficient on the areas of operation that are appropriate to the pilot certificate for the aircraft category and, if applicable, class rating sought;

(4) Must pass the required practical test that is appropriate to the pilot certificate for the aircraft category and, if applicable, class rating sought; and

(5) Need not take an additional knowledge test, provided the applicant holds an airplane, rotorcraft, powered-lift, or airship rating at that pilot certificate level.

(c) *Additional class rating.* Any person who applies for an additional class rating to be added on a pilot certificate:

(1) Must have an endorsement in his or her logbook or training record from an authorized instructor and that endorsement must attest that the applicant has been found competent in the aeronautical knowledge areas appropriate to the pilot certificate for the aircraft class rating sought;

(2) Must have an endorsement in his or her logbook or training record from an authorized instructor, and that endorsement must attest that the applicant has been found proficient in the areas of operation appropriate to the pilot certificate for the aircraft class rating sought;

(3) Must pass the required practical test that is appropriate to the pilot certificate for the aircraft class rating sought;

(4) Need not meet the specified training time requirements prescribed by this part that apply to the pilot certificate for the aircraft class rating sought unless the person holds a lighter-than-air category rating with a balloon class rating and is seeking an airship class rating and

(5) Need not take an additional knowledge test, provided the applicant holds an airplane, rotorcraft, powered-lift, or airship rating at that pilot certificate level.

(d) *Additional type rating.* Except as specified in paragraph (d)(7) of this section, a person who applies for an additional aircraft type rating to be added on a pilot certificate, or the addition of

an aircraft type rating that is accomplished concurrently with an additional aircraft category or class rating:

(1) Must hold or concurrently obtain an instrument rating that is appropriate to the aircraft category, class, or type rating sought;

(2) Must have an endorsement in his or her logbook or training record from an authorized instructor, and that endorsement must attest that the applicant has been found competent in the aeronautical knowledge areas appropriate to the pilot certificate for the aircraft category, class, or type rating sought;

(3) Must have an endorsement in his or her logbook, or training record from an authorized instructor, and that endorsement must attest that the applicant has been found proficient in the areas of operation required for the issuance of an airline transport pilot certificate for the aircraft category, class, and type rating sought;

(4) Must pass the required practical test appropriate to the airline transport pilot certificate for the aircraft category, class, and type rating sought;

(5) Must perform the practical test in actual or simulated instrument conditions, unless the aircraft's type certificate makes the aircraft incapable of operating under instrument flight rules. If the practical test cannot be accomplished for this reason, the person may obtain a type rating limited to ''VFR only.'' The ''VFR only'' limitation may be removed for that aircraft type when the person passes the practical test in actual or simulated instrument conditions. When an instrument rating is issued to a person who holds one or more type ratings, the type ratings on the amended pilot certificate shall bear the ''VFR only'' limitation for each aircraft type rating for which the person has not demonstrated instrument competency;

(6) Need not take an additional knowledge test, provided the applicant holds an airplane, rotorcraft, powered-lift, or airship rating on their pilot certificate; and

(7) In the case of a pilot employee of a certificate holder operating under part 121 or 135 of this chapter or of a fractional ownership program manager under subpart K of part 91 of this chapter, must have—

(i) Met the appropriate requirements of paragraphs (d)(1), (d)(4), and (d)(5) of this section for the aircraft type rating sought; and

(ii) Received an endorsement in his or her flight training record from the certificate holder or program manager attesting that the applicant has completed the certificate holder's or program manager's approved ground and flight training program appropriate to the aircraft type rating sought.

(e) *Use of a flight simulator or flight training device for an additional rating in an airplane.* The areas of operation required to be performed by paragraphs (b), (c), and (d) of this section shall be performed as follows:

(1) Except as provided in paragraph (e)(2) of this section, the areas of operation must be performed in an airplane of the same category, class, and type, if applicable, as the airplane for which the additional rating is sought.

(2) Subject to the limitations of paragraph (e)(3) through (e)(12) of this section, the areas of operation may be performed in a flight simulator or flight training device that represents the airplane for which the additional rating is sought.

(3) The use of a flight simulator or flight training device permitted by paragraph (e)(2) of this section shall be conducted in accordance with an approved course at a training center certificated under part 142 of this chapter.

(4) To complete all training and testing (except preflight inspection) for an additional airplane rating without limitations when using a flight simulator—

(i) The flight simulator must be qualified and approved as Level C or Level D; and

(ii) The applicant must meet at least one of the following:

(A) Hold a type rating for a turbojet airplane of the same class of airplane for which the type rating is sought, or have been appointed by a military service as a pilot in command of an airplane of the same class of airplane for which the type rating is sought, if a type rating in a turbojet airplane is sought.

(B) Hold a type rating for a turbopropeller airplane of the same class of airplane for which the type rating is sought, or have been designated by a military service as a pilot in command of an airplane of the same class of airplane for which the type rating is sought, if a type rating in a turbopropeller airplane is sought.

(C) Have at least 2,000 hours of flight time, of which 500 hours is in turbine-powered airplanes of the same class of airplane for which the type rating is sought.

(D) Have at least 500 hours of flight time in the same type airplane as the airplane for which the rating is sought.

(E) Have at least 1,000 hours of flight time in at least two different airplanes requiring a type rating.

(5) Subject to the limitation of paragraph (e)(6) of this section, an applicant who does not meet the requirements of paragraph (e)(4) of this section may complete all training and testing (except for preflight inspection) for an additional rating when using a flight simulator if—

(i) The flight simulator is qualified and approved as a Level C or Level D; and

(ii) The applicant meets at least one of the following:

(A) Holds a type rating in a propeller-driven airplane if a type rating in a turbojet airplane is sought, or holds a type rating in a turbojet airplane if a type rating in a propeller-driven airplane is sought; or

(B) Since the beginning of the 12th calendar month before the month in which the applicant completes the practical test for an additional airplane rating, has logged:

(*1*) At least 100 hours of flight time in airplanes of the same class for which the type rating is sought and which requires a type rating; and

(*2*) At least 25 hours of flight time in airplanes of the same type for which the rating is sought.

(6) An applicant meeting only the requirements of paragraph (e)(5) of this section will be issued an additional rating with a limitation.

(7) The limitation on a certificate issued under the provisions of paragraph (e)(6) of this section shall state, ''This certificate is subject to pilot-in-command limitations for the additional rating.''

(8) An applicant who has been issued a pilot certificate with the limitation specified in paragraph (e)(7) of this section—

(i) May not act as pilot in command of that airplane for which the additional rating was obtained under the provisions of this section until the limitation is removed from the pilot certificate; and

(ii) May have the limitation removed by accomplishing 15 hours of supervised operating experience as pilot in command under the supervision of a qualified and current pilot in command, in the seat normally occupied by the pilot in command, in the same type of airplane to which the limitation applies.

(9) An applicant who does not meet the requirements of paragraph (e)(4) or paragraph (e)(5) of this section may be issued an additional rating after successful completion of one of the following requirements:

(i) Compliance with paragraphs (e)(2) and (e)(3) of this section and the following tasks, which must be successfully completed on a static airplane or in flight, as appropriate:

(A) Preflight inspection;

(B) Normal takeoff;

(C) Normal ILS approach;

(D) Missed approach; and

(E) Normal landing.

(ii) Compliance with paragraphs (e)(2), (e)(3), and (e)(10) through (e)(12) of this section.

(10) An applicant meeting only the requirements of paragraph (e)(9)(ii) of this section will be issued an additional rating with a limitation.

(11) The limitation on a certificate issued under the provisions of paragraph (e)(10) of this section shall state, ''This certificate is subject to pilot-in-command limitations for the additional rating.''

(12) An applicant who has been issued a pilot certificate with the limitation specified in paragraph (e)(11) of this section—

(i) May not act as pilot in command of that airplane for which the additional rating was obtained under the

provisions of this section until the limitation is removed from the pilot certificate; and

(ii) May have the limitation removed by accomplishing 25 hours of supervised operating experience as pilot in command under the supervision of a qualified and current pilot in command, in the seat normally occupied by the pilot in command, in that airplane of the same type to which the limitation applies.

(f) *Use of a flight simulator or flight training device for an additional rating in a helicopter*. The areas of operation required to be performed by paragraphs (b), (c), and (d) of this section shall be performed as follows:

(1) Except as provided in paragraph (f)(2) of this section, the areas of operation must be performed in a helicopter of the same type for the additional rating sought.

(2) Subject to the limitations of paragraph (f)(3) through (f)(12) of this section, the areas of operation may be performed in a flight simulator or flight training device that represents that helicopter for the additional rating sought.

(3) The use of a flight simulator or flight training device permitted by paragraph (f)(2) of this section shall be conducted in accordance with an approved course at a training center certificated under part 142 of this chapter.

(4) To complete all training and testing (except preflight inspection) for an additional helicopter rating without limitations when using a flight simulator—

(i) The flight simulator must be qualified and approved as Level C or Level D; and

(ii) The applicant must meet at least one of the following if a type rating is sought in a turbine-powered helicopter:

(A) Hold a type rating in a turbine-powered helicopter or have been appointed by a military service as a pilot in command of a turbine-powered helicopter.

(B) Have at least 2,000 hours of flight time that includes at least 500 hours in turbine-powered helicopters.

(C) Have at least 500 hours of flight time in turbine-powered helicopters.

(D) Have at least 1,000 hours of flight time in at least two different turbine-powered helicopters.

(5) Subject to the limitation of paragraph (f)(6) of this section, an applicant who does not meet the requirements of paragraph (f)(4) of this section may complete all training and testing (except for preflight inspection) for an additional rating when using a flight simulator if—

(i) The flight simulator is qualified and approved as Level C or Level D; and

(ii) The applicant meets at least one of the following:

(A) Holds a type rating in a turbine-powered helicopter if a type rating in a turbine-powered helicopter is sought; or

(B) Since the beginning of the 12th calendar month before the month in which the applicant completes the practical test for an additional helicopter rating, has logged at least 25 hours of flight time in helicopters of the same type for which the rating is sought.

(6) An applicant meeting only the requirements of paragraph (f)(5) of this section will be issued an additional rating with a limitation.

(7) The limitation on a certificate issued under the provisions of paragraph (f)(6) of this section shall state, ''This certificate is subject to pilot-in-command limitations for the additional rating.''

(8) An applicant who is issued a pilot certificate with the limitation specified in paragraph (f)(7) of this section—

(i) May not act as pilot in command of that helicopter for which the additional rating was obtained under the provisions of this section until the limitation is removed from the pilot certificate; and

(ii) May have the limitation removed by accomplishing 15 hours of supervised operating experience as pilot in command under the supervision of a qualified and current pilot in command, in the seat normally occupied by the pilot in command, in the same type of helicopter to which the limitation applies.

(9) An applicant who does not meet the requirements of paragraph (f)(4) or paragraph (f)(5) of this section may be

issued an additional rating after successful completion of one of the following requirements:

(i) Compliance with paragraphs (f)(2) and (f)(3) of this section and the following tasks, which must be successfully completed on a static helicopter or in flight, as appropriate:

(A) Preflight inspection;

(B) Normal takeoff;

(C) Normal ILS approach;

(D) Missed approach; and

(E) Normal landing.

(ii) Compliance with paragraphs (f)(2), (f)(3), and (f)(10) through (f)(12) of this section.

(10) A applicant meeting only the requirements of paragraph (f)(9)(ii) of this section will be issued an additional rating with a limitation.

(11) The limitation on a certificate issued under the provisions of paragraph (f)(10) of this section shall state, ''This certificate is subject to pilot-in-command limitations for the additional rating.''

(12) An applicant who has been issued a pilot certificate with the limitation specified in paragraph (f)(11) of this section—

(i) May not act as pilot in command of that helicopter for which the additional rating was obtained under the provisions of this section until the limitation is removed from the pilot certificate; and

(ii) May have the limitation removed by accomplishing 25 hours of supervised operating experience as pilot in command under the supervision of a qualified and current pilot in command, in the seat normally occupied by the pilot in command, in that helicopter of the same type as to which the limitation applies.

(g) *Use of a flight simulator or flight training device for an additional rating in a powered-lift.* The areas of operation required to be performed by paragraphs (b), (c), and (d) of this section shall be performed as follows:

(1) Except as provided in paragraph (g)(2) of this section, the areas of operation must be performed in a powered-lift of the same type for the additional rating sought.

(2) Subject to the limitations of paragraphs (g)(3) through (g)(12) of this section, the areas of operation may be performed in a flight simulator or flight training device that represents that powered-lift for the additional rating sought.

(3) The use of a flight simulator or flight training device permitted by paragraph (g)(2) of this section shall be conducted in accordance with an approved course at a training center certificated under part 142 of this chapter.

(4) To complete all training and testing (except preflight inspection) for an additional powered-lift rating without limitations when using a flight simulator—

(i) The flight simulator must be qualified and approved as Level C or Level D; and

(ii) The applicant must meet at least one of the following if a type rating is sought in a turbine powered-lift:

(A) Hold a type rating in a turbine powered-lift or have been appointed by a military service as a pilot in command of a turbine powered-lift.

(B) Have at least 2,000 hours of flight time that includes at least 500 hours in turbine powered-lifts.

(C) Have at least 500 hours of flight time in turbine powered-lifts.

(D) Have at least 1,000 hours of flight time in at least two different turbine powered-lifts.

(5) Subject to the limitation of paragraph (g)(6) of this section, an applicant who does not meet the requirements of paragraph (g)(4) of this section may complete all training and testing (except for preflight inspection) for an additional rating when using a flight simulator if—

(i) The flight simulator is qualified and approved as Level C or Level D; and

(ii) The applicant meets at least one of the following:

(A) Holds a type rating in a turbine powered-lift if a type rating in a turbine powered-lift is sought; or

(B) Since the beginning of the 12th calendar month before the month in which the applicant completes the practical test for an additional powered-lift rating, has logged at least 25 hours of flight time in powered-lifts of the same type for which the rating is sought.

(6) An applicant meeting only the requirements of paragraph (g)(5) of this

section will be issued an additional rating with a limitation.

(7) The limitation on a certificate issued under the provisions of paragraph (g)(6) of this section shall state, ''This certificate is subject to pilot-in-command limitations for the additional rating.''

(8) An applicant who is issued a pilot certificate with the limitation specified in paragraph (g)(7) of this section—

(i) May not act as pilot in command of that powered-lift for which the additional rating was obtained under the provisions of this section until the limitation is removed from the pilot certificate; and

(ii) May have the limitation removed by accomplishing 15 hours of supervised operating experience as pilot in command under the supervision of a qualified and current pilot in command, in the seat normally occupied by the pilot in command, in the same type of powered-lift to which the limitation applies.

(9) An applicant who does not meet the requirements of paragraph (g)(4) or paragraph (g)(5) of this section may be issued an additional rating after successful completion of one of the following requirements:

(i) Compliance with paragraphs (g)(2) and (g)(3) of this section and the following tasks, which must be successfully completed on a static powered-lift or in flight, as appropriate:

(A) Preflight inspection;

(B) Normal takeoff;

(C) Normal ILS approach;

(D) Missed approach; and

(E) Normal landing.

(ii) Compliance with paragraphs (g)(2), (g)(3), and (g)(10) through (g)(12) of this section.

(10) An applicant meeting only the requirements of paragraph (g)(9)(ii) of this section will be issued an additional rating with a limitation.

(11) The limitation on a certificate issued under the provisions of paragraph (g)(10) of this section shall state, ''This certificate is subject to pilot-in-command limitations for the additional rating.''

(12) An applicant who has been issued a pilot certificate with the limitation specified in paragraph (g)(11) of this section—

(i) May not act as pilot in command of that powered-lift for which the additional rating was obtained under the provisions of this section until the limitation is removed from the pilot certificate; and

(ii) May have the limitation removed by accomplishing 25 hours of supervised operating experience as pilot in command under the supervision of a qualified and current pilot in command, in the seat normally occupied by the pilot in command, in that powered-lift of the same type as to which the limitation applies.

(h) *Aircraft not capable of instrument maneuvers and procedures.* An applicant for a type rating who provides an aircraft not capable of the instrument maneuvers and procedures required by the appropriate requirements contained in §61.157 of this part for the practical test may—

(1) Obtain a type rating limited to ''VFR only''; and

(2) Remove the ''VFR only'' limitation for each aircraft type in which the applicant demonstrates compliance with the appropriate instrument requirements contained in §61.157 or §61.73 of this part.

(i) *Multiengine, single-pilot station airplane.* An applicant for a type rating in a multiengine, single-pilot station airplane may meet the requirements of this part in a multiseat version of that multiengine airplane.

(j) *Single-engine, single-pilot station airplane.* An applicant for a type rating in a single-engine, single-pilot station airplane may meet the requirements of this part in a multiseat version of that single-engine airplane.

(k) *Category class ratings for the operation of aircraft with experimental certificates:* Notwithstanding the provisions of paragraphs (b) and (c) of this section, a person holding at least a recreational pilot certificate may apply for a category and class rating limited to a specific make and model of experimental aircraft, provided—

(1) The person has logged at least 5 hours flight time while acting as pilot in command in the same category, class, make, and model of aircraft that has been issued an experimental certificate;

(2) The person has received a logbook endorsement from an authorized instructor who has determined that he or she is proficient to act as pilot in command of the same category, class, make, and model of aircraft for which application is made; and

(3) The flight time specified in paragraph (k)(1) of this section must be logged between September 1, 2004 and August 31, 2005.

(l) *Waivers.* Unless the Administrator requires certain or all tasks to be performed, the examiner who conducts the practical test may waive any of the tasks for which the Administrator approves waiver authority.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40899, July 30, 1997; Amdt. 61–104, 63 FR 20287, Apr. 23, 1998; Amdt. 61–110, 69 FR 44866, July 27, 2004]

§ 61.64 [Reserved]

§ 61.65 Instrument rating requirements.

(a) *General.* A person who applies for an instrument rating must:

(1) Hold at least a current private pilot certificate with an airplane, helicopter, or powered-lift rating appropriate to the instrument rating sought;

(2) Be able to read, speak, write, and understand the English language. If the applicant is unable to meet any of these requirements due to a medical condition, the Administrator may place such operating limitations on the applicant's pilot certificate as are necessary for the safe operation of the aircraft;

(3) Receive and log ground training from an authorized instructor or accomplish a home-study course of training on the aeronautical knowledge areas of paragraph (b) of this section that apply to the instrument rating sought;

(4) Receive a logbook or training record endorsement from an authorized instructor certifying that the person is prepared to take the required knowledge test;

(5) Receive and log training on the areas of operation of paragraph (c) of this section from an authorized instructor in an aircraft, flight simulator, or flight training device that represents an airplane, helicopter, or powered-lift appropriate to the instrument rating sought;

(6) Receive a logbook or training record endorsement from an authorized instructor certifying that the person is prepared to take the required practical test;

(7) Pass the required knowledge test on the aeronautical knowledge areas of paragraph (b) of this section; however, an applicant is not required to take another knowledge test when that person already holds an instrument rating; and

(8) Pass the required practical test on the areas of operation in paragraph (c) of this section in—

(i) An airplane, helicopter, or powered-lift appropriate to the rating sought; or

(ii) A flight simulator or a flight training device appropriate to the rating sought and for the specific maneuver or instrument approach procedure performed. If an approved flight training device is used for the practical test, the instrument approach procedures conducted in that flight training device are limited to one precision and one nonprecision approach, provided the flight training device is approved for the procedure performed.

(b) *Aeronautical knowledge.* A person who applies for an instrument rating must have received and logged ground training from an authorized instructor or accomplished a home-study course on the following aeronautical knowledge areas that apply to the instrument rating sought:

(1) Federal Aviation Regulations of this chapter that apply to flight operations under IFR;

(2) Appropriate information that applies to flight operations under IFR in the ''Aeronautical Information Manual;''

(3) Air traffic control system and procedures for instrument flight operations;

(4) IFR navigation and approaches by use of navigation systems;

(5) Use of IFR en route and instrument approach procedure charts;

(6) Procurement and use of aviation weather reports and forecasts and the elements of forecasting weather trends based on that information and personal observation of weather conditions;

(7) Safe and efficient operation of aircraft under instrument flight rules and conditions;

(8) Recognition of critical weather situations and windshear avoidance;

(9) Aeronautical decision making and judgment; and

(10) Crew resource management, including crew communication and coordination.

(c) *Flight proficiency.* A person who applies for an instrument rating must receive and log training from an authorized instructor in an aircraft, or in a flight simulator or flight training device, in accordance with paragraph (e) of this section, that includes the following areas of operation:

(1) Preflight preparation;

(2) Preflight procedures;

(3) Air traffic control clearances and procedures;

(4) Flight by reference to instruments;

(5) Navigation systems;

(6) Instrument approach procedures;

(7) Emergency operations; and

(8) Postflight procedures.

(d) *Aeronautical experience.* A person who applies for an instrument rating must have logged the following:

(1) At least 50 hours of cross-country flight time as pilot in command, of which at least 10 hours must be in airplanes for an instrument—airplane rating; and

(2) A total of 40 hours of actual or simulated instrument time on the areas of operation of this section, to include—

(i) At least 15 hours of instrument flight training from an authorized instructor in the aircraft category for which the instrument rating is sought;

(ii) At least 3 hours of instrument training that is appropriate to the instrument rating sought from an authorized instructor in preparation for the practical test within the 60 days preceding the date of the test;

(iii) For an instrument—airplane rating, instrument training on cross-country flight procedures specific to airplanes that includes at least one cross-country flight in an airplane that is performed under IFR, and consists of—

(A) A distance of at least 250 nautical miles along airways or ATC-directed routing;

(B) An instrument approach at each airport; and

(C) Three different kinds of approaches with the use of navigation systems;

(iv) For an instrument—helicopter rating, instrument training specific to helicopters on cross-country flight procedures that includes at least one cross-country flight in a helicopter that is performed under IFR, and consists of—

(A) A distance of at least 100 nautical miles along airways or ATC-directed routing;

(B) An instrument approach at each airport; and

(C) Three different kinds of approaches with the use of navigation systems; and

(v) For an instrument—powered-lift rating, instrument training specific to a powered-lift on cross-country flight procedures that includes at least one cross-country flight in a powered-lift that is performed under IFR and consists of—

(A) A distance of at least 250 nautical miles along airways or ATC-directed routing;

(B) An instrument approach at each airport; and

(C) Three different kinds of approaches with the use of navigation systems.

(e) *Use of flight simulators or flight training devices.* If the instrument training was provided by an authorized instructor in a flight simulator or flight training device—

(1) A maximum of 30 hours may be performed in that flight simulator or flight training device if the training was accomplished in accordance with part 142 of this chapter; or

(2) A maximum of 20 hours may be performed in that flight simulator or flight training device if the training was not accomplished in accordance with part 142 of this chapter.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40900, July 30, 1997]

§ 61.67 Category II pilot authorization requirements.

(a) *General.* A person who applies for a Category II pilot authorization must hold:

(1) At least a private or commercial pilot certificate with an instrument rating or an airline transport pilot certificate;

(2) A type rating for the aircraft for which the authorization is sought if that aircraft requires a type rating; and

(3) A category and class rating for the aircraft for which the authorization is sought.

(b) *Experience requirements.* An applicant for a Category II pilot authorization must have at least—

(1) 50 hours of night flight time as pilot in command.

(2) 75 hours of instrument time under actual or simulated instrument conditions that may include not more than—

(i) A combination of 25 hours of simulated instrument flight time in a flight simulator or flight training device; or

(ii) 40 hours of simulated instrument flight time if accomplished in an approved course conducted by an appropriately rated training center certificated under part 142 of this chapter.

(3) 250 hours of cross-country flight time as pilot in command.

(c) *Practical test requirements.* (1) A practical test must be passed by a person who applies for—

(i) Issuance or renewal of a Category II pilot authorization; and

(ii) The addition of another type aircraft to the applicant's Category II pilot authorization.

(2) To be eligible for the practical test for an authorization under this section, an applicant must—

(i) Meet the requirements of paragraphs (a) and (b) of this section; and

(ii) If the applicant has not passed a practical test for this authorization during the 12 calendar months preceding the month of the test, then that person must—

(A) Meet the requirements of § 61.57(c); and

(B) Have performed at least six ILS approaches during the 6 calendar months preceding the month of the test, of which at least three of the approaches must have been conducted without the use of an approach coupler.

(3) The approaches specified in paragraph (c)(2)(ii)(B) of this section—

(i) Must be conducted under actual or simulated instrument flight conditions;

(ii) Must be conducted to the decision height for the ILS approach in the type aircraft in which the practical test is to be conducted;

(iii) Need not be conducted to the decision height authorized for Category II operations;

(iv) Must be conducted to the decision height authorized for Category II operations only if conducted in a flight simulator or flight training device; and

(v) Must be accomplished in an aircraft of the same category and class, and type, as applicable, as the aircraft in which the practical test is to be conducted or in a flight simulator that—

(A) Represents an aircraft of the same category and class, and type, as applicable, as the aircraft in which the authorization is sought; and

(B) Is used in accordance with an approved course conducted by a training center certificated under part 142 of this chapter.

(4) The flight time acquired in meeting the requirements of paragraph (c)(2)(ii)(B) of this section may be used to meet the requirements of paragraph (c)(2)(ii)(A) of this section.

(d) *Practical test procedures.* The practical test consists of an oral increment and a flight increment.

(1) *Oral increment.* In the oral increment of the practical test an applicant must demonstrate knowledge of the following:

(i) Required landing distance;

(ii) Recognition of the decision height;

(iii) Missed approach procedures and techniques using computed or fixed attitude guidance displays;

(iv) Use and limitations of RVR;

(v) Use of visual clues, their availability or limitations, and altitude at which they are normally discernible at reduced RVR readings;

(vi) Procedures and techniques related to transition from nonvisual to visual flight during a final approach under reduced RVR;

(vii) Effects of vertical and horizontal windshear;

(viii) Characteristics and limitations of the ILS and runway lighting system;

(ix) Characteristics and limitations of the flight director system, auto approach coupler (including split axis type if equipped), auto throttle system (if equipped), and other required Category II equipment;

(x) Assigned duties of the second in command during Category II approaches, unless the aircraft for which authorization is sought does not require a second in command; and

(xi) Instrument and equipment failure warning systems.

(2) *Flight increment.* The following requirements apply to the flight increment of the practical test:

(i) The flight increment must be conducted in an aircraft of the same category, class, and type, as applicable, as the aircraft in which the authorization is sought or in a flight simulator that—

(A) Represents an aircraft of the same category and class, and type, as applicable, as the aircraft in which the authorization is sought; and

(B) Is used in accordance with an approved course conducted by a training center certificated under part 142 of this chapter.

(ii) The flight increment must consist of at least two ILS approaches to 100 feet AGL including at least one landing and one missed approach.

(iii) All approaches performed during the flight increment must be made with the use of an approved flight control guidance system, except if an approved auto approach coupler is installed, at least one approach must be hand flown using flight director commands.

(iv) If a multiengine airplane with the performance capability to execute a missed approach with one engine inoperative is used for the practical test, the flight increment must include the performance of one missed approach with an engine, which shall be the most critical engine, if applicable, set at idle or zero thrust before reaching the middle marker.

(v) If a multiengine flight simulator or multiengine flight training device is used for the practical test, the applicant must execute a missed approach with the most critical engine, if applicable, failed.

(vi) For an authorization for an aircraft that requires a type rating, the practical test must be performed in coordination with a second in command who holds a type rating in the aircraft in which the authorization is sought.

(vii) Oral questioning may be conducted at any time during a practical test.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40900, July 30, 1997]

§ 61.68 Category III pilot authorization requirements.

(a) *General.* A person who applies for a Category III pilot authorization must hold:

(1) At least a private pilot certificate or commercial pilot certificate with an instrument rating or an airline transport pilot certificate;

(2) A type rating for the aircraft for which the authorization is sought if that aircraft requires a type rating; and

(3) A category and class rating for the aircraft for which the authorization is sought.

(b) *Experience requirements.* An applicant for a Category III pilot authorization must have at least—

(1) 50 hours of night flight time as pilot in command.

(2) 75 hours of instrument flight time during actual or simulated instrument conditions that may include not more than—

(i) A combination of 25 hours of simulated instrument flight time in a flight simulator or flight training device; or

(ii) 40 hours of simulated instrument flight time if accomplished in an approved course conducted by an appropriately rated training center certificated under part 142 of this chapter.

(3) 250 hours of cross-country flight time as pilot in command.

(c) *Practical test requirements.* (1) A practical test must be passed by a person who applies for—

(i) Issuance or renewal of a Category III pilot authorization; and

(ii) The addition of another type of aircraft to the applicant's Category III pilot authorization.

(2) To be eligible for the practical test for an authorization under this section, an applicant must—

(i) Meet the requirements of paragraphs (a) and (b) of this section; and

(ii) If the applicant has not passed a practical test for this authorization during the 12 calendar months preceding the month of the test, then that person must—

(A) Meet the requirements of § 61.57(c); and

(B) Have performed at least six ILS approaches during the 6 calendar months preceding the month of the test, of which at least three of the approaches must have been conducted without the use of an approach coupler.

(3) The approaches specified in paragraph (c)(2)(ii)(B) of this section—

(i) Must be conducted under actual or simulated instrument flight conditions;

(ii) Must be conducted to the alert height or decision height for the ILS approach in the type aircraft in which the practical test is to be conducted;

(iii) Need not be conducted to the decision height authorized for Category III operations;

(iv) Must be conducted to the alert height or decision height, as applicable, authorized for Category III operations only if conducted in a flight simulator or flight training device; and

(v) Must be accomplished in an aircraft of the same category and class, and type, as applicable, as the aircraft in which the practical test is to be conducted or in a flight simulator that—

(A) Represents an aircraft of the same category and class, and type, as applicable, as the aircraft for which the authorization is sought; and

(B) Is used in accordance with an approved course conducted by a training center certificated under part 142 of this chapter.

(4) The flight time acquired in meeting the requirements of paragraph (c)(2)(ii)(B) of this section may be used to meet the requirements of paragraph (c)(2)(ii)(A) of this section.

(d) *Practical test procedures.* The practical test consists of an oral increment and a flight increment.

(1) *Oral increment.* In the oral increment of the practical test an applicant must demonstrate knowledge of the following:

(i) Required landing distance;

(ii) Determination and recognition of the alert height or decision height, as applicable, including use of a radar altimeter;

(iii) Recognition of and proper reaction to significant failures encountered prior to and after reaching the alert height or decision height, as applicable;

(iv) Missed approach procedures and techniques using computed or fixed attitude guidance displays and expected height loss as they relate to manual go-around or automatic go-around, and initiation altitude, as applicable;

(v) Use and limitations of RVR, including determination of controlling RVR and required transmissometers;

(vi) Use, availability, or limitations of visual cues and the altitude at which they are normally discernible at reduced RVR readings including—

(A) Unexpected deterioration of conditions to less than minimum RVR during approach, flare, and rollout;

(B) Demonstration of expected visual references with weather at minimum conditions;

(C) The expected sequence of visual cues during an approach in which visibility is at or above landing minima; and

(D) Procedures and techniques for making a transition from instrument reference flight to visual flight during a final approach under reduced RVR.

(vii) Effects of vertical and horizontal windshear;

(viii) Characteristics and limitations of the ILS and runway lighting system;

(ix) Characteristics and limitations of the flight director system auto approach coupler (including split axis type if equipped), auto throttle system (if equipped), and other Category III equipment;

(x) Assigned duties of the second in command during Category III operations, unless the aircraft for which authorization is sought does not require a second in command;

(xi) Recognition of the limits of acceptable aircraft position and flight path tracking during approach, flare, and, if applicable, rollout; and

(xii) Recognition of, and reaction to, airborne or ground system faults or abnormalities, particularly after passing alert height or decision height, as applicable.

(2) *Flight increment.* The following requirements apply to the flight increment of the practical test—

(i) The flight increment may be conducted in an aircraft of the same category and class, and type, as applicable, as the aircraft for which the authorization is sought, or in a flight simulator that—

(A) Represents an aircraft of the same category and class, and type, as applicable, as the aircraft in which the authorization is sought; and

(B) Is used in accordance with an approved course conducted by a training center certificated under part 142 of this chapter.

(ii) The flight increment must consist of at least two ILS approaches to 100 feet AGL, including one landing and one missed approach initiated from a very low altitude that may result in a touchdown during the go-around maneuver;

(iii) All approaches performed during the flight increment must be made with the approved automatic landing system or an equivalent landing system approved by the Administrator;

(iv) If a multiengine aircraft with the performance capability to execute a missed approach with one engine inoperative is used for the practical test, the flight increment must include the performance of one missed approach with the most critical engine, if applicable, set at idle or zero thrust before reaching the middle or outer marker;

(v) If a multiengine flight simulator or multiengine flight training device is used, a missed approach must be executed with an engine, which shall be the most critical engine, if applicable, failed;

(vi) For an authorization for an aircraft that requires a type rating, the practical test must be performed in coordination with a second in command who holds a type rating in the aircraft in which the authorization is sought;

(vii) Oral questioning may be conducted at any time during the practical test;

(viii) Subject to the limitations of this paragraph, for Category IIIb operations predicated on the use of a fail-passive rollout control system, at least one manual rollout using visual reference or a combination of visual and instrument references must be executed. The maneuver required by this paragraph shall be initiated by a fail-passive disconnect of the rollout control system—

(A) After main gear touchdown;

(B) Prior to nose gear touchdown;

(C) In conditions representative of the most adverse lateral touchdown displacement allowing a safe landing on the runway; and

(D) In weather conditions anticipated in Category IIIb operations.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40900, July 30, 1997]

§61.69 Glider and unpowered ultralight vehicle towing: Experience and training requirements.

(a) No person may act as pilot in command for towing a glider or unpowered ultralight vehicle unless that person—

(1) Holds at least a private pilot certificate with a category rating for powered aircraft;

(2) Has logged at least 100 hours of pilot-in-command time in the aircraft category, class and type, if required, that the pilot is using to tow a glider or unpowered ultralight vehicle;

(3) Has a logbook endorsement from an authorized instructor who certifies that the person has received ground and flight training in gliders or unpowered ultralight vehicles and is proficient in—

(i) The techniques and procedures essential to the safe towing of gliders or unpowered ultralight vehicles, including airspeed limitations;

(ii) Emergency procedures;

(iii) Signals used; and

(iv) Maximum angles of bank.

(4) Except as provided in paragraph (b) of this section, has logged at least three flights as the sole manipulator of the controls of an aircraft towing a glider or unpowered ultralight vehicle simulating towing flight procedures while accompanied by a pilot who meets the requirements of paragraphs (c) and (d) of this section;

(5) Except as provided in paragraph (b) of this section, has received a logbook endorsement from the pilot, described in paragraph (a)(4) of this section, certifying that the person has accomplished at least 3 flights in an aircraft while towing a glider or unpowered ultralight vehicle, or while simulating towing flight procedures; and

(6) Within the preceding 12 months has—

(i) Made at least three actual or simulated tows of a glider or unpowered ultralight vehicle while accompanied by a qualified pilot who meets the requirements of this section; or

(ii) Made at least three flights as pilot in command of a glider or unpowered ultralight vehicle towed by an aircraft.

(b) Any person who, before May 17, 1967, has made and logged 10 or more flights as pilot in command of an aircraft towing a glider or unpowered ultralight vehicle in accordance with a certificate of waiver need not comply with paragraphs (a)(4) and (a)(5) of this section.

(c) The pilot, described in paragraph (a)(4) of this section, who endorses the logbook of a person seeking towing privileges must have—

(1) Met the requirements of this section prior to endorsing the logbook of the person seeking towing privileges; and

(2) Logged at least 10 flights as pilot in command of an aircraft while towing a glider or unpowered ultralight vehicle.

(d) If the pilot described in paragraph (a)(4) of this section holds only a private pilot certificate, then that pilot must have—

(1) Logged at least 100 hours of pilot-in-command time in airplanes, or 200 hours of pilot-in-command time in a combination of powered and other-than-powered aircraft; and

(2) Performed and logged at least three flights within the 12 calendar months preceding the month that pilot accompanies or endorses the logbook of a person seeking towing privileges—

(i) In an aircraft while towing a glider or unpowered ultralight vehicle accompanied by another pilot who meets the requirements of this section; or

(ii) As pilot in command of a glider or unpowered ultralight vehicle being towed by another aircraft.

[Doc. No. FAA–2001–11133, 69 FR 44866, July 27, 2004]

§ 61.71 Graduates of an approved training program other than under this part: Special rules.

(a) A person who graduates from an approved training program under part 141 or part 142 of this chapter is considered to have met the applicable aeronautical experience, aeronautical knowledge, and areas of operation requirements of this part if that person presents the graduation certificate and passes the required practical test within the 60-day period after the date of graduation.

(b) A person may apply for an airline transport pilot certificate, type rating, or both under this part, and will be considered to have met the applicable requirements under § 61.157 of this part for that certificate and rating, if that person has:

(1) Satisfactorily accomplished an approved training program and the pilot-in-command proficiency check for that airplane type, in accordance with the pilot-in-command requirements under subparts N and O of part 121 of this chapter; and

(2) Applied for the airline transport pilot certificate, type rating, or both within the 60-day period from the date the person satisfactorily accomplished the approved training program and pilot-in-command proficiency check for that airplane type.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40901, July 30, 1997]

§ 61.73 Military pilots or former military pilots: Special rules.

(a) *General.* Except for a rated military pilot or former rated military pilot who has been removed from flying status for lack of proficiency, or because of disciplinary action involving aircraft operations, a rated military pilot or former rated military pilot who meets the applicable requirements of this section may apply, on the basis of his or her military training, for:

(1) A commercial pilot certificate;

(2) An aircraft rating in the category and class of aircraft for which that military pilot is qualified;

(3) An instrument rating with the appropriate aircraft rating for which that military pilot is qualified; or

(4) A type rating, if appropriate.

(b) *Military pilots on active flying status within the past 12 months.* A rated military pilot or former rated military pilot who has been on active flying status within the 12 months before applying must:

(1) Pass a knowledge test on the appropriate parts of this chapter that apply to pilot privileges and limitations, air traffic and general operating rules, and accident reporting rules;

(2) Present documentation showing compliance with the requirements of paragraph (d) of this section for at least one aircraft category rating; and

(3) Present documentation showing that the applicant is or was, at any time during the 12 calendar months before the month of application—

(i) A rated military pilot on active flying status in an armed force of the United States; or

(ii) A rated military pilot of an armed force of a foreign contracting State to the Convention on International Civil Aviation, assigned to pilot duties (other than flight training) with an armed force of the United States and holds, at the time of application, a current civil pilot license issued by that contracting State authorizing at least the privileges of the pilot certificate sought.

(c) *Military pilots not on active flying status during the 12 calendar months before the month of application.* A rated military pilot or former rated military pilot who has not been on active flying status within the 12 calendar months before the month of application must:

(1) Pass the appropriate knowledge and practical tests prescribed in this part for the certificate or rating sought; and

(2) Present documentation showing that the applicant was, before the beginning of the 12th calendar month before the month of application, a rated military pilot as prescribed by paragraph (b)(3)(i) or paragraph (b)(3)(ii) of this section.

(d) *Aircraft category, class, and type ratings.* A rated military pilot or former rated military pilot who applies for an aircraft category, class, or type rating, if applicable, is issued that rating at the commercial pilot certificate level if the pilot presents documentary evidence that shows satisfactory accomplishment of:

(1) An official U.S. military pilot check and instrument proficiency check in that aircraft category, class, or type, if applicable, as pilot in command during the 12 calendar months before the month of application;

(2) At least 10 hours of pilot-in-command time in that aircraft category, class, or type, if applicable, during the 12 calendar months before the month of application; or

(3) An FAA practical test in that aircraft after—

(i) Meeting the requirements of paragraphs (b)(1) and (b)(2) of this section; and

(ii) Having received an endorsement from an authorized instructor who certifies that the pilot is proficient to take the required practical test, and that endorsement is made within the 60-day period preceding the date of the practical test.

(e) *Instrument rating.* A rated military pilot or former rated military pilot who applies for an airplane instrument rating, a helicopter instrument rating, or a powered-lift instrument rating to be added to his or her commercial pilot certificate may apply for an instrument rating if the pilot has, within the 12 calendar months preceding the month of application:

(1) Passed an instrument proficiency check by a U.S. Armed Force in the aircraft category for the instrument rating sought; and

(2) Received authorization from a U.S. Armed Force to conduct IFR flights on Federal airways in that aircraft category and class for the instrument rating sought.

(f) *Aircraft type rating.* An aircraft type rating is issued only for aircraft types that the Administrator has certificated for civil operations.

(g) *Aircraft type rating placed on an airline transport pilot certificate.* A rated military pilot or former rated military pilot who holds an airline transport

pilot certificate and who requests an aircraft type rating to be placed on that person's airline transport pilot certificate may be issued that aircraft type rating at the airline transport pilot certificate level, provided that person:

(1) Holds a category and class rating for that type of aircraft at the airline transport pilot certificate level; and

(2) Passed an official U.S. military pilot check and instrument proficiency check in that type of aircraft as pilot in command during the 12 calendar months before the month of application.

(h) *Evidentiary documents.* The following documents are satisfactory evidence for the purposes indicated:

(1) An official identification card issued to the pilot by an armed force may be used to demonstrate membership in the armed forces.

(2) An original or a copy of a certificate of discharge or release may be used to demonstrate discharge or release from an armed force or former membership in an armed force.

(3) Current or previous status as a rated military pilot with a U.S. Armed Force may be demonstrated by—

(i) An official U.S. Armed Force order to flight status as a military pilot;

(ii) An official U.S. Armed Force form or logbook showing military pilot status; or

(iii) An official order showing that the rated military pilot graduated from a U.S. military pilot school and received a rating as a military pilot.

(4) A certified U.S. Armed Force logbook or an appropriate official U.S. Armed Force form or summary may be used to demonstrate flight time in military aircraft as a member of a U.S. Armed Force.

(5) An official U.S. Armed Force record of a military checkout as pilot in command may be used to demonstrate pilot in command status.

(6) A current instrument grade slip that is issued by a U.S. Armed Force, or an official record of satisfactory accomplishment of an instrument proficiency check during the 12 calendar months preceding the month of the application may be used to demonstrate instrument pilot qualification.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40901, July 30, 1997]

§ 61.75 Private pilot certificate issued on the basis of a foreign pilot license.

(a) *General.* A person who holds a current foreign pilot license issued by a contracting State to the Convention on International Civil Aviation may apply for and be issued a private pilot certificate with the appropriate ratings when the application is based on the foreign pilot license that meets the requirements of this section.

(b) *Certificate issued.* A U.S. private pilot certificate that is issued under this section shall specify the person's foreign license number and country of issuance. A person who holds a current foreign pilot license issued by a contracting State to the Convention on International Civil Aviation may be issued a private pilot certificate based on the foreign pilot license without any further showing of proficiency, provided the applicant:

(1) Meets the requirements of this section;

(2) Holds a foreign pilot license that—

(i) Is not under an order of revocation or suspension by the foreign country that issued the foreign pilot license; and

(ii) Does not contain an endorsement stating that the applicant has not met all of the standards of ICAO for that license;

(3) Does not currently hold a U.S. pilot certificate;

(4) Holds a current medical certificate issued under part 67 of this chapter or a current medical certificate issued by the country that issued the person's foreign pilot license; and

(5) Is able to read, speak, write, and understand the English language. If the applicant is unable to meet one of these requirements due to medical reasons, then the Administrator may place such operating limitations on that applicant's pilot certificate as are necessary for the safe operation of the aircraft.

(c) *Aircraft ratings issued.* Aircraft ratings listed on a person's foreign

pilot license, in addition to any issued after testing under the provisions of this part, may be placed on that person's U.S. pilot certificate.

(d) *Instrument ratings issued.* A person who holds an instrument rating on the foreign pilot license issued by a contracting State to the Convention on International Civil Aviation may be issued an instrument rating on a U.S. private pilot certificate provided:

(1) The person's foreign pilot license authorizes instrument privileges;

(2) Within 24 months preceding the month in which the person applies for the instrument rating, the person passes the appropriate knowledge test; and

(3) The person is able to read, speak, write, and understand the English language. If the applicant is unable to meet one of these requirements due to medical reasons, then the Administrator may place such operating limitations on that applicant's pilot certificate as are necessary for the safe operation of the aircraft.

(e) *Operating privileges and limitations.* A person who receives a U.S. private pilot certificate that has been issued under the provisions of this section:

(1) May act as a pilot of a civil aircraft of U.S. registry in accordance with the private pilot privileges authorized by this part;

(2) Is limited to the privileges placed on the certificate by the Administrator;

(3) Is subject to the limitations and restrictions on the person's U.S. certificate and foreign pilot license when exercising the privileges of that U.S. pilot certificate in an aircraft of U.S. registry operating within or outside the United States; and

(4) Shall not exercise the privileges of that U.S. private pilot certificate when the person's foreign pilot license has been revoked or suspended.

(f) *Limitation on licenses used as the basis for a U.S. certificate.* Only one foreign pilot license may be used as a basis for issuing a U.S. private pilot certificate. The foreign pilot license and medical certification used as a basis for issuing a U.S. private pilot certificate under this section must be in the English language or accompanied by an English language transcription that has been signed by an official or representative of the foreign aviation authority that issued the foreign pilot license.

(g) *Limitation placed on a U.S. private pilot certificate.* A U.S. private pilot certificate issued under this section is valid only when the holder has the foreign pilot license upon which the issuance of the U.S. private pilot certificate was based in the holder's personal possession or readily accessible in the aircraft.

§61.77 Special purpose pilot authorization: Operation of U.S.-registered civil aircraft leased by a person who is not a U.S. citizen.

(a) *General.* The holder of a foreign pilot license issued by a contracting State to the Convention on International Civil Aviation who meets the requirements of this section may be issued a special purpose pilot authorization by the Administrator for the purpose of performing pilot duties—

(1) On a civil aircraft of U.S. registry that is leased to a person who is not a citizen of the United States, and

(2) For carrying persons or property for compensation or hire on that aircraft.

(b) *Eligibility.* To be eligible for the issuance or renewal of a special purpose pilot authorization, an applicant must present the following to an FAA Flight Standards District Office:

(1) A current foreign pilot license that has been issued by the aeronautical authority of a contracting State to the Convention on International Civil Aviation from which the person holds citizenship or resident status and that contains the appropriate aircraft category, class, instrument rating, and type rating, if appropriate, for the aircraft to be flown;

(2) A current certification by the lessee of the aircraft—

(i) Stating that the applicant is employed by the lessee;

(ii) Specifying the aircraft type on which the applicant will perform pilot duties; and

(iii) Stating that the applicant has received ground and flight instruction that qualifies the applicant to perform the duties to be assigned on the aircraft.

(3) Documentation showing when the applicant will reach the age of 60 years (an official copy of the applicant's birth certificate or other official documentation);

(4) Documentation that the applicant meets the medical standards for the issuance of the foreign pilot license from the aeronautical authority of the contracting State to the Convention on International Civil Aviation where the applicant holds citizenship or resident status;

(5) Documentation that the applicant meets the recent flight experience requirements of this part (a logbook or flight record); and

(6) A statement that the applicant does not already hold a special purpose pilot authorization; however, if the applicant already holds a special purpose pilot authorization, then that special purpose pilot authorization must be surrendered to either the FAA Flight Standards District Office that issued it, or the FAA Flight Standards District Office processing the application for the authorization, prior to being issued another special purpose pilot authorization.

(c) *Privileges.* A person issued a special purpose pilot authorization under this section—

(1) May exercise the privileges prescribed on the special purpose pilot authorization; and

(2) Must comply with the limitations specified in this section and any additional limitations specified on the special purpose pilot authorization.

(d) *General limitations.* A special purpose pilot authorization is valid only—

(1) For flights between foreign countries or for flights in foreign air commerce within the time period allotted on the authorization;

(2) If the foreign pilot license required by paragraph (b)(1) of this section, the medical documentation required by paragraph (b)(4) of this section, and the special purpose pilot authorization issued under this section are in the holder's physical possession or immediately accessible in the aircraft;

(3) While the holder is employed by the person to whom the aircraft described in the certification required by paragraph (b)(2) of this section is leased;

(4) While the holder is performing pilot duties on the U.S.-registered aircraft described in the certification required by paragraph (b)(2) of this section; and

(5) If the holder has only one special purpose pilot authorization as provided in paragraph (b)(6) of this section.

(e) *Age limitation.* Except as provided in paragraph (g) of this section, no person who holds a special purpose pilot authorization issued under this part, and no person who holds a special purpose pilot certificate issued under this part before August 4, 1997, shall serve as a pilot on a civil airplane of U.S. registry if the person has reached his or her 60th birthday, in the following operations:

(1) Scheduled international air services carrying passengers in turbojet-powered airplanes;

(2) Scheduled international air services carrying passengers in airplanes having a passenger-seat configuration of more than nine passenger seats, excluding each crewmember seat;

(3) Nonscheduled international air transportation for compensation or hire in airplanes having a passenger-seat configuration of more than 30 passenger seats, excluding each crewmember seat; or

(4) Scheduled international air services, or nonscheduled international air transportation for compensation or hire, in airplanes having a payload capacity of more than 7,500 pounds.

(f) *Definitions.* (1) *International air service,* as used in paragraph (e) of this section, means scheduled air service performed in airplanes for the public transport of passengers, mail, or cargo, in which the service passes through the air space over the territory of more than one country.

(2) *International air transportation,* as used in paragraph (e) of this section, means air transportation performed in airplanes for the public transport of passengers, mail, or cargo, in which service passes through the air space over the territory of more than one country.

(g) *Delayed pilot age limitations for certain operations.* Until December 20, 1999,

a person may serve as a pilot in the operations specified in paragraph (e) of this section after that person has reached his or her 60th birthday, if, on March 20, 1997, that person was employed as a pilot in any of the following operations:

(1) Scheduled international air services carrying passengers in nontransport category turbopropeller-powered airplanes type certificated after December 31, 1964, that have a passenger-seat configuration of 10 to 19 seats;

(2) Scheduled international air services carrying passengers in transport category turbopropeller-powered airplanes that have a passenger-seat configuration of 20 to 30 seats; or

(3) Scheduled international air services carrying passengers in turbojet-powered airplanes having a passenger-seat configuration of 1 to 30 seats.

(h) *Expiration date.* Each special purpose pilot authorization issued under this section expires—

(1) 60 calendar months from the month it was issued, unless sooner suspended or revoked;

(2) When the lease agreement for the aircraft expires or the lessee terminates the employment of the person who holds the special purpose pilot authorization;

(3) Whenever the person's foreign pilot license has been suspended, revoked, or is no longer valid; or

(4) When the person no longer meets the medical standards for the issuance of the foreign pilot license.

(i) *Renewal.* A person exercising the privileges of a special purpose pilot authorization may apply for a 60-calendar-month extension of that authorization, provided the person—

(1) Continues to meet the requirements of this section; and

(2) Surrenders the expired special purpose pilot authorization upon receipt of the new authorization.

(j) *Surrender.* The holder of a special purpose pilot authorization must surrender the authorization to the Administrator within 7 days after the date the authorization terminates.

[Doc. No. 25910, 62 FR 40901, July 30, 1997]

Subpart C—Student Pilots

§ 61.81 Applicability.

This subpart prescribes the requirements for the issuance of student pilot certificates, the conditions under which those certificates are necessary, and the general operating rules and limitations for the holders of those certificates.

§ 61.83 Eligibility requirements for student pilots.

To be eligible for a student pilot certificate, an applicant must:

(a) Be at least 16 years of age for other than the operation of a glider or balloon.

(b) Be at least 14 years of age for the operation of a glider or balloon.

(c) Be able to read, speak, write, and understand the English language. If the applicant is unable to meet one of these requirements due to medical reasons, then the Administrator may place such operating limitations on that applicant's pilot certificate as are necessary for the safe operation of the aircraft.

§ 61.85 Application.

An application for a student pilot certificate is made on a form and in a manner provided by the Administrator and is submitted to:

(a) A designated aviation medical examiner if applying for an FAA medical certificate under part 67 of this chapter;

(b) An examiner; or

(c) A Flight Standards District Office.

§ 61.87 Solo requirements for student pilots.

(a) *General.* A student pilot may not operate an aircraft in solo flight unless that student has met the requirements of this section. The term ''solo flight'' as used in this subpart means that flight time during which a student pilot is the sole occupant of the aircraft or that flight time during which the student performs the duties of a pilot in command of a gas balloon or an airship requiring more than one pilot flight crewmember.

(b) *Aeronautical knowledge.* A student pilot must demonstrate satisfactory

aeronautical knowledge on a knowledge test that meets the requirements of this paragraph:

(1) The test must address the student pilot's knowledge of—

(i) Applicable sections of parts 61 and 91 of this chapter;

(ii) Airspace rules and procedures for the airport where the solo flight will be performed; and

(iii) Flight characteristics and operational limitations for the make and model of aircraft to be flown.

(2) The student's authorized instructor must—

(i) Administer the test; and

(ii) At the conclusion of the test, review all incorrect answers with the student before authorizing that student to conduct a solo flight.

(c) *Pre-solo flight training.* Prior to conducting a solo flight, a student pilot must have:

(1) Received and logged flight training for the maneuvers and procedures of this section that are appropriate to the make and model of aircraft to be flown; and

(2) Demonstrated satisfactory proficiency and safety, as judged by an authorized instructor, on the maneuvers and procedures required by this section in the make and model of aircraft or similar make and model of aircraft to be flown.

(d) *Maneuvers and procedures for pre-solo flight training in a single-engine airplane.* A student pilot who is receiving training for a single-engine airplane rating or privileges must receive and log flight training for the following maneuvers and procedures:

(1) Proper flight preparation procedures, including preflight planning and preparation, powerplant operation, and aircraft systems;

(2) Taxiing or surface operations, including runups;

(3) Takeoffs and landings, including normal and crosswind;

(4) Straight and level flight, and turns in both directions;

(5) Climbs and climbing turns;

(6) Airport traffic patterns, including entry and departure procedures;

(7) Collision avoidance, windshear avoidance, and wake turbulence avoidance;

(8) Descents, with and without turns, using high and low drag configurations;

(9) Flight at various airspeeds from cruise to slow flight;

(10) Stall entries from various flight attitudes and power combinations with recovery initiated at the first indication of a stall, and recovery from a full stall;

(11) Emergency procedures and equipment malfunctions;

(12) Ground reference maneuvers;

(13) Approaches to a landing area with simulated engine malfunctions;

(14) Slips to a landing; and

(15) Go-arounds.

(e) *Maneuvers and procedures for pre-solo flight training in a multiengine airplane.* A student pilot who is receiving training for a multiengine airplane rating must receive and log flight training for the following maneuvers and procedures:

(1) Proper flight preparation procedures, including preflight planning and preparation, powerplant operation, and aircraft systems;

(2) Taxiing or surface operations, including runups;

(3) Takeoffs and landings, including normal and crosswind;

(4) Straight and level flight, and turns in both directions;

(5) Climbs and climbing turns;

(6) Airport traffic patterns, including entry and departure procedures;

(7) Collision avoidance, windshear avoidance, and wake turbulence avoidance;

(8) Descents, with and without turns, using high and low drag configurations;

(9) Flight at various airspeeds from cruise to slow flight;

(10) Stall entries from various flight attitudes and power combinations with recovery initiated at the first indication of a stall, and recovery from a full stall;

(11) Emergency procedures and equipment malfunctions;

(12) Ground reference maneuvers;

(13) Approaches to a landing area with simulated engine malfunctions; and

(14) Go-arounds.

(f) *Maneuvers and procedures for pre-solo flight training in a helicopter.* A student pilot who is receiving training for a helicopter rating must receive and

log flight training for the following maneuvers and procedures:

(1) Proper flight preparation procedures, including preflight planning and preparation, powerplant operation, and aircraft systems;

(2) Taxiing or surface operations, including runups;

(3) Takeoffs and landings, including normal and crosswind;

(4) Straight and level flight, and turns in both directions;

(5) Climbs and climbing turns;

(6) Airport traffic patterns, including entry and departure procedures;

(7) Collision avoidance, windshear avoidance, and wake turbulence avoidance;

(8) Descents with and without turns;

(9) Flight at various airspeeds;

(10) Emergency procedures and equipment malfunctions;

(11) Ground reference maneuvers;

(12) Approaches to the landing area;

(13) Hovering and hovering turns;

(14) Go-arounds;

(15) Simulated emergency procedures, including autorotational descents with a power recovery and power recovery to a hover;

(16) Rapid decelerations; and

(17) Simulated one-engine-inoperative approaches and landings for multiengine helicopters.

(g) *Maneuvers and procedures for presolo flight training in a gyroplane.* A student pilot who is receiving training for a gyroplane rating or privileges must receive and log flight training for the following maneuvers and procedures:

(1) Proper flight preparation procedures, including preflight planning and preparation, powerplant operation, and aircraft systems;

(2) Taxiing or surface operations, including runups;

(3) Takeoffs and landings, including normal and crosswind;

(4) Straight and level flight, and turns in both directions;

(5) Climbs and climbing turns;

(6) Airport traffic patterns, including entry and departure procedures;

(7) Collision avoidance, windshear avoidance, and wake turbulence avoidance;

(8) Descents with and without turns;

(9) Flight at various airspeeds;

(10) Emergency procedures and equipment malfunctions;

(11) Ground reference maneuvers;

(12) Approaches to the landing area;

(13) High rates of descent with power on and with simulated power off, and recovery from those flight configurations;

(14) Go-arounds; and

(15) Simulated emergency procedures, including simulated power-off landings and simulated power failure during departures.

(h) *Maneuvers and procedures for presolo flight training in a powered-lift.* A student pilot who is receiving training for a powered-lift rating must receive and log flight training in the following maneuvers and procedures:

(1) Proper flight preparation procedures, including preflight planning and preparation, powerplant operation, and aircraft systems;

(2) Taxiing or surface operations, including runups;

(3) Takeoffs and landings, including normal and crosswind;

(4) Straight and level flight, and turns in both directions;

(5) Climbs and climbing turns;

(6) Airport traffic patterns, including entry and departure procedures;

(7) Collision avoidance, windshear avoidance, and wake turbulence avoidance;

(8) Descents with and without turns;

(9) Flight at various airspeeds from cruise to slow flight;

(10) Stall entries from various flight attitudes and power combinations with recovery initiated at the first indication of a stall, and recovery from a full stall;

(11) Emergency procedures and equipment malfunctions;

(12) Ground reference maneuvers;

(13) Approaches to a landing with simulated engine malfunctions;

(14) Go-arounds;

(15) Approaches to the landing area;

(16) Hovering and hovering turns; and

(17) For multiengine powered-lifts, simulated one-engine-inoperative approaches and landings.

(i) *Maneuvers and procedures for presolo flight training in a glider.* A student pilot who is receiving training for a glider rating or privileges must receive

and log flight training for the following maneuvers and procedures:

(1) Proper flight preparation procedures, including preflight planning, preparation, aircraft systems, and, if appropriate, powerplant operations;

(2) Taxiing or surface operations, including runups, if applicable;

(3) Launches, including normal and crosswind;

(4) Straight and level flight, and turns in both directions, if applicable;

(5) Airport traffic patterns, including entry procedures;

(6) Collision avoidance, windshear avoidance, and wake turbulence avoidance;

(7) Descents with and without turns using high and low drag configurations;

(8) Flight at various airspeeds;

(9) Emergency procedures and equipment malfunctions;

(10) Ground reference maneuvers, if applicable;

(11) Inspection of towline rigging and review of signals and release procedures, if applicable;

(12) Aerotow, ground tow, or self-launch procedures;

(13) Procedures for disassembly and assembly of the glider;

(14) Stall entry, stall, and stall recovery;

(15) Straight glides, turns, and spirals;

(16) Landings, including normal and crosswind;

(17) Slips to a landing;

(18) Procedures and techniques for thermalling; and

(19) Emergency operations, including towline break procedures.

(j) *Maneuvers and procedures for pre-solo flight training in an airship.* A student pilot who is receiving training for an airship rating or privileges must receive and log flight training for the following maneuvers and procedures:

(1) Proper flight preparation procedures, including preflight planning and preparation, powerplant operation, and aircraft systems;

(2) Taxiing or surface operations, including runups;

(3) Takeoffs and landings, including normal and crosswind;

(4) Straight and level flight, and turns in both directions;

(5) Climbs and climbing turns;

(6) Airport traffic patterns, including entry and departure procedures;

(7) Collision avoidance, windshear avoidance, and wake turbulence avoidance;

(8) Descents with and without turns;

(9) Flight at various airspeeds from cruise to slow flight;

(10) Emergency procedures and equipment malfunctions;

(11) Ground reference maneuvers;

(12) Rigging, ballasting, and controlling pressure in the ballonets, and superheating; and

(13) Landings with positive and with negative static trim.

(k) *Maneuvers and procedures for pre-solo flight training in a balloon.* A student pilot who is receiving training in a balloon must receive and log flight training for the following maneuvers and procedures:

(1) Layout and assembly procedures;

(2) Proper flight preparation procedures, including preflight planning and preparation, and aircraft systems;

(3) Ascents and descents;

(4) Landing and recovery procedures;

(5) Emergency procedures and equipment malfunctions;

(6) Operation of hot air or gas source, ballast, valves, vents, and rip panels, as appropriate;

(7) Use of deflation valves or rip panels for simulating an emergency;

(8) The effects of wind on climb and approach angles; and

(9) Obstruction detection and avoidance techniques.

(l) *Maneuvers and procedures for pre-solo flight training in a powered parachute.* A student pilot who is receiving training for a powered parachute rating or privileges must receive and log flight training for the following maneuvers and procedures:

(1) Proper flight preparation procedures, including preflight planning and preparation, preflight assembly and rigging, aircraft systems, and powerplant operations.

(2) Taxiing or surface operations, including run-ups.

(3) Takeoffs and landings, including normal and crosswind.

(4) Straight and level flight, and turns in both directions.

(5) Climbs, and climbing turns in both directions.

(6) Airport traffic patterns, including entry and departure procedures.

(7) Collision avoidance, windshear avoidance, and wake turbulence avoidance.

(8) Descents, and descending turns in both directions.

(9) Emergency procedures and equipment malfunctions.

(10) Ground reference maneuvers.

(11) Straight glides, and gliding turns in both directions.

(12) Go-arounds.

(13) Approaches to landing areas with a simulated engine malfunction.

(14) Procedures for canopy packing and aircraft disassembly.

(m) *Maneuvers and procedures for pre-solo flight training in a weight-shift-control aircraft.* A student pilot who is receiving training for a weight-shift-control aircraft rating or privileges must receive and log flight training for the following maneuvers and procedures:

(1) Proper flight preparation procedures, including preflight planning and preparation, preflight assembly and rigging, aircraft systems, and powerplant operations.

(2) Taxiing or surface operations, including run-ups.

(3) Takeoffs and landings, including normal and crosswind.

(4) Straight and level flight, and turns in both directions.

(5) Climbs, and climbing turns in both directions.

(6) Airport traffic patterns, including entry and departure procedures.

(7) Collision avoidance, windshear avoidance, and wake turbulence avoidance.

(8) Descents, and descending turns in both directions.

(9) Flight at various airspeeds from maximum cruise to slow flight.

(10) Emergency procedures and equipment malfunctions.

(11) Ground reference maneuvers.

(12) Stall entry, stall, and stall recovery.

(13) Straight glides, and gliding turns in both directions.

(14) Go-arounds.

(15) Approaches to landing areas with a simulated engine malfunction.

(16) Procedures for disassembly.

(n) *Limitations on student pilots operating an aircraft in solo flight.* A student pilot may not operate an aircraft in solo flight unless that student pilot has received:

(1) An endorsement from an authorized instructor on his or her student pilot certificate for the specific make and model aircraft to be flown; and

(2) An endorsement in the student's logbook for the specific make and model aircraft to be flown by an authorized instructor, who gave the training within the 90 days preceding the date of the flight.

(o) *Limitations on student pilots operating an aircraft in solo flight at night.* A student pilot may not operate an aircraft in solo flight at night unless that student pilot has received:

(1) Flight training at night on night flying procedures that includes takeoffs, approaches, landings, and go-arounds at night at the airport where the solo flight will be conducted;

(2) Navigation training at night in the vicinity of the airport where the solo flight will be conducted; and

(3) An endorsement in the student's logbook for the specific make and model aircraft to be flown for night solo flight by an authorized instructor who gave the training within the 90-day period preceding the date of the flight.

(p) *Limitations on flight instructors authorizing solo flight.* (1) No instructor may authorize a student pilot to perform a solo flight unless that instructor has—

(i) Given that student pilot training in the make and model of aircraft or a similar make and model of aircraft in which the solo flight is to be flown;

(ii) Determined the student pilot is proficient in the maneuvers and procedures prescribed in this section;

(iii) Determined the student pilot is proficient in the make and model of aircraft to be flown;

(iv) Ensured that the student pilot's certificate has been endorsed by an instructor authorized to provide flight training for the specific make and model aircraft to be flown; and

(v) Endorsed the student pilot's logbook for the specific make and model aircraft to be flown, and that endorsement remains current for solo flight

privileges, provided an authorized instructor updates the student's logbook every 90 days thereafter.

(2) The flight training required by this section must be given by an instructor authorized to provide flight training who is appropriately rated and current.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40902, July 30, 1997; Amdt. 61–104, 63 FR 20287, Apr. 23, 1998; Amdt. 61–110, 69 FR 44866, July 27, 2004]

§ 61.89 General limitations.

(a) A student pilot may not act as pilot in command of an aircraft:

(1) That is carrying a passenger;

(2) That is carrying property for compensation or hire;

(3) For compensation or hire;

(4) In furtherance of a business;

(5) On an international flight, except that a student pilot may make solo training flights from Haines, Gustavus, or Juneau, Alaska, to White Horse, Yukon, Canada, and return over the province of British Columbia;

(6) With a flight or surface visibility of less than 3 statute miles during daylight hours or 5 statute miles at night;

(7) When the flight cannot be made with visual reference to the surface; or

(8) In a manner contrary to any limitations placed in the pilot's logbook by an authorized instructor.

(b) A student pilot may not act as a required pilot flight crewmember on any aircraft for which more than one pilot is required by the type certificate of the aircraft or regulations under which the flight is conducted, except when receiving flight training from an authorized instructor on board an airship, and no person other than a required flight crewmember is carried on the aircraft.

(c) A student pilot seeking a sport pilot certificate must comply with the provisions of paragraphs (a) and (b) of this section and may not act as pilot in command—

(1) Of an aircraft other than a light-sport aircraft;

(2) At night;

(3) At an altitude of more than 10,000 feet MSL; and

(4) In Class B, C, and D airspace, at an airport located in Class B, C, or D airspace, and to, from, through, or on an airport having an operational control tower without having received the ground and flight training specified in § 61.94 and an endorsement from an authorized instructor.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997, as amended by Amdt. 61–110, 69 FR 44867, July 27, 2004]

§ 61.91 [Reserved]

§ 61.93 Solo cross-country flight requirements.

(a) *General.* (1) Except as provided in paragraph (b) of this section, a student pilot must meet the requirements of this section before—

(i) Conducting a solo cross-country flight, or any flight greater than 25 nautical miles from the airport from where the flight originated.

(ii) Making a solo flight and landing at any location other than the airport of origination.

(2) Except as provided in paragraph (b) of this section, a student pilot who seeks solo cross-country flight privileges must:

(i) Have received flight training from an instructor authorized to provide flight training on the maneuvers and procedures of this section that are appropriate to the make and model of aircraft for which solo cross-country privileges are sought;

(ii) Have demonstrated cross-country proficiency on the appropriate maneuvers and procedures of this section to an authorized instructor;

(iii) Have satisfactorily accomplished the pre-solo flight maneuvers and procedures required by § 61.87 of this part in the make and model of aircraft or similar make and model of aircraft for which solo cross-country privileges are sought; and

(iv) Comply with any limitations included in the authorized instructor's endorsement that are required by paragraph (c) of this section.

(3) A student pilot who seeks solo cross-country flight privileges must have received ground and flight training from an authorized instructor on the cross-country maneuvers and procedures listed in this section that are appropriate to the aircraft to be flown.

(b) *Authorization to perform certain solo flights and cross-country flights.* A

student pilot must obtain an endorsement from an authorized instructor to make solo flights from the airport where the student pilot normally receives training to another location. A student pilot who receives this endorsement must comply with the requirements of this paragraph.

(1) Solo flights may be made to another airport that is within 25 nautical miles from the airport where the student pilot normally receives training, provided—

(i) An authorized instructor has given the student pilot flight training at the other airport, and that training includes flight in both directions over the route, entering and exiting the traffic pattern, and takeoffs and landings at the other airport;

(ii) The authorized instructor who gave the training endorses the student pilot's logbook authorizing the flight;

(iii) The student pilot has current solo flight endorsements in accordance with § 61.87 of this part;

(iv) The authorized instructor has determined that the student pilot is proficient to make the flight; and

(v) The purpose of the flight is to practice takeoffs and landings at that other airport.

(2) Repeated specific solo cross-country flights may be made to another airport that is within 50 nautical miles of the airport from which the flight originated, provided—

(i) The authorized instructor has given the student flight training in both directions over the route, including entering and exiting the traffic patterns, takeoffs, and landings at the airports to be used;

(ii) The authorized instructor who gave the training has endorsed the student's logbook certifying that the student is proficient to make such flights;

(iii) The student has current solo flight endorsements in accordance with § 61.87 of this part; and

(iv) The student has current solo cross-country flight endorsements in accordance with paragraph (c) of this section; however, for repeated solo cross-country flights to another airport within 50 nautical miles from which the flight originated, separate endorsements are not required to be made for each flight.

(c) *Endorsements for solo cross-country flights.* Except as specified in paragraph (b)(2) of this section, a student pilot must have the endorsements prescribed in this paragraph for each cross-country flight:

(1) *Student pilot certificate endorsement.* A student pilot must have a solo cross-country endorsement from the authorized instructor who conducted the training, and that endorsement must be placed on that person's student pilot certificate for the specific category of aircraft to be flown.

(2) *Logbook endorsement.* (i) A student pilot must have a solo cross-country endorsement from an authorized instructor that is placed in the student pilot's logbook for the specific make and model of aircraft to be flown.

(ii) For each cross-country flight, the authorized instructor who reviews the cross-country planning must make an endorsement in the person's logbook after reviewing that person's cross-country planning, as specified in paragraph (d) of this section. The endorsement must—

(A) Specify the make and model of aircraft to be flown;

(B) State that the student's preflight planning and preparation is correct and that the student is prepared to make the flight safely under the known conditions; and

(C) State that any limitations required by the student's authorized instructor are met.

(d) *Limitations on authorized instructors to permit solo cross-country flights.* An authorized instructor may not permit a student pilot to conduct a solo cross-country flight unless that instructor has:

(1) Determined that the student's cross-country planning is correct for the flight;

(2) Reviewed the current and forecast weather conditions and has determined that the flight can be completed under VFR;

(3) Determined that the student is proficient to conduct the flight safely;

(4) Determined that the student has the appropriate solo cross-country endorsement for the make and model of aircraft to be flown; and

(5) Determined that the student's solo flight endorsement is current for

the make and model aircraft to be flown.

(e) *Maneuvers and procedures for cross-country flight training in a single-engine airplane.* A student pilot who is receiving training for cross-country flight in a single-engine airplane must receive and log flight training in the following maneuvers and procedures:

(1) Use of aeronautical charts for VFR navigation using pilotage and dead reckoning with the aid of a magnetic compass;

(2) Use of aircraft performance charts pertaining to cross-country flight;

(3) Procurement and analysis of aeronautical weather reports and forecasts, including recognition of critical weather situations and estimating visibility while in flight;

(4) Emergency procedures;

(5) Traffic pattern procedures that include area departure, area arrival, entry into the traffic pattern, and approach;

(6) Procedures and operating practices for collision avoidance, wake turbulence precautions, and windshear avoidance;

(7) Recognition, avoidance, and operational restrictions of hazardous terrain features in the geographical area where the cross-country flight will be flown;

(8) Procedures for operating the instruments and equipment installed in the aircraft to be flown, including recognition and use of the proper operational procedures and indications;

(9) Use of radios for VFR navigation and two-way communications;

(10) Takeoff, approach, and landing procedures, including short-field, soft-field, and crosswind takeoffs, approaches, and landings;

(11) Climbs at best angle and best rate; and

(12) Control and maneuvering solely by reference to flight instruments, including straight and level flight, turns, descents, climbs, use of radio aids, and ATC directives.

(f) *Maneuvers and procedures for cross-country flight training in a multiengine airplane.* A student pilot who is receiving training for cross-country flight in a multiengine airplane must receive and log flight training in the following maneuvers and procedures:

(1) Use of aeronautical charts for VFR navigation using pilotage and dead reckoning with the aid of a magnetic compass;

(2) Use of aircraft performance charts pertaining to cross-country flight;

(3) Procurement and analysis of aeronautical weather reports and forecasts, including recognition of critical weather situations and estimating visibility while in flight;

(4) Emergency procedures;

(5) Traffic pattern procedures that include area departure, area arrival, entry into the traffic pattern, and approach;

(6) Procedures and operating practices for collision avoidance, wake turbulence precautions, and windshear avoidance;

(7) Recognition, avoidance, and operational restrictions of hazardous terrain features in the geographical area where the cross-country flight will be flown;

(8) Procedures for operating the instruments and equipment installed in the aircraft to be flown, including recognition and use of the proper operational procedures and indications;

(9) Use of radios for VFR navigation and two-way communications;

(10) Takeoff, approach, and landing procedures, including short-field, soft-field, and crosswind takeoffs, approaches, and landings;

(11) Climbs at best angle and best rate; and

(12) Control and maneuvering solely by reference to flight instruments, including straight and level flight, turns, descents, climbs, use of radio aids, and ATC directives.

(g) *Maneuvers and procedures for cross-country flight training in a helicopter.* A student pilot who is receiving training for cross-country flight in a helicopter must receive and log flight training for the following maneuvers and procedures:

(1) Use of aeronautical charts for VFR navigation using pilotage and dead reckoning with the aid of a magnetic compass;

(2) Use of aircraft performance charts pertaining to cross-country flight;

(3) Procurement and analysis of aeronautical weather reports and forecasts,

including recognition of critical weather situations and estimating visibility while in flight;

(4) Emergency procedures;

(5) Traffic pattern procedures that include area departure, area arrival, entry into the traffic pattern, and approach;

(6) Procedures and operating practices for collision avoidance, wake turbulence precautions, and windshear avoidance;

(7) Recognition, avoidance, and operational restrictions of hazardous terrain features in the geographical area where the cross-country flight will be flown;

(8) Procedures for operating the instruments and equipment installed in the aircraft to be flown, including recognition and use of the proper operational procedures and indications;

(9) Use of radios for VFR navigation and two-way communications; and

(10) Takeoff, approach, and landing procedures.

(h) *Maneuvers and procedures for cross-country flight training in a gyroplane.* A student pilot who is receiving training for cross-country flight in a gyroplane must receive and log flight training in the following maneuvers and procedures:

(1) Use of aeronautical charts for VFR navigation using pilotage and dead reckoning with the aid of a magnetic compass;

(2) Use of aircraft performance charts pertaining to cross-country flight;

(3) Procurement and analysis of aeronautical weather reports and forecasts, including recognition of critical weather situations and estimating visibility while in flight;

(4) Emergency procedures;

(5) Traffic pattern procedures that include area departure, area arrival, entry into the traffic pattern, and approach;

(6) Procedures and operating practices for collision avoidance, wake turbulence precautions, and windshear avoidance;

(7) Recognition, avoidance, and operational restrictions of hazardous terrain features in the geographical area where the cross-country flight will be flown;

(8) Procedures for operating the instruments and equipment installed in the aircraft to be flown, including recognition and use of the proper operational procedures and indications;

(9) Use of radios for VFR navigation and two-way communications; and

(10) Takeoff, approach, and landing procedures, including short-field and soft-field takeoffs, approaches, and landings.

(i) *Maneuvers and procedures for cross-country flight training in a powered-lift.* A student pilot who is receiving training for cross-country flight training in a powered-lift must receive and log flight training in the following maneuvers and procedures:

(1) Use of aeronautical charts for VFR navigation using pilotage and dead reckoning with the aid of a magnetic compass;

(2) Use of aircraft performance charts pertaining to cross-country flight;

(3) Procurement and analysis of aeronautical weather reports and forecasts, including recognition of critical weather situations and estimating visibility while in flight;

(4) Emergency procedures;

(5) Traffic pattern procedures that include area departure, area arrival, entry into the traffic pattern, and approach;

(6) Procedures and operating practices for collision avoidance, wake turbulence precautions, and windshear avoidance;

(7) Recognition, avoidance, and operational restrictions of hazardous terrain features in the geographical area where the cross-country flight will be flown;

(8) Procedures for operating the instruments and equipment installed in the aircraft to be flown, including recognition and use of the proper operational procedures and indications;

(9) Use of radios for VFR navigation and two-way communications;

(10) Takeoff, approach, and landing procedures that include high-altitude, steep, and shallow takeoffs, approaches, and landings; and

(11) Control and maneuvering solely by reference to flight instruments, including straight and level flight, turns, descents, climbs, use of radio aids, and ATC directives.

(j) *Maneuvers and procedures for cross-country flight training in a glider.* A student pilot who is receiving training for cross-country flight in a glider must receive and log flight training in the following maneuvers and procedures:

(1) Use of aeronautical charts for VFR navigation using pilotage and dead reckoning with the aid of a magnetic compass;

(2) Use of aircraft performance charts pertaining to cross-country flight;

(3) Procurement and analysis of aeronautical weather reports and forecasts, including recognition of critical weather situations and estimating visibility while in flight;

(4) Emergency procedures;

(5) Traffic pattern procedures that include area departure, area arrival, entry into the traffic pattern, and approach;

(6) Procedures and operating practices for collision avoidance, wake turbulence precautions, and windshear avoidance;

(7) Recognition, avoidance, and operational restrictions of hazardous terrain features in the geographical area where the cross-country flight will be flown;

(8) Procedures for operating the instruments and equipment installed in the aircraft to be flown, including recognition and use of the proper operational procedures and indications;

(9) Landings accomplished without the use of the altimeter from at least 2,000 feet above the surface; and

(10) Recognition of weather and upper air conditions favorable for cross-country soaring, ascending and descending flight, and altitude control.

(k) *Maneuvers and procedures for cross-country flight training in an airship.* A student pilot who is receiving training for cross-country flight in an airship must receive and log flight training for the following maneuvers and procedures:

(1) Use of aeronautical charts for VFR navigation using pilotage and dead reckoning with the aid of a magnetic compass;

(2) Use of aircraft performance charts pertaining to cross-country flight;

(3) Procurement and analysis of aeronautical weather reports and forecasts, including recognition of critical weather situations and estimating visibility while in flight;

(4) Emergency procedures;

(5) Traffic pattern procedures that include area departure, area arrival, entry into the traffic pattern, and approach;

(6) Procedures and operating practices for collision avoidance, wake turbulence precautions, and windshear avoidance;

(7) Recognition, avoidance, and operational restrictions of hazardous terrain features in the geographical area where the cross-country flight will be flown;

(8) Procedures for operating the instruments and equipment installed in the aircraft to be flown, including recognition and use of the proper operational procedures and indications;

(9) Use of radios for VFR navigation and two-way communications;

(10) Control of air pressure with regard to ascending and descending flight and altitude control;

(11) Control of the airship solely by reference to flight instruments; and

(12) Recognition of weather and upper air conditions conducive for the direction of cross-country flight.

(l) *Maneuvers and procedures for cross-country flight training in a powered parachute.* A student pilot who is receiving training for cross-country flight in a powered parachute must receive and log flight training in the following maneuvers and procedures:

(1) Use of aeronautical charts for VFR navigation using pilotage and dead reckoning with the aid of a magnetic compass, as appropriate.

(2) Use of aircraft performance charts pertaining to cross-country flight.

(3) Procurement and analysis of aeronautical weather reports and forecasts, including recognizing critical weather situations and estimating visibility while in flight.

(4) Emergency procedures.

(5) Traffic pattern procedures that include area departure, area arrival, entry into the traffic pattern, and approach.

(6) Procedures and operating practices for collision avoidance, wake turbulence precautions, and windshear avoidance.

(7) Recognition, avoidance, and operational restrictions of hazardous terrain features in the geographical area where the cross-country flight will be flown.

(8) Procedures for operating the instruments and equipment installed in the aircraft to be flown, including recognition and use of the proper operational procedures and indications.

(9) If equipped for flight with navigation radios, the use of radios for VFR navigation.

(10) Recognition of weather and upper air conditions favorable for the cross-country flight.

(11) Takeoff, approach and landing procedures.

(m) *Maneuvers and procedures for cross-country flight training in a weight-shift-control aircraft.* A student pilot who is receiving training for cross-country flight in a weight-shift-control aircraft must receive and log flight training for the following maneuvers and procedures:

(1) Use of aeronautical charts for VFR navigation using pilotage and dead reckoning with the aid of a magnetic compass, as appropriate.

(2) Use of aircraft performance charts pertaining to cross-country flight.

(3) Procurement and analysis of aeronautical weather reports and forecasts, including recognizing critical weather situations and estimating visibility while in flight.

(4) Emergency procedures.

(5) Traffic pattern procedures that include area departure, area arrival, entry into the traffic pattern, and approach.

(6) Procedures and operating practices for collision avoidance, wake turbulence precautions, and windshear avoidance.

(7) Recognition, avoidance, and operational restrictions of hazardous terrain features in the geographical area where the cross-country flight will be flown.

(8) Procedures for operating the instruments and equipment installed in the aircraft to be flown, including recognition and use of the proper operational procedures and indications.

(9) If equipped for flight using navigation radios, the use of radios for VFR navigation.

(10) Recognition of weather and upper air conditions favorable for the cross-country flight.

(11) Takeoff, approach and landing procedures, including crosswind approaches and landings.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40902, July 30, 1997; Amdt. 61–110, 69 FR 44867, July 27, 2004]

§ 61.94 Student pilot seeking a sport pilot certificate or a recreational pilot certificate: Operations at airports within, and in airspace located within, Class B, C, and D airspace, or at airports with an operational control tower in other airspace.

(a) A student pilot seeking a sport pilot certificate or a recreational pilot certificate who wants to obtain privileges to operate in Class B, C, and D airspace, at an airport located in Class B, C, or D airspace, and to, from, through, or at an airport having an operational control tower, must receive and log ground and flight training from an authorized instructor in the following aeronautical knowledge areas and areas of operation:

(1) The use of radios, communications, navigation systems and facilities, and radar services.

(2) Operations at airports with an operating control tower, to include three takeoffs and landings to a full stop, with each landing involving a flight in the traffic pattern, at an airport with an operating control tower.

(3) Applicable flight rules of part 91 of this chapter for operations in Class B, C, and D airspace and air traffic control clearances.

(4) Ground and flight training for the specific Class B, C, or D airspace for which the solo flight is authorized, if applicable, within the 90-day period preceding the date of the flight in that airspace. The flight training must be received in the specific airspace area for which solo flight is authorized.

(5) Ground and flight training for the specific airport located in Class B, C, or D airspace for which the solo flight is authorized, if applicable, within the 90-day period preceding the date of the flight at that airport. The flight and ground training must be received at the specific airport for which solo flight is authorized.

(b) The authorized instructor who provides the training specified in paragraph (a) of this section must provide a logbook endorsement that certifies the student has received that training and is proficient to conduct solo flight in that specific airspace or at that specific airport and in those aeronautical knowledge areas and areas of operation specified in this section.

[Doc. No. FAA–2001–11133, 69 FR 44867, July 27, 2004]

§ 61.95 Operations in Class B airspace and at airports located within Class B airspace.

(a) A student pilot may not operate an aircraft on a solo flight in Class B airspace unless:

(1) The student pilot has received both ground and flight training from an authorized instructor on that Class B airspace area, and the flight training was received in the specific Class B airspace area for which solo flight is authorized;

(2) The logbook of that student pilot has been endorsed by the authorized instructor who gave the student pilot flight training, and the endorsement is dated within the 90-day period preceding the date of the flight in that Class B airspace area; and

(3) The logbook endorsement specifies that the student pilot has received the required ground and flight training, and has been found proficient to conduct solo flight in that specific Class B airspace area.

(b) A student pilot may not operate an aircraft on a solo flight to, from, or at an airport located within Class B airspace pursuant to §91.131(b) of this chapter unless:

(1) The student pilot has received both ground and flight training from an instructor authorized to provide training to operate at that airport, and the flight and ground training has been received at the specific airport for which the solo flight is authorized;

(2) The logbook of that student pilot has been endorsed by an authorized instructor who gave the student pilot flight training, and the endorsement is dated within the 90-day period preceding the date of the flight at that airport; and

(3) The logbook endorsement specifies that the student pilot has received the required ground and flight training, and has been found proficient to conduct solo flight operations at that specific airport.

(c) This section does not apply to a student pilot seeking a sport pilot certificate or a recreational pilot certificate.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40902, July 30, 1997; Amdt. 61–110, 69 FR 44868, July 27, 2004]

Subpart D—Recreational Pilots

§ 61.96 Applicability and eligibility requirements: General.

(a) This subpart prescribes the requirement for the issuance of recreational pilot certificates and ratings, the conditions under which those certificates and ratings are necessary, and the general operating rules for persons who hold those certificates and ratings.

(b) To be eligible for a recreational pilot certificate, a person who applies for that certificate must:

(1) Be at least 17 years of age;

(2) Be able to read, speak, write, and understand the English language. If the applicant is unable to meet one of these requirements due to medical reasons, then the Administrator may place such operating limitations on that applicant's pilot certificate as are necessary for the safe operation of the aircraft;

(3) Receive a logbook endorsement from an authorized instructor who—

(i) Conducted the training or reviewed the applicant's home study on the aeronautical knowledge areas listed in §61.97(b) of this part that apply to the aircraft category and class rating sought; and

(ii) Certified that the applicant is prepared for the required knowledge test.

(4) Pass the required knowledge test on the aeronautical knowledge areas listed in §61.97(b) of this part;

(5) Receive flight training and a logbook endorsement from an authorized instructor who—

(i) Conducted the training on the areas of operation listed in §61.98(b) of this part that apply to the aircraft category and class rating sought; and

(ii) Certified that the applicant is prepared for the required practical test.

(6) Meet the aeronautical experience requirements of § 61.99 of this part that apply to the aircraft category and class rating sought before applying for the practical test;

(7) Pass the required practical test on the areas of operation listed in § 61.98(b) of this part that apply to the aircraft category and class rating sought; and

(8) Comply with the sections of this part that apply to the aircraft category and class rating sought.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40902, July 30, 1997]

§ 61.97 Aeronautical knowledge.

(a) *General.* A person who applies for a recreational pilot certificate must receive and log ground training from an authorized instructor or complete a home-study course on the aeronautical knowledge areas of paragraph (b) of this section that apply to the aircraft category and class rating sought.

(b) *Aeronautical knowledge areas.* (1) Applicable Federal Aviation Regulations of this chapter that relate to recreational pilot privileges, limitations, and flight operations;

(2) Accident reporting requirements of the National Transportation Safety Board;

(3) Use of the applicable portions of the ''Aeronautical Information Manual'' and FAA advisory circulars;

(4) Use of aeronautical charts for VFR navigation using pilotage with the aid of a magnetic compass;

(5) Recognition of critical weather situations from the ground and in flight, windshear avoidance, and the procurement and use of aeronautical weather reports and forecasts;

(6) Safe and efficient operation of aircraft, including collision avoidance, and recognition and avoidance of wake turbulence;

(7) Effects of density altitude on takeoff and climb performance;

(8) Weight and balance computations;

(9) Principles of aerodynamics, powerplants, and aircraft systems;

(10) Stall awareness, spin entry, spins, and spin recovery techniques, if applying for an airplane single-engine rating;

(11) Aeronautical decision making and judgment; and

(12) Preflight action that includes—

(i) How to obtain information on runway lengths at airports of intended use, data on takeoff and landing distances, weather reports and forecasts, and fuel requirements; and

(ii) How to plan for alternatives if the planned flight cannot be completed or delays are encountered.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40902, July 30, 1997]

§ 61.98 Flight proficiency.

(a) *General.* A person who applies for a recreational pilot certificate must receive and log ground and flight training from an authorized instructor on the areas of operation of this section that apply to the aircraft category and class rating sought.

(b) *Areas of operation.* (1) *For a single-engine airplane rating:* (i) Preflight preparation;

(ii) Preflight procedures;

(iii) Airport operations;

(iv) Takeoffs, landings, and go-arounds;

(v) Performance maneuvers;

(vi) Ground reference maneuvers;

(vii) Navigation;

(viii) Slow flight and stalls;

(ix) Emergency operations; and

(x) Postflight procedures.

(2) *For a helicopter rating:* (i) Preflight preparation;

(ii) Preflight procedures;

(iii) Airport and heliport operations;

(iv) Hovering maneuvers;

(v) Takeoffs, landings, and go-arounds;

(vi) Performance maneuvers;

(vii) Ground reference maneuvers;

(viii) Navigation;

(ix) Emergency operations; and

(x) Postflight procedures.

(3) *For a gyroplane rating:* (i) Preflight preparation;

(ii) Preflight procedures;

(iii) Airport operations;

(iv) Takeoffs, landings, and go-arounds;

(v) Performance maneuvers;

(vi) Ground reference maneuvers;

(vii) Navigation;

(viii) Flight at slow airspeeds;

(ix) Emergency operations; and

(x) Postflight procedures.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40902, July 30, 1997]

§ 61.99 Aeronautical experience.

A person who applies for a recreational pilot certificate must receive and log at least 30 hours of flight time that includes at least—

(a) 15 hours of flight training from an authorized instructor on the areas of operation listed in § 61.98 of this part that consists of at least:

(1) Except as provided in § 61.100 of this part, 2 hours of flight training en route to an airport that is located more than 25 nautical miles from the airport where the applicant normally trains, which includes at least three takeoffs and three landings at the airport located more than 25 nautical miles from the airport where the applicant normally trains; and

(2) 3 hours of flight training in the aircraft for the rating sought in preparation for the practical test within the 60 days preceding the date of the practical test.

(b) 3 hours of solo flying in the aircraft for the rating sought, on the areas of operation listed in § 61.98 of this part that apply to the aircraft category and class rating sought.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997, as amended by Amdt. 61–110, 69 FR 44868, July 27, 2004]

§ 61.100 Pilots based on small islands.

(a) An applicant located on an island from which the flight training required in § 61.99(a)(1) of this part cannot be accomplished without flying over water for more than 10 nautical miles from the nearest shoreline need not comply with the requirements of that section. However, if other airports that permit civil operations are available to which a flight may be made without flying over water for more than 10 nautical miles from the nearest shoreline, the applicant must show completion of a dual flight between two airports, which must include three landings at the other airport.

(b) An applicant who complies with paragraph (a) of this section and meets all requirements for the issuance of a recreational pilot certificate, except the requirements of § 61.99(a)(1) of this part, will be issued a pilot certificate with an endorsement containing the following limitation, ''Passenger carrying prohibited on flights more than 10 nautical miles from (the appropriate island).'' The limitation may be subsequently amended to include another island if the applicant complies with the requirements of paragraph (a) of this section for another island.

(c) Upon meeting the requirements of § 61.99(a)(1) of this part, the applicant may have the limitation(s) in paragraph (b) of this section removed.

§ 61.101 Recreational pilot privileges and limitations.

(a) A person who holds a recreational pilot certificate may:

(1) Carry no more than one passenger; and

(2) Not pay less than the pro rata share of the operating expenses of a flight with a passenger, provided the expenses involve only fuel, oil, airport expenses, or aircraft rental fees.

(b) A person who holds a current and valid recreational pilot certificate may act as pilot in command of an aircraft on a flight within 50 nautical miles from the departure airport, provided that person has—

(1) Received ground and flight training for takeoff, departure, arrival, and landing procedures at the departure airport;

(2) Received ground and flight training for the area, terrain, and aids to navigation that are in the vicinity of the departure airport;

(3) Been found proficient to operate the aircraft at the departure airport and the area within 50 nautical miles from that airport; and

(4) Received from an authorized instructor a logbook endorsement, which is carried in the person's possession in the aircraft, that permits flight within 50 nautical miles from the departure airport.

(c) A person who holds a current and valid recreational pilot certificate may act as pilot in command of an aircraft on a flight that exceeds 50 nautical miles from the departure airport, provided that person has—

(1) Received ground and flight training from an authorized instructor on

the cross-country training requirements of subpart E of this part that apply to the aircraft rating held;

(2) Been found proficient in cross-country flying; and

(3) Received from an authorized instructor a logbook endorsement, which is carried on the person's possession in the aircraft, that certifies the person has received and been found proficient in the cross-country training requirements of subpart E of this part that apply to the aircraft rating held.

(d) A person who holds a current and valid recreational pilot certificate may act as pilot in command of an aircraft in Class B, C, and D airspace, at an airport located in Class B, C, or D airspace, and to, from, through, or at an airport having an operational control tower, provided that person has—

(1) Received and logged ground and flight training from an authorized instructor on the following aeronautical knowledge areas and areas of operation, as appropriate to the aircraft rating held:

(i) The use of radios, communications, navigation system and facilities, and radar services.

(ii) Operations at airports with an operating control tower to include three takeoffs and landings to a full stop, with each landing involving a flight in the traffic pattern at an airport with an operating control tower.

(iii) Applicable flight rules of part 91 of this chapter for operations in Class B, C, and D airspace and air traffic control clearances;

(2) Been found proficient in those aeronautical knowledge areas and areas of operation specified in paragraph (d)(1) of this section; and

(3) Received from an authorized instructor a logbook endorsement, which is carried on the person's possession or readily accessible in the aircraft, that certifies the person has received and been found proficient in those aeronautical knowledge areas and areas of operation specified in paragraph (d)(1) of this section.

(e) Except as provided in paragraphs (d) and (i) of this section, a recreational pilot may not act as pilot in command of an aircraft—

(1) That is certificated—

(i) For more than four occupants;

(ii) With more than one powerplant;

(iii) With a powerplant of more than 180 horsepower; or

(iv) With retractable landing gear;

(2) That is classified as a multiengine airplane, powered-lift, glider, airship, balloon, powered parachute, or weight-shift-control aircraft;

(3) That is carrying a passenger or property for compensation or hire;

(4) For compensation or hire;

(5) In furtherance of a business;

(6) Between sunset and sunrise;

(7) In Class A, B, C, and D airspace, at an airport located in Class B, C, or D airspace, or to, from, through, or at an airport having an operational control tower;

(8) At an altitude of more than 10,000 feet MSL or 2,000 feet AGL, whichever is higher;

(9) When the flight or surface visibility is less than 3 statute miles;

(10) Without visual reference to the surface;

(11) On a flight outside the United States, unless authorized by the country in which the flight is conducted;

(12) To demonstrate that aircraft in flight as an aircraft salesperson to a prospective buyer;

(13) That is used in a passenger-carrying airlift and sponsored by a charitable organization; and

(14) That is towing any object.

(f) A recreational pilot may not act as a pilot flight crewmember on any aircraft for which more than one pilot is required by the type certificate of the aircraft or the regulations under which the flight is conducted, except when:

(1) Receiving flight training from a person authorized to provide flight training on board an airship; and

(2) No person other than a required flight crewmember is carried on the aircraft.

(g) A person who holds a recreational pilot certificate, has logged fewer than 400 flight hours, and has not logged pilot-in-command time in an aircraft within the 180 days preceding the flight shall not act as pilot in command of an aircraft until the pilot receives flight training and a logbook endorsement from an authorized instructor, and the instructor certifies that the person is proficient to act as pilot in command

of the aircraft. This requirement can be met in combination with the requirements of §§ 61.56 and 61.57 of this part, at the discretion of the authorized instructor.

(h) A recreational pilot certificate issued under this subpart carries the notation, ''Holder does not meet ICAO requirements.''

(i) For the purpose of obtaining additional certificates or ratings while under the supervision of an authorized instructor, a recreational pilot may fly as the sole occupant of an aircraft:

(1) For which the pilot does not hold an appropriate category or class rating;

(2) Within airspace that requires communication with air traffic control; or

(3) Between sunset and sunrise, provided the flight or surface visibility is at least 5 statute miles.

(j) In order to fly solo as provided in paragraph (h) of this section, the recreational pilot must meet the appropriate aeronautical knowledge and flight training requirements of § 61.87 for that aircraft. When operating an aircraft under the conditions specified in paragraph (h) of this section, the recreational pilot shall carry the logbook that has been endorsed for each flight by an authorized instructor who:

(1) Has given the recreational pilot training in the make and model of aircraft in which the solo flight is to be made;

(2) Has found that the recreational pilot has met the applicable requirements of § 61.87; and

(3) Has found that the recreational pilot is competent to make solo flights in accordance with the logbook endorsement.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997, as amended by Amdt. 61–110, 69 FR 44868, July 27, 2004]

Subpart E—Private Pilots

§ 61.102 Applicability.

This subpart prescribes the requirements for the issuance of private pilot certificates and ratings, the conditions under which those certificates and ratings are necessary, and the general operating rules for persons who hold those certificates and ratings.

§ 61.103 Eligibility requirements: General.

To be eligible for a private pilot certificate, a person must:

(a) Be at least 17 years of age for a rating in other than a glider or balloon.

(b) Be at least 16 years of age for a rating in a glider or balloon.

(c) Be able to read, speak, write, and understand the English language. If the applicant is unable to meet one of these requirements due to medical reasons, then the Administrator may place such operating limitations on that applicant's pilot certificate as are necessary for the safe operation of the aircraft.

(d) Receive a logbook endorsement from an authorized instructor who:

(1) Conducted the training or reviewed the person's home study on the aeronautical knowledge areas listed in § 61.105(b) of this part that apply to the aircraft rating sought; and

(2) Certified that the person is prepared for the required knowledge test.

(e) Pass the required knowledge test on the aeronautical knowledge areas listed in § 61.105(b) of this part.

(f) Receive flight training and a logbook endorsement from an authorized instructor who:

(1) Conducted the training in the areas of operation listed in § 61.107(b) of this part that apply to the aircraft rating sought; and

(2) Certified that the person is prepared for the required practical test.

(g) Meet the aeronautical experience requirements of this part that apply to the aircraft rating sought before applying for the practical test.

(h) Pass a practical test on the areas of operation listed in § 61.107(b) of this part that apply to the aircraft rating sought.

(i) Comply with the appropriate sections of this part that apply to the aircraft category and class rating sought.

§ 61.105 Aeronautical knowledge.

(a) *General.* A person who is applying for a private pilot certificate must receive and log ground training from an authorized instructor or complete a home-study course on the aeronautical knowledge areas of paragraph (b) of

this section that apply to the aircraft category and class rating sought.

(b) *Aeronautical knowledge areas.* (1) Applicable Federal Aviation Regulations of this chapter that relate to private pilot privileges, limitations, and flight operations;

(2) Accident reporting requirements of the National Transportation Safety Board;

(3) Use of the applicable portions of the ''Aeronautical Information Manual'' and FAA advisory circulars;

(4) Use of aeronautical charts for VFR navigation using pilotage, dead reckoning, and navigation systems;

(5) Radio communication procedures;

(6) Recognition of critical weather situations from the ground and in flight, windshear avoidance, and the procurement and use of aeronautical weather reports and forecasts;

(7) Safe and efficient operation of aircraft, including collision avoidance, and recognition and avoidance of wake turbulence;

(8) Effects of density altitude on takeoff and climb performance;

(9) Weight and balance computations;

(10) Principles of aerodynamics, powerplants, and aircraft systems;

(11) Stall awareness, spin entry, spins, and spin recovery techniques for the airplane and glider category ratings;

(12) Aeronautical decision making and judgment; and

(13) Preflight action that includes—

(i) How to obtain information on runway lengths at airports of intended use, data on takeoff and landing distances, weather reports and forecasts, and fuel requirements; and

(ii) How to plan for alternatives if the planned flight cannot be completed or delays are encountered.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40902, July 30, 1997]

§ 61.107 Flight proficiency.

(a) *General.* A person who applies for a private pilot certificate must receive and log ground and flight training from an authorized instructor on the areas of operation of this section that apply to the aircraft category and class rating sought.

(b) *Areas of operation.* (1) For an airplane category rating with a single-engine class rating:

(i) Preflight preparation;

(ii) Preflight procedures;

(iii) Airport and seaplane base operations;

(iv) Takeoffs, landings, and go-arounds;

(v) Performance maneuvers;

(vi) Ground reference maneuvers;

(vii) Navigation;

(viii) Slow flight and stalls;

(ix) Basic instrument maneuvers;

(x) Emergency operations;

(xi) Night operations, except as provided in § 61.110 of this part; and

(xii) Postflight procedures.

(2) For an airplane category rating with a multiengine class rating:

(i) Preflight preparation;

(ii) Preflight procedures;

(iii) Airport and seaplane base operations;

(iv) Takeoffs, landings, and go-arounds;

(v) Performance maneuvers;

(vi) Ground reference maneuvers;

(vii) Navigation;

(viii) Slow flight and stalls;

(ix) Basic instrument maneuvers;

(x) Emergency operations;

(xi) Multiengine operations;

(xii) Night operations, except as provided in § 61.110 of this part; and

(xiii) Postflight procedures.

(3) For a rotorcraft category rating with a helicopter class rating:

(i) Preflight preparation;

(ii) Preflight procedures;

(iii) Airport and heliport operations;

(iv) Hovering maneuvers;

(v) Takeoffs, landings, and go-arounds;

(vi) Performance maneuvers;

(vii) Navigation;

(viii) Emergency operations;

(ix) Night operations, except as provided in § 61.110 of this part; and

(x) Postflight procedures.

(4) For a rotorcraft category rating with a gyroplane class rating:

(i) Preflight preparation;

(ii) Preflight procedures;

(iii) Airport operations;

(iv) Takeoffs, landings, and go-arounds;

(v) Performance maneuvers;

(vi) Ground reference maneuvers;

(vii) Navigation;
(viii) Flight at slow airspeeds;
(ix) Emergency operations;
(x) Night operations, except as provided in § 61.110 of this part; and
(xi) Postflight procedures.
(5) For a powered-lift category rating:
(i) Preflight preparation;
(ii) Preflight procedures;
(iii) Airport and heliport operations;
(iv) Hovering maneuvers;
(v) Takeoffs, landings, and go-arounds;
(vi) Performance maneuvers;
(vii) Ground reference maneuvers;
(viii) Navigation;
(ix) Slow flight and stalls;
(x) Basic instrument maneuvers;
(xi) Emergency operations;
(xii) Night operations, except as provided in § 61.110 of this part; and
(xiii) Postflight procedures.
(6) For a glider category rating:
(i) Preflight preparation;
(ii) Preflight procedures;
(iii) Airport and gliderport operations;
(iv) Launches and landings;
(v) Performance speeds;
(vi) Soaring techniques;
(vii) Performance maneuvers;
(viii) Navigation;
(ix) Slow flight and stalls;
(x) Emergency operations; and
(xi) Postflight procedures.
(7) For a lighter-than-air category rating with an airship class rating:
(i) Preflight preparation;
(ii) Preflight procedures;
(iii) Airport operations;
(iv) Takeoffs, landings, and go-arounds;
(v) Performance maneuvers;
(vi) Ground reference maneuvers;
(vii) Navigation;
(viii) Emergency operations; and
(ix) Postflight procedures.
(8) For a lighter-than-air category rating with a balloon class rating:
(i) Preflight preparation;
(ii) Preflight procedures;
(iii) Airport operations;
(iv) Launches and landings;
(v) Performance maneuvers;
(vi) Navigation;
(vii) Emergency operations; and
(viii) Postflight procedures.
(9) For a powered parachute category rating—
(i) Preflight preparation;
(ii) Preflight procedures;
(iii) Airport and seaplane base operations, as applicable;
(iv) Takeoffs, landings, and go-arounds;
(v) Performance maneuvers;
(vi) Ground reference maneuvers;
(vii) Navigation;
(viii) Night operations, except as provided in § 61.110;
(ix) Emergency operations; and
(x) Post-flight procedures.
(10) For a weight-shift-control aircraft category rating—
(i) Preflight preparation;
(ii) Preflight procedures;
(iii) Airport and seaplane base operations, as applicable;
(iv) Takeoffs, landings, and go-arounds;
(v) Performance maneuvers;
(vi) Ground reference maneuvers;
(vii) Navigation;
(viii) Slow flight and stalls;
(ix) Night operations, except as provided in § 61.110;
(x) Emergency operations; and
(xi) Post-flight procedures.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997, as amended by Amdt. 61–110, 69 FR 44868, July 27, 2004]

§ 61.109 Aeronautical experience.

(a) *For an airplane single-engine rating.* Except as provided in paragraph (k) of this section, a person who applies for a private pilot certificate with an airplane category and single-engine class rating must log at least 40 hours of flight time that includes at least 20 hours of flight training from an authorized instructor and 10 hours of solo flight training in the areas of operation listed in § 61.107(b)(1) of this part, and the training must include at least—
(1) 3 hours of cross-country flight training in a single-engine airplane;
(2) Except as provided in § 61.110 of this part, 3 hours of night flight training in a single-engine airplane that includes—
(i) One cross-country flight of over 100 nautical miles total distance; and
(ii) 10 takeoffs and 10 landings to a full stop (with each landing involving a flight in the traffic pattern) at an airport.

(3) 3 hours of flight training in a single-engine airplane on the control and maneuvering of an airplane solely by reference to instruments, including straight and level flight, constant airspeed climbs and descents, turns to a heading, recovery from unusual flight attitudes, radio communications, and the use of navigation systems/facilities and radar services appropriate to instrument flight;

(4) 3 hours of flight training in preparation for the practical test in a single-engine airplane, which must have been performed within 60 days preceding the date of the test; and

(5) 10 hours of solo flight time in a single-engine airplane, consisting of at least—

(i) 5 hours of solo cross-country time;

(ii) One solo cross-country flight of at least 150 nautical miles total distance, with full-stop landings at a minimum of three points, and one segment of the flight consisting of a straight-line distance of at least 50 nautical miles between the takeoff and landing locations; and

(iii) Three takeoffs and three landings to a full stop (with each landing involving a flight in the traffic pattern) at an airport with an operating control tower.

(b) *For an airplane multiengine rating.* Except as provided in paragraph (k) of this section, a person who applies for a private pilot certificate with an airplane category and multiengine class rating must log at least 40 hours of flight time that includes at least 20 hours of flight training from an authorized instructor and 10 hours of solo flight training in the areas of operation listed in §61.107(b)(2) of this part, and the training must include at least—

(1) 3 hours of cross-country flight training in a multiengine airplane;

(2) Except as provided in §61.110 of this part, 3 hours of night flight training in a multiengine airplane that includes—

(i) One cross-country flight of over 100 nautical miles total distance; and

(ii) 10 takeoffs and 10 landings to a full stop (with each landing involving a flight in the traffic pattern) at an airport.

(3) 3 hours of flight training in a multiengine airplane on the control and maneuvering of an airplane solely by reference to instruments, including straight and level flight, constant airspeed climbs and descents, turns to a heading, recovery from unusual flight attitudes, radio communications, and the use of navigation systems/facilities and radar services appropriate to instrument flight;

(4) 3 hours of flight training in preparation for the practical test in a multiengine airplane, which must have been performed within the 60-day period preceding the date of the test; and

(5) 10 hours of solo flight time in an airplane consisting of at least—

(i) 5 hours of solo cross-country time;

(ii) One solo cross-country flight of at least 150 nautical miles total distance, with full-stop landings at a minimum of three points, and one segment of the flight consisting of a straight-line distance of at least 50 nautical miles between the takeoff and landing locations; and

(iii) Three takeoffs and three landings to a full stop (with each landing involving a flight in the traffic pattern) at an airport with an operating control tower.

(c) *For a helicopter rating.* Except as provided in paragraph (k) of this section, a person who applies for a private pilot certificate with rotorcraft category and helicopter class rating must log at least 40 hours of flight time that includes at least 20 hours of flight training from an authorized instructor and 10 hours of solo flight training in the areas of operation listed in §61.107(b)(3) of this part, and the training must include at least—

(1) 3 hours of cross-country flight training in a helicopter;

(2) Except as provided in §61.110 of this part, 3 hours of night flight training in a helicopter that includes—

(i) One cross-country flight of over 50 nautical miles total distance; and

(ii) 10 takeoffs and 10 landings to a full stop (with each landing involving a flight in the traffic pattern) at an airport.

(3) 3 hours of flight training in preparation for the practical test in a helicopter, which must have been performed within 60 days preceding the date of the test; and

(4) 10 hours of solo flight time in a helicopter, consisting of at least—

(i) 3 hours cross-country time;

(ii) One solo cross-country flight of at least 75 nautical miles total distance, with landings at a minimum of three points, and one segment of the flight being a straight-line distance of at least 25 nautical miles between the takeoff and landing locations; and

(iii) Three takeoffs and three landings to a full stop (with each landing involving a flight in the traffic pattern) at an airport with an operating control tower.

(d) *For a gyroplane rating.* Except as provided in paragraph (k) of this section, a person who applies for a private pilot certificate with rotorcraft category and gyroplane class rating must log at least 40 hours of flight time that includes at least 20 hours of flight training from an authorized instructor and 10 hours of solo flight training in the areas of operation listed in §61.107(b)(4) of this part, and the training must include at least—

(1) 3 hours of cross-country flight training in a gyroplane;

(2) Except as provided in §61.110 of this part, 3 hours of night flight training in a gyroplane that includes—

(i) One cross-country flight of over 50 nautical miles total distance; and

(ii) 10 takeoffs and 10 landings to a full stop (with each landing involving a flight in the traffic pattern) at an airport.

(3) 3 hours of flight training in preparation for the practical test in a gyroplane, which must have been performed within the 60-day period preceding the date of the test; and

(4) 10 hours of solo flight time in a gyroplane, consisting of at least—

(i) 3 hours of cross-country time;

(ii) One solo cross-country flight of over 75 nautical miles total distance, with landings at a minimum of three points, and one segment of the flight being a straight-line distance of at least 25 nautical miles between the takeoff and landing locations; and

(iii) Three takeoffs and three landings to a full stop (with each landing involving a flight in the traffic pattern) at an airport with an operating control tower.

(e) *For a powered-lift rating.* Except as provided in paragraph (k) of this section, a person who applies for a private pilot certificate with a powered-lift category rating must log at least 40 hours of flight time that includes at least 20 hours of flight training from an authorized instructor and 10 hours of solo flight training in the areas of operation listed in §61.107(b)(5) of this part, and the training must include at least—

(1) 3 hours of cross-country flight training in a powered-lift;

(2) Except as provided in §61.110 of this part, 3 hours of night flight training in a powered-lift that includes—

(i) One cross-country flight of over 100 nautical miles total distance; and

(ii) 10 takeoffs and 10 landings to a full stop (with each landing involving a flight in the traffic pattern) at an airport.

(3) 3 hours of flight training in a powered-lift on the control and maneuvering of a powered-lift solely by reference to instruments, including straight and level flight, constant airspeed climbs and descents, turns to a heading, recovery from unusual flight attitudes, radio communications, and the use of navigation systems/facilities and radar services appropriate to instrument flight;

(4) 3 hours of flight training in preparation for the practical test in a powered-lift, which must have been performed within the 60-day period preceding the date of the test; and

(5) 10 hours of solo flight time in an airplane or powered-lift consisting of at least—

(i) 5 hours cross-country time;

(ii) One cross-country flight of at least 150 nautical miles total distance, with landings at a minimum of three points, and one segment of the flight being a straight-line distance of at least 50 nautical miles between the takeoff and landing locations; and

(iii) Three takeoffs and three landings to a full stop (with each landing involving a flight in the traffic pattern) at an airport with an operating control tower.

(f) *For a glider category rating.* (1) If the applicant for a private pilot certificate with a glider category rating has not logged at least 40 hours of flight

time as a pilot in a heavier-than-air aircraft, the applicant must log at least 10 hours of flight time in a glider in the areas of operation listed in § 61.107(b)(6) of this part, and that flight time must include at least—

(i) 20 flights in a glider in the areas of operations listed in § 61.107(b)(6) of this part, including at least 3 training flights in a glider with an authorized instructor in preparation for the practical test that must have been performed within the 60-day period preceding the date of the test; and

(ii) 2 hours of solo flight time in a glider in the areas of operation listed in § 61.107(b)(6) of this part, with not less than 10 launches and landings being performed.

(2) If the applicant has logged at least 40 hours of flight time in a heavier-than-air aircraft, the applicant must log at least 3 hours of flight time in a glider in the areas of operation listed in § 61.107(b)(6) of this part, and that flight time must include at least—

(i) 10 solo flights in a glider in the areas of operation listed in § 61.107(b)(6) of this part; and

(ii) 3 training flights in a glider with an authorized instructor in preparation for the practical test that must have been performed within the 60-day period preceding the date of the test.

(g) *For an airship rating.* A person who applies for a private pilot certificate with a lighter-than-air category and airship class rating must log at least:

(1) 25 hours of flight training in airships on the areas of operation listed in § 61.107(b)(7) of this part, which consists of at least:

(i) 3 hours of cross-country flight training in an airship;

(ii) Except as provided in § 61.110 of this part, 3 hours of night flight training in an airship that includes:

(A) A cross-country flight of over 25 nautical miles total distance; and

(B) Five takeoffs and five landings to a full stop (with each landing involving a flight in the traffic pattern) at an airport.

(2) 3 hours of flight training in an airship on the control and maneuvering of an airship solely by reference to instruments, including straight and level flight, constant airspeed climbs and descents, turns to a heading, recovery from unusual flight attitudes, radio communications, and the use of navigation systems/facilities and radar services appropriate to instrument flight;

(3) 3 hours of flight training in an airship in preparation for the practical test within the 60 days preceding the date of the test; and

(4) 5 hours performing the duties of pilot in command in an airship with an authorized instructor.

(h) *For a balloon rating.* A person who applies for a private pilot certificate with a lighter-than-air category and balloon class rating must log at least 10 hours of flight training that includes at least six training flights with an authorized instructor in the areas of operation listed in § 61.107(b)(8) of this part, that includes—

(1) *Gas balloon.* If the training is being performed in a gas balloon, at least two flights of 2 hours each that consists of—

(i) At least one training flight with an authorized instructor within 60 days prior to application for the rating on the areas of operation for a gas balloon;

(ii) At least one flight performing the duties of pilot in command in a gas balloon with an authorized instructor; and

(iii) At least one flight involving a controlled ascent to 3,000 feet above the launch site.

(2) *Balloon with an airborne heater.* If the training is being performed in a balloon with an airborne heater, at least—

(i) Two flights of 1 hour each within 60 days prior to application for the rating on the areas of operation appropriate to a balloon with an airborne heater;

(ii) One solo flight in a balloon with an airborne heater; and

(iii) At least one flight involving a controlled ascent to 2,000 feet above the launch site.

(i) *For a powered parachute rating.* A person who applies for a private pilot certificate with a powered parachute category rating must log at least 25 hours of flight time in a powered parachute that includes at least 10 hours of flight training with an authorized instructor, including 30 takeoffs and landings, and 10 hours of solo flight

training in the areas of operation listed in § 61.107 (b)(9) and the training must include at least—

(1) One hour of cross-country flight training in a powered parachute that includes a 1-hour cross-country flight with a landing at an airport at least 25 nautical miles from the airport of departure;

(2) Except as provided in § 61.110, 3 hours of night flight training in a powered parachute that includes 10 takeoffs and landings (with each landing involving a flight in the traffic pattern) at an airport;

(3) Three hours of flight training in preparation for the practical test in a powered parachute, which must have been performed within the 60-day period preceding the date of the test; and

(4) Three hours of solo flight time in a powered parachute, consisting of at least—

(i) One solo cross-country flight with a landing at an airport at least 25 nautical miles from the departure airport; and

(ii) Twenty solo takeoffs and landings to a full stop (with each landing involving a flight in a traffic pattern) at an airport, with at least 3 takeoffs and landings at an airport with an operating control tower.

(j) *For a weight-shift-control aircraft rating.* A person who applies for a private pilot certificate with a weight-shift-control rating must log at least 40 hours of flight time that includes at least 20 hours of flight training with an authorized instructor and 10 hours of solo flight training in the areas listed in § 61.107(b)(10) and the training must include at least—

(1) Three hours of cross-country flight training in a weight-shift-control aircraft;

(2) Except as provided in § 61.110, 3 hours of night flight training in a weight-shift-control aircraft that includes—

(i) One cross-country flight over 75 nautical miles total distance; and

(ii) Ten takeoffs and landings (with each landing involving a flight in the traffic pattern) at an airport;

(3) Three hours of flight training in preparation for the practical test in a weight-shift-control aircraft, which must have been performed within the 60-day period preceding the date of the test; and

(4) Ten hours of solo flight time in a weight-shift-control aircraft, consisting of at least—

(i) Five hours of solo cross-country time;

(ii) One solo cross-country flight over 100 nautical miles total distance, with landings at a minimum of three points, and one segment of the flight being a straight line distance of at least 50 nautical miles between takeoff and landing locations; and

(iii) Three takeoffs and landings (with each landing involving a flight in the traffic pattern) at an airport with an operating control tower.

(k) *Permitted credit for use of a flight simulator or flight training device.* (1) Except as provided in paragraphs (k)(2) of this section, a maximum of 2.5 hours of training in a flight simulator or flight training device representing the category, class, and type, if applicable, of aircraft appropriate to the rating sought, may be credited toward the flight training time required by this section, if received from an authorized instructor.

(2) A maximum of 5 hours of training in a flight simulator or flight training device representing the category, class, and type, if applicable, of aircraft appropriate to the rating sought, may be credited toward the flight training time required by this section if the training is accomplished in a course conducted by a training center certificated under part 142 of this chapter.

(3) Except when fewer hours are approved by the Administrator, an applicant for a private pilot certificate with an airplane, rotorcraft, or powered-lift rating, who has satisfactorily completed an approved private pilot course conducted by a training center certificated under part 142 of this chapter, need only have a total of 35 hours of aeronautical experience to meet the requirements of this section.

[Doc. No. 25910, 62 FR 40902, July 30, 1997, as amended by Amdt. 61–104, 63 FR 20287, Apr. 23, 1998; Amdt. 61–110, 69 FR 44868, July 27, 2004]

§ 61.110 Night flying exceptions.

(a) Subject to the limitations of paragraph (b) of this section, a person

is not required to comply with the night flight training requirements of this subpart if the person receives flight training in and resides in the State of Alaska.

(b) A person who receives flight training in and resides in the State of Alaska but does not meet the night flight training requirements of this section:

(1) May be issued a pilot certificate with a limitation ''Night flying prohibited''; and

(2) Must comply with the appropriate night flight training requirements of this subpart within the 12-calendar-month period after the issuance of the pilot certificate. At the end of that period, the certificate will become invalid for use until the person complies with the appropriate night training requirements of this subpart. The person may have the ''Night flying prohibited'' limitation removed if the person—

(i) Accomplishes the appropriate night flight training requirements of this subpart; and

(ii) Presents to an examiner a logbook or training record endorsement from an authorized instructor that verifies accomplishment of the appropriate night flight training requirements of this subpart.

(c) A person who does not meet the night flying requirements in §61.109(d)(2), (i)(2), or (j)(2) may be issued a private pilot certificate with the limitation ''Night flying prohibited.'' This limitation may be removed by an examiner if the holder complies with the requirements of §61.109(d)(2), (i)(2), or (j)(2), as appropriate.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40904, July 30, 1997; Amdt. 61–110, 69 FR 44869, July 27, 2004]

§61.111 Cross-country flights: Pilots based on small islands.

(a) Except as provided in paragraph (b) of this section, an applicant located on an island from which the cross-country flight training required in §61.109 of this part cannot be accomplished without flying over water for more than 10 nautical miles from the nearest shoreline need not comply with the requirements of that section.

(b) If other airports that permit civil operations are available to which a flight may be made without flying over water for more than 10 nautical miles from the nearest shoreline, the applicant must show completion of two round-trip solo flights between those two airports that are farthest apart, including a landing at each airport on both flights.

(c) An applicant who complies with paragraph (a) or paragraph (b) of this section, and meets all requirements for the issuance of a private pilot certificate, except the cross-country training requirements of §61.109 of this part, will be issued a pilot certificate with an endorsement containing the following limitation, ''Passenger carrying prohibited on flights more than 10 nautical miles from (the appropriate island).'' The limitation may be subsequently amended to include another island if the applicant complies with the requirements of paragraph (b) of this section for another island.

(d) Upon meeting the cross-country training requirements of §61.109 of this part, the applicant may have the limitation in paragraph (c) of this section removed.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40904, July 30, 1997]

§61.113 Private pilot privileges and limitations: Pilot in command.

(a) Except as provided in paragraphs (b) through (g) of this section, no person who holds a private pilot certificate may act as pilot in command of an aircraft that is carrying passengers or property for compensation or hire; nor may that person, for compensation or hire, act as pilot in command of an aircraft.

(b) A private pilot may, for compensation or hire, act as pilot in command of an aircraft in connection with any business or employment if:

(1) The flight is only incidental to that business or employment; and

(2) The aircraft does not carry passengers or property for compensation or hire.

(c) A private pilot may not pay less than the pro rata share of the operating expenses of a flight with passengers, provided the expenses involve

only fuel, oil, airport expenditures, or rental fees.

(d) A private pilot may act as pilot in command of a charitable, nonprofit, or community event flight described in § 91.146, if the sponsor and pilot comply with the requirements of § 91.146.

(e) A private pilot may be reimbursed for aircraft operating expenses that are directly related to search and location operations, provided the expenses involve only fuel, oil, airport expenditures, or rental fees, and the operation is sanctioned and under the direction and control of:

(1) A local, State, or Federal agency; or

(2) An organization that conducts search and location operations.

(f) A private pilot who is an aircraft salesman and who has at least 200 hours of logged flight time may demonstrate an aircraft in flight to a prospective buyer.

(g) A private pilot who meets the requirements of § 61.69 may act as a pilot in command of an aircraft towing a glider or unpowered ultralight vehicle.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997, as amended by Amdt. 61–110, 69 FR 44869, July 27, 2004; Amdt. 61–115, 72 FR 6910, Feb. 13, 2007]

§ 61.115 Balloon rating: Limitations.

(a) If a person who applies for a private pilot certificate with a balloon rating takes a practical test in a balloon with an airborne heater:

(1) The pilot certificate will contain a limitation restricting the exercise of the privileges of that certificate to a balloon with an airborne heater; and

(2) The limitation may be removed when the person obtains the required aeronautical experience in a gas balloon and receives a logbook endorsement from an authorized instructor who attests to the person's accomplishment of the required aeronautical experience and ability to satisfactorily operate a gas balloon.

(b) If a person who applies for a private pilot certificate with a balloon rating takes a practical test in a gas balloon:

(1) The pilot certificate will contain a limitation restricting the exercise of the privilege of that certificate to a gas balloon; and

(2) The limitation may be removed when the person obtains the required aeronautical experience in a balloon with an airborne heater and receives a logbook endorsement from an authorized instructor who attests to the person's accomplishment of the required aeronautical experience and ability to satisfactorily operate a balloon with an airborne heater.

§ 61.117 Private pilot privileges and limitations: Second in command of aircraft requiring more than one pilot.

Except as provided in § 61.113 of this part, no private pilot may, for compensation or hire, act as second in command of an aircraft that is type certificated for more than one pilot, nor may that pilot act as second in command of such an aircraft that is carrying passengers or property for compensation or hire.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40904, July 30, 1997]

§ 61.118–61.120 [Reserved]

Subpart F—Commercial Pilots

§ 61.121 Applicability.

This subpart prescribes the requirements for the issuance of commercial pilot certificates and ratings, the conditions under which those certificates and ratings are necessary, and the general operating rules for persons who hold those certificates and ratings.

§ 61.123 Eligibility requirements: General.

To be eligible for a commercial pilot certificate, a person must:

(a) Be at least 18 years of age;

(b) Be able to read, speak, write, and understand the English language. If the applicant is unable to meet one of these requirements due to medical reasons, then the Administrator may place such operating limitations on that applicant's pilot certificate as are necessary for the safe operation of the aircraft.

(c) Receive a logbook endorsement from an authorized instructor who:

(1) Conducted the required ground training or reviewed the person's home study on the aeronautical knowledge

areas listed in § 61.125 of this part that apply to the aircraft category and class rating sought; and

(2) Certified that the person is prepared for the required knowledge test that applies to the aircraft category and class rating sought.

(d) Pass the required knowledge test on the aeronautical knowledge areas listed in § 61.125 of this part;

(e) Receive the required training and a logbook endorsement from an authorized instructor who:

(1) Conducted the training on the areas of operation listed in § 61.127(b) of this part that apply to the aircraft category and class rating sought; and

(2) Certified that the person is prepared for the required practical test.

(f) Meet the aeronautical experience requirements of this subpart that apply to the aircraft category and class rating sought before applying for the practical test;

(g) Pass the required practical test on the areas of operation listed in § 61.127(b) of this part that apply to the aircraft category and class rating sought;

(h) Hold at least a private pilot certificate issued under this part or meet the requirements of § 61.73; and

(i) Comply with the sections of this part that apply to the aircraft category and class rating sought.

§ 61.125 Aeronautical knowledge.

(a) *General.* A person who applies for a commercial pilot certificate must receive and log ground training from an authorized instructor, or complete a home-study course, on the aeronautical knowledge areas of paragraph (b) of this section that apply to the aircraft category and class rating sought.

(b) *Aeronautical knowledge areas.* (1) Applicable Federal Aviation Regulations of this chapter that relate to commercial pilot privileges, limitations, and flight operations;

(2) Accident reporting requirements of the National Transportation Safety Board;

(3) Basic aerodynamics and the principles of flight;

(4) Meteorology to include recognition of critical weather situations, windshear recognition and avoidance, and the use of aeronautical weather reports and forecasts;

(5) Safe and efficient operation of aircraft;

(6) Weight and balance computations;

(7) Use of performance charts;

(8) Significance and effects of exceeding aircraft performance limitations;

(9) Use of aeronautical charts and a magnetic compass for pilotage and dead reckoning;

(10) Use of air navigation facilities;

(11) Aeronautical decision making and judgment;

(12) Principles and functions of aircraft systems;

(13) Maneuvers, procedures, and emergency operations appropriate to the aircraft;

(14) Night and high-altitude operations;

(15) Procedures for operating within the National Airspace System; and

(16) Procedures for flight and ground training for lighter-than-air ratings.

§ 61.127 Flight proficiency.

(a) *General.* A person who applies for a commercial pilot certificate must receive and log ground and flight training from an authorized instructor on the areas of operation of this section that apply to the aircraft category and class rating sought.

(b) *Areas of operation.* (1) For an airplane category rating with a single-engine class rating:

(i) Preflight preparation;

(ii) Preflight procedures;

(iii) Airport and seaplane base operations;

(iv) Takeoffs, landings, and go-arounds;

(v) Performance maneuvers;

(vi) Ground reference maneuvers;

(vii) Navigation;

(viii) Slow flight and stalls;

(ix) Emergency operations;

(x) High-altitude operations; and

(xi) Postflight procedures.

(2) For an airplane category rating with a multiengine class rating:

(i) Preflight preparation;

(ii) Preflight procedures;

(iii) Airport and seaplane base operations;

(iv) Takeoffs, landings, and go-arounds;

(v) Performance maneuvers;

(vi) Navigation;
(vii) Slow flight and stalls;
(viii) Emergency operations;
(ix) Multiengine operations;
(x) High-altitude operations; and
(xi) Postflight procedures.
(3) For a rotorcraft category rating with a helicopter class rating:
(i) Preflight preparation;
(ii) Preflight procedures;
(iii) Airport and heliport operations;
(iv) Hovering maneuvers;
(v) Takeoffs, landings, and go-arounds;
(vi) Performance maneuvers;
(vii) Navigation;
(viii) Emergency operations;
(ix) Special operations; and
(x) Postflight procedures.
(4) For a rotorcraft category rating with a gyroplane class rating:
(i) Preflight preparation;
(ii) Preflight procedures;
(iii) Airport operations;
(iv) Takeoffs, landings, and go-arounds;
(v) Performance maneuvers;
(vi) Navigation;
(vii) Flight at slow airspeeds;
(viii) Emergency operations; and
(ix) Postflight procedures.
(5) For a powered-lift category rating:
(i) Preflight preparation;
(ii) Preflight procedures;
(iii) Airport and heliport operations;
(iv) Hovering maneuvers;
(v) Takeoffs, landings, and go-arounds;
(vi) Performance maneuvers;
(vii) Ground reference maneuvers;
(viii) Navigation;
(ix) Slow flight and stalls;
(x) Emergency operations;
(xi) High-altitude operations;
(xii) Special operations; and
(xiii) Postflight procedures.
(6) For a glider category rating:
(i) Preflight preparation;
(ii) Preflight procedures;
(iii) Airport and gliderport operations;
(iv) Launches and landings;
(v) Performance speeds;
(vi) Soaring techniques;
(vii) Performance maneuvers;
(viii) Navigation;
(ix) Slow flight and stalls;
(x) Emergency operations; and
(xi) Postflight procedures.
(7) For a lighter-than-air category rating with an airship class rating:
(i) Fundamentals of instructing;
(ii) Technical subjects;
(iii) Preflight preparation;
(iv) Preflight lesson on a maneuver to be performed in flight;
(v) Preflight procedures;
(vi) Airport operations;
(vii) Takeoffs, landings, and go-arounds;
(viii) Performance maneuvers;
(ix) Navigation;
(x) Emergency operations; and
(xi) Postflight procedures.
(8) For a lighter-than-air category rating with a balloon class rating:
(i) Fundamentals of instructing;
(ii) Technical subjects;
(iii) Preflight preparation;
(iv) Preflight lesson on a maneuver to be performed in flight;
(v) Preflight procedures;
(vi) Airport operations;
(vii) Launches and landings;
(viii) Performance maneuvers;
(ix) Navigation;
(x) Emergency operations; and
(xi) Postflight procedures.

§ 61.129 Aeronautical experience.

(a) *For an airplane single-engine rating.* Except as provided in paragraph (i) of this section, a person who applies for a commercial pilot certificate with an airplane category and single-engine class rating must log at least 250 hours of flight time as a pilot that consists of at least:
(1) 100 hours in powered aircraft, of which 50 hours must be in airplanes.
(2) 100 hours of pilot-in-command flight time, which includes at least—
(i) 50 hours in airplanes; and
(ii) 50 hours in cross-country flight of which at least 10 hours must be in airplanes.
(3) 20 hours of training on the areas of operation listed in §61.127(b)(1) of this part that includes at least—
(i) 10 hours of instrument training of which at least 5 hours must be in a single-engine airplane;
(ii) 10 hours of training in an airplane that has a retractable landing gear, flaps, and a controllable pitch propeller, or is turbine-powered, or for an

applicant seeking a single-engine seaplane rating, 10 hours of training in a seaplane that has flaps and a controllable pitch propeller;

(iii) One cross-country flight of at least 2 hours in a single-engine airplane in day VFR conditions, consisting of a total straight-line distance of more than 100 nautical miles from the original point of departure;

(iv) One cross-country flight of at least 2 hours in a single-engine airplane in night VFR conditions, consisting of a total straight-line distance of more than 100 nautical miles from the original point of departure; and

(v) 3 hours in a single-engine airplane in preparation for the practical test within the 60-day period preceding the date of the test.

(4) 10 hours of solo flight in a single-engine airplane on the areas of operation listed in §61.127(b)(1) of this part, which includes at least—

(i) One cross-country flight of not less than 300 nautical miles total distance, with landings at a minimum of three points, one of which is a straight-line distance of at least 250 nautical miles from the original departure point. However, if this requirement is being met in Hawaii, the longest segment need only have a straight-line distance of at least 150 nautical miles; and

(ii) 5 hours in night VFR conditions with 10 takeoffs and 10 landings (with each landing involving a flight in the traffic pattern) at an airport with an operating control tower.

(b) *For an airplane multiengine rating.* Except as provided in paragraph (i) of this section, a person who applies for a commercial pilot certificate with an airplane category and multiengine class rating must log at least 250 hours of flight time as a pilot that consists of at least:

(1) 100 hours in powered aircraft, of which 50 hours must be in airplanes.

(2) 100 hours of pilot-in-command flight time, which includes at least—

(i) 50 hours in airplanes; and

(ii) 50 hours in cross-country flight of which at least 10 hours must be in airplanes.

(3) 20 hours of training on the areas of operation listed in §61.127(b)(2) of this part that includes at least—

(i) 10 hours of instrument training of which at least 5 hours must be in a multiengine airplane;

(ii) 10 hours of training in a multiengine airplane that has a retractable landing gear, flaps, and controllable pitch propellers, or is turbine-powered, or for an applicant seeking a multiengine seaplane rating, 10 hours of training in a multiengine seaplane that has flaps and a controllable pitch propeller;

(iii) One cross-country flight of at least 2 hours in a multiengine airplane in day VFR conditions, consisting of a total straight-line distance of more than 100 nautical miles from the original point of departure;

(iv) One cross-country flight of at least 2 hours in a multiengine airplane in night VFR conditions, consisting of a total straight-line distance of more than 100 nautical miles from the original point of departure; and

(v) 3 hours in a multiengine airplane in preparation for the practical test within the 60-day period preceding the date of the test.

(4) 10 hours of solo flight time in a multiengine airplane or 10 hours of flight time performing the duties of pilot in command in a multiengine airplane with an authorized instructor (either of which may be credited towards the flight time requirement in paragraph (b)(2) of this section), on the areas of operation listed in §61.127(b)(2) of this part that includes at least—

(i) One cross-country flight of not less than 300 nautical miles total distance with landings at a minimum of three points, one of which is a straight-line distance of at least 250 nautical miles from the original departure point. However, if this requirement is being met in Hawaii, the longest segment need only have a straight-line distance of at least 150 nautical miles; and

(ii) 5 hours in night VFR conditions with 10 takeoffs and 10 landings (with each landing involving a flight with a traffic pattern) at an airport with an operating control tower.

(c) *For a helicopter rating.* Except as provided in paragraph (i) of this section, a person who applies for a commercial pilot certificate with a rotorcraft category and helicopter class rating must log at least 150 hours of flight time as a pilot that consists of at least:

(1) 100 hours in powered aircraft, of which 50 hours must be in helicopters.

(2) 100 hours of pilot-in-command flight time, which includes at least—

(i) 35 hours in helicopters; and

(ii) 10 hours in cross-country flight in helicopters.

(3) 20 hours of training on the areas of operation listed in §61.127(b)(3) of this part that includes at least—

(i) 10 hours of instrument training in an aircraft;

(ii) One cross-country flight of at least 2 hours in a helicopter in day VFR conditions, consisting of a total straight-line distance of more than 50 nautical miles from the original point of departure;

(iii) One cross-country flight of at least 2 hours in a helicopter in night VFR conditions, consisting of a total straight-line distance of more than 50 nautical miles from the original point of departure; and

(iv) 3 hours in a helicopter in preparation for the practical test within the 60-day period preceding the date of the test.

(4) 10 hours of solo flight in a helicopter on the areas of operation listed in §61.127(b)(3) of this part, which includes at least—

(i) One cross-country flight with landings at a minimum of three points, with one segment consisting of a straight-line distance of at least 50 nautical miles from the original point of departure; and

(ii) 5 hours in night VFR conditions with 10 takeoffs and 10 landings (with each landing involving a flight in the traffic pattern).

(d) *For a gyroplane rating.* A person who applies for a commercial pilot certificate with a rotorcraft category and gyroplane class rating must log at least 150 hours of flight time as a pilot (of which 5 hours may have been accomplished in a flight simulator or flight training device that is representative of a gyroplane) that consists of at least:

(1) 100 hours in powered aircraft, of which 25 hours must be in gyroplanes.

(2) 100 hours of pilot-in-command flight time, which includes at least—

(i) 10 hours in gyroplanes; and

(ii) 3 hours in cross-country flight in gyroplanes.

(3) 20 hours of training on the areas of operation listed in §61.127(b)(4) of this part that includes at least—

(i) 5 hours of instrument training in an aircraft;

(ii) One cross-country flight of at least 2 hours in a gyroplane in day VFR conditions, consisting of a total straight-line distance of more than 50 nautical miles from the original point of departure;

(iii) One cross-country flight of at least 2 hours in a gyroplane in night VFR conditions, consisting of a total straight-line distance of more than 50 nautical miles from the original point of departure; and

(iv) 3 hours in a gyroplane in preparation for the practical test within the 60-day period preceding the date of the test.

(4) 10 hours of solo flight in a gyroplane on the areas of operation listed in §61.127(b)(4) of this part, which includes at least—

(i) One cross-country flight with landings at a minimum of three points, with one segment consisting of a straight-line distance of at least 50 nautical miles from the original point of departure; and

(ii) 5 hours in night VFR conditions with 10 takeoffs and 10 landings (with each landing involving a flight in the traffic pattern).

(e) *For a powered-lift rating.* Except as provided in paragraph (i) of this section, a person who applies for a commercial pilot certificate with a powered-lift category rating must log at least 250 hours of flight time as a pilot that consists of at least:

(1) 100 hours in powered aircraft, of which 50 hours must be in a powered-lift.

(2) 100 hours of pilot-in-command flight time, which includes at least—

(i) 50 hours in a powered-lift; and

(ii) 50 hours in cross-country flight of which 10 hours must be in a powered-lift.

(3) 20 hours of training on the areas of operation listed in § 61.127(b)(5) of this part that includes at least—

(i) 10 hours of instrument training, of which at least 5 hours must be in a powered-lift;

(ii) One cross-country flight of at least 2 hours in a powered-lift in day VFR conditions, consisting of a total straight-line distance of more than 100 nautical miles from the original point of departure;

(iii) One cross-country flight of at least 2 hours in a powered-lift in night VFR conditions, consisting of a total straight-line distance of more than 100 nautical miles from the original point of departure; and

(iv) 3 hours in a powered-lift in preparation for the practical test within the 60-day period preceding the date of the test.

(4) 10 hours of solo flight in a powered-lift on the areas of operation listed in § 61.127(b)(5) of this part, which includes at least—

(i) One cross-country flight of not less than 300 nautical miles total distance with landings at a minimum of three points, one of which is a straight-line distance of at least 250 nautical miles from the original departure point. However, if this requirement is being met in Hawaii the longest segment need only have a straight-line distance of at least 150 nautical miles; and

(ii) 5 hours in night VFR conditions with 10 takeoffs and 10 landings (with each landing involving a flight in the traffic pattern) at an airport with an operating control tower.

(f) *For a glider rating.* A person who applies for a commercial pilot certificate with a glider category rating must log at least—

(1) 25 hours of flight time as a pilot in a glider and that flight time must include at least 100 flights in a glider as pilot in command, including at least—

(i) 3 hours of flight training in a glider or 10 training flights in a glider with an authorized instructor on the areas of operation listed in § 61.127(b)(6) of this part, including at least 3 training flights in a glider with an authorized instructor in preparation for the practical test within the 60-day period preceding the date of the test; and

(ii) 2 hours of solo flight that include not less than 10 solo flights in a glider on the areas of operation listed in § 61.127(b)(6) of this part; or

(2) 200 hours of flight time as a pilot in heavier-than-air aircraft and at least 20 flights in a glider as pilot in command, including at least—

(i) 3 hours of flight training in a glider or 10 training flights in a glider with an authorized instructor on the areas of operation listed in § 61.127(b)(6) of this part including at least 3 training flights in a glider with an authorized instructor in preparation for the practical test within the 60-day period preceding the date of the test; and

(ii) 5 solo flights in a glider on the areas of operation listed in § 61.127(b)(6) of this part.

(g) *For an airship rating.* A person who applies for a commercial pilot certificate with a lighter-than-air category and airship class rating must log at least 200 hours of flight time as a pilot, which includes at least the following hours:

(1) 50 hours in airships.

(2) 30 hours of pilot-in-command time in airships, which consists of at least—

(i) 10 hours of cross-country flight time in airships; and

(ii) 10 hours of night flight time in airships.

(3) 40 hours of instrument time, which consists of at least 20 hours in flight, of which 10 hours must be in flight in airships.

(4) 20 hours of flight training in airships on the areas of operation listed in § 61.127(b)(7) of this part, which includes at least—

(i) 3 hours in an airship in preparation for the practical test within the 60-day period preceding the date of the test;

(ii) One cross-country flight of at least 1 hour in duration in an airship in day VFR conditions, consisting of a total straight-line distance of more than 25 nautical miles from the original point of departure; and

(iii) One cross-country flight of at least 1 hour in duration in an airship in night VFR conditions, consisting of a total straight-line distance of more than 25 nautical miles from the original point of departure.

(5) 10 hours of flight training performing the duties of pilot in command with an authorized instructor on the areas of operation listed in § 61.127(b)(7) of this part, which includes at least—

(i) One cross-country flight with landings at a minimum of three points, with one segment consisting of a straight-line distance of at least 25 nautical miles from the original point of departure; and

(ii) 5 hours in night VFR conditions with 10 takeoffs and 10 landings (with each landing involving a flight in the traffic pattern).

(h) *For a balloon rating.* A person who applies for a commercial pilot certificate with a lighter-than-air category and a balloon class rating must log at least 35 hours of flight time as a pilot, which includes at least the following requirements:

(1) 20 hours in balloons;

(2) 10 flights in balloons;

(3) Two flights in balloons as the pilot in command; and

(4) 10 hours of flight training that includes at least 10 training flights with an authorized instructor in balloons on the areas of operation listed in § 61.127(b)(8) of this part, which consists of at least—

(i) For a gas balloon—

(A) 2 training flights of 2 hours each with an authorized instructor in a gas balloon on the areas of operation appropriate to a gas balloon within 60 days prior to application for the rating;

(B) 2 flights performing the duties of pilot in command in a gas balloon with an authorized instructor on the appropriate areas of operation; and

(C) One flight involving a controlled ascent to 5,000 feet above the launch site.

(ii) For a balloon with an airborne heater—

(A) 2 training flights of 1 hour each with an authorized instructor in a balloon with an airborne heater on the areas of operation appropriate to a balloon with an airborne heater within 60 days prior to application for the rating;

(B) Two solo flights in a balloon with an airborne heater on the appropriate areas of operation; and

(C) One flight involving a controlled ascent to 3,000 feet above the launch site.

(i) *Permitted credit for use of a flight simulator or flight training device.* (1) Except as provided in paragraph (i)(2) of this section, an applicant who has not accomplished the training required by this section in a course conducted by a training center certificated under part 142 of this chapter may:

(i) Credit a maximum of 50 hours toward the total aeronautical experience requirements for an airplane or powered-lift rating, provided the aeronautical experience was obtained from an authorized instructor in a flight simulator or flight training device that represents that class of airplane or powered-lift category and type, if applicable, appropriate to the rating sought; and

(ii) Credit a maximum of 25 hours toward the total aeronautical experience requirements of this section for a helicopter rating, provided the aeronautical experience was obtained from an authorized instructor in a flight simulator or flight training device that represents a helicopter and type, if applicable, appropriate to the rating sought.

(2) An applicant who has accomplished the training required by this section in a course conducted by a training center certificated under part 142 of this chapter may:

(i) Credit a maximum of 100 hours toward the total aeronautical experience requirements of this section for an airplane and powered-lift rating, provided the aeronautical experience was obtained from an authorized instructor in a flight simulator or flight training device that represents that class of airplane or powered-lift category and type, if applicable, appropriate to the rating sought; and

(ii) Credit a maximum of 50 hours toward the total aeronautical experience requirements of this section for a helicopter rating, provided the aeronautical experience was obtained from an authorized instructor in a flight simulator or flight training device that represents a helicopter and type, if applicable, appropriate to the rating sought.

(3) Except when fewer hours are approved by the Administrator, an applicant for a commercial pilot certificate

with an airplane or a powered-lift rating who has satisfactorily completed an approved commercial pilot course conducted by a training center certificated under part 142 of this chapter need only have 190 hours of total to meet the aeronautical experience requirements of this section.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–101, 62 FR 16892, Apr. 8, 1997; Amdt. 61–103, 62 FR 40904, July 30, 1997; Amdt. 61–104, 63 FR 20288, Apr. 23, 1998]

§ 61.131 Exceptions to the night flying requirements.

(a) Subject to the limitations of paragraph (b) of this section, a person is not required to comply with the night flight training requirements of this subpart if the person receives flight training in and resides in the State of Alaska.

(b) A person who receives flight training in and resides in the State of Alaska but does not meet the night flight training requirements of this section:

(1) May be issued a pilot certificate with the limitation ''night flying prohibited.''

(2) Must comply with the appropriate night flight training requirements of this subpart within the 12-calendar-month period after the issuance of the pilot certificate. At the end of that period, the certificate will become invalid for use until the person complies with the appropriate night flight training requirements of this subpart. The person may have the ''night flying prohibited'' limitation removed if the person—

(i) Accomplishes the appropriate night flight training requirements of this subpart; and

(ii) Presents to an examiner a logbook or training record endorsement from an authorized instructor that verifies accomplishment of the appropriate night flight training requirements of this subpart.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40905, July 30, 1997]

§ 61.133 Commercial pilot privileges and limitations.

(a) *Privileges*—(1) *General.* A person who holds a commercial pilot certificate may act as pilot in command of an aircraft—

(i) Carrying persons or property for compensation or hire, provided the person is qualified in accordance with this part and with the applicable parts of this chapter that apply to the operation; and

(ii) For compensation or hire, provided the person is qualified in accordance with this part and with the applicable parts of this chapter that apply to the operation.

(2) *Commercial pilots with lighter-than-air category ratings.* A person with a commercial pilot certificate with a lighter-than-air category rating may—

(i) *For an airship*—(A) Give flight and ground training in an airship for the issuance of a certificate or rating;

(B) Give an endorsement for a pilot certificate with an airship rating;

(C) Endorse a student pilot certificate or logbook for solo operating privileges in an airship;

(D) Act as pilot in command of an airship under IFR or in weather conditions less than the minimum prescribed for VFR flight; and

(E) Give flight and ground training and endorsements that are required for a flight review, an operating privilege or recency-of-experience requirements of this part.

(ii) *For a balloon*—(A) Give flight and ground training in a balloon for the issuance of a certificate or rating;

(B) Give an endorsement for a pilot certificate with a balloon rating;

(C) Endorse a student pilot certificate or logbook for solo operating privileges in a balloon; and

(D) Give ground and flight training and endorsements that are required for a flight review, an operating privilege, or recency-of-experience requirements of this part.

(b) *Limitations.* (1) A person who applies for a commercial pilot certificate with an airplane category or powered-lift category rating and does not hold an instrument rating in the same category and class will be issued a commercial pilot certificate that contains the limitation, ''The carriage of passengers for hire in (airplanes) (powered-lifts) on cross-country flights in excess of 50 nautical miles or at night is prohibited.'' The limitation may be

removed when the person satisfactorily accomplishes the requirements listed in § 61.65 of this part for an instrument rating in the same category and class of aircraft listed on the person's commercial pilot certificate.

(2) If a person who applies for a commercial pilot certificate with a balloon rating takes a practical test in a balloon with an airborne heater—

(i) The pilot certificate will contain a limitation restricting the exercise of the privileges of that certificate to a balloon with an airborne heater.

(ii) The limitation specified in paragraph (b)(2)(i) of this section may be removed when the person obtains the required aeronautical experience in a gas balloon and receives a logbook endorsement from an authorized instructor who attests to the person's accomplishment of the required aeronautical experience and ability to satisfactorily operate a gas balloon.

(3) If a person who applies for a commercial pilot certificate with a balloon rating takes a practical test in a gas balloon—

(i) The pilot certificate will contain a limitation restricting the exercise of the privileges of that certificate to a gas balloon.

(ii) The limitation specified in paragraph (b)(3)(i) of this section may be removed when the person obtains the required aeronautical experience in a balloon with an airborne heater and receives a logbook endorsement from an authorized instructor who attests to the person's accomplishment of the required aeronautical experience and ability to satisfactorily operate a balloon with an airborne heater.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40905, July 30, 1997]

§§ 61.135–61.141 [Reserved]

Subpart G—Airline Transport Pilots

§ 61.151 Applicability.

This subpart prescribes the requirements for the issuance of airline transport pilot certificates and ratings, the conditions under which those certificates and ratings are necessary, and the general operating rules for persons who hold those certificates and ratings.

§ 61.153 Eligibility requirements: General.

To be eligible for an airline transport pilot certificate, a person must:

(a) Be at least 23 years of age;

(b) Be able to read, speak, write, and understand the English language. If the applicant is unable to meet one of these requirements due to medical reasons, then the Administrator may place such operating limitations on that applicant's pilot certificate as are necessary for the safe operation of the aircraft;

(c) Be of good moral character;

(d) Meet at least one of the following requirements:

(1) Hold at least a commercial pilot certificate and an instrument rating;

(2) Meet the military experience requirements under § 61.73 of this part to qualify for a commercial pilot certificate, and an instrument rating if the person is a rated military pilot or former rated military pilot of an Armed Force of the United States; or

(3) Hold either a foreign airline transport pilot or foreign commercial pilot license and an instrument rating, without limitations, issued by a contracting State to the Convention on International Civil Aviation.

(e) Meet the aeronautical experience requirements of this subpart that apply to the aircraft category and class rating sought before applying for the practical test;

(f) Pass a knowledge test on the aeronautical knowledge areas of § 61.155(c) of this part that apply to the aircraft category and class rating sought;

(g) Pass the practical test on the areas of operation listed in § 61.157(e) of this part that apply to the aircraft category and class rating sought; and

(h) Comply with the sections of this part that apply to the aircraft category and class rating sought.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40905, July 30, 1997]

§ 61.155 Aeronautical knowledge.

(a) *General.* The knowledge test for an airline transport pilot certificate is based on the aeronautical knowledge areas listed in paragraph (c) of this section that are appropriate to the aircraft category and class rating sought.

(b) *Aircraft type rating.* A person who is applying for an additional aircraft type rating to be added to an airline transport pilot certificate is not required to pass a knowledge test if that person's airline transport pilot certificate lists the aircraft category and class rating that is appropriate to the type rating sought.

(c) *Aeronautical knowledge areas.* (1) Applicable Federal Aviation Regulations of this chapter that relate to airline transport pilot privileges, limitations, and flight operations;

(2) Meteorology, including knowledge of and effects of fronts, frontal characteristics, cloud formations, icing, and upper-air data;

(3) General system of weather and NOTAM collection, dissemination, interpretation, and use;

(4) Interpretation and use of weather charts, maps, forecasts, sequence reports, abbreviations, and symbols;

(5) National Weather Service functions as they pertain to operations in the National Airspace System;

(6) Windshear and microburst awareness, identification, and avoidance;

(7) Principles of air navigation under instrument meteorological conditions in the National Airspace System;

(8) Air traffic control procedures and pilot responsibilities as they relate to en route operations, terminal area and radar operations, and instrument departure and approach procedures;

(9) Aircraft loading, weight and balance, use of charts, graphs, tables, formulas, and computations, and their effect on aircraft performance;

(10) Aerodynamics relating to an aircraft's flight characteristics and performance in normal and abnormal flight regimes;

(11) Human factors;

(12) Aeronautical decision making and judgment; and

(13) Crew resource management to include crew communication and coordination.

§ 61.157 Flight proficiency.

(a) *General.* (1) The practical test for an airline transport pilot certificate is given for—

(i) An airplane category and single-engine class rating;

(ii) An airplane category and multi-engine class rating;

(iii) A rotorcraft category and helicopter class rating;

(iv) A powered-lift category rating; and

(v) An aircraft type rating for the category and class ratings listed in paragraphs (a)(1)(i) through (a)(1)(iv) of this section.

(2) A person who is applying for an airline transport pilot practical test must meet—

(i) The eligibility requirements of § 61.153 of this part; and

(ii) The aeronautical knowledge and aeronautical experience requirements of this subpart that apply to the aircraft category and class rating sought.

(b) *Aircraft type rating.* Except as provided in paragraph (c) of this section, a person who is applying for an aircraft type rating to be added to an airline transport pilot certificate:

(1) Must receive and log ground and flight training from an authorized instructor on the areas of operation in this section that apply to the aircraft type rating sought;

(2) Must receive a logbook endorsement from an authorized instructor certifying that the applicant completed the training on the areas of operation listed in paragraph (e) of this section that apply to the aircraft type rating sought; and

(3) Must perform the practical test in actual or simulated instrument conditions, unless the aircraft's type certificate makes the aircraft incapable of operating under instrument flight rules. If the practical test cannot be accomplished for this reason, the person may obtain a type rating limited to ''VFR only.'' The ''VFR only'' limitation may be removed for that aircraft type when the person passes the practical test in actual or simulated instrument conditions.

(c) *Exceptions.* A person who is applying for an aircraft type rating to be added to an airline transport pilot certificate or an aircraft type rating concurrently with an airline transport pilot certificate, and who is an employee of a certificate holder operating under part 121 or 135 of this chapter or of a fractional ownership program manager operating under subpart K of

part 91 of this chapter, need not comply with the requirements of paragraph (b) of this section if the applicant presents a training record that shows satisfactory completion of that certificate holder's or program manager's approved pilot-in-command training program for the aircraft type rating sought.

(d) *Upgrading type ratings.* Any type rating(s) on the pilot certificate of an applicant who successfully completes an airline transport pilot practical test shall be included on the airline transport pilot certificate with the privileges and limitations of the airline transport pilot certificate, provided the applicant passes the practical test in the same category and class of aircraft for which the applicant holds the type rating(s). However, if a type rating for that category and class of aircraft on the superseded pilot certificate is limited to VFR, that limitation shall be carried forward to the person's airline transport pilot certificate level.

(e) *Areas of operation.* (1) For an airplane category—single-engine class rating:

(i) Preflight preparation;

(ii) Preflight procedures;

(iii) Takeoff and departure phase;

(iv) In-flight maneuvers;

(v) Instrument procedures;

(vi) Landings and approaches to landings;

(vii) Normal and abnormal procedures;

(viii) Emergency procedures; and

(ix) Postflight procedures.

(2) For an airplane category—multiengine class rating:

(i) Preflight preparation;

(ii) Preflight procedures;

(iii) Takeoff and departure phase;

(iv) In-flight maneuvers;

(v) Instrument procedures;

(vi) Landings and approaches to landings;

(vii) Normal and abnormal procedures;

(viii) Emergency procedures; and

(ix) Postflight procedures.

(3) For a powered-lift category rating:

(i) Preflight preparation;

(ii) Preflight procedures;

(iii) Takeoff and departure phase;

(iv) In-flight maneuvers;

(v) Instrument procedures;

(vi) Landings and approaches to landings;

(vii) Normal and abnormal procedures;

(viii) Emergency procedures; and

(ix) Postflight procedures.

(4) For a rotorcraft category—helicopter class rating:

(i) Preflight preparation;

(ii) Preflight procedures;

(iii) Takeoff and departure phase;

(iv) In-flight maneuvers;

(v) Instrument procedures;

(vi) Landings and approaches to landings;

(vii) Normal and abnormal procedures;

(viii) Emergency procedures; and

(ix) Postflight procedures.

(f) *Proficiency and competency checks conducted under part 121, part 135, or subpart K of part 91.* (1) Successful completion of any of the following checks satisfy the requirements of this section for the appropriate aircraft rating:

(i) A proficiency check under §121.441 of this chapter.

(ii) Both a competency check under §135.293 of this chapter and a pilot-in-command instrument proficiency check under §135.297 of this chapter.

(iii) Both a competency check under §91.1065 of this chapter and a pilot-in-command instrument proficiency check under §91.1069 of this chapter.

(2) The checks specified in paragraph (f)(1) of this section must be conducted by an authorized designated pilot examiner or FAA aviation safety inspector.

(g) *Use of a flight simulator or flight training device for an airplane rating.* If a flight simulator or flight training device is used for accomplishing all of the training and the required practical test for an airplane transport pilot certificate with an airplane category, class, and type rating, if applicable, the applicant, flight simulator, and flight training device are subject to the following requirements:

(1) The flight simulator and flight training device must represent that airplane type if the rating involves a type rating in an airplane, or is representative of an airplane if the applicant is only seeking an airplane class

rating and does not require a type rating.

(2) The flight simulator and flight training device must be used in accordance with an approved course at a training center certificated under part 142 of this chapter.

(3) All training and testing (except preflight inspection) must be accomplished by the applicant to receive an airplane class rating and type rating, if applicable, without limitations and—

(i) The flight simulator must be qualified and approved as Level C or Level D; and

(ii) The applicant must meet the aeronautical experience requirements of § 61.159 of this part and at least one of the following—

(A) Hold a type rating for a turbojet airplane of the same class of airplane for which the type rating is sought, or have been designated by a military service as a pilot in command of an airplane of the same class of airplane for which the type rating is sought, if a turbojet type rating is sought;

(B) Hold a type rating for a turbopropeller airplane of the same class as the airplane for which the type rating is sought, or have been appointed by a military service as a pilot in command of an airplane of the same class of airplane for which the type rating is sought, if a turbopropeller airplane type rating is sought;

(C) Have at least 2,000 hours of flight time, of which 500 hours must be in turbine-powered airplanes of the same class as the airplane for which the type rating is sought;

(D) Have at least 500 hours of flight time in the same type of airplane as the airplane for which the type rating is sought; or

(E) Have at least 1,000 hours of flight time in at least two different airplanes requiring a type rating.

(4) Subject to the limitation of paragraph (g)(5) of this section, an applicant who does not meet the requirements of paragraph (g)(3) of this section may complete all training and testing (except for preflight inspection) for an additional rating if—

(i) The flight simulator is qualified and approved as Level C or Level D; and

(ii) The applicant meets the aeronautical experience requirements of § 61.159 of this part and at least one of the following—

(A) Holds a type rating in a propeller-driven airplane if a type rating in a turbojet airplane is sought, or holds a type rating in a turbojet airplane if a type rating in a propeller-driven airplane is sought;

(B) Since the beginning of the 12th calendar month before the month in which the applicant completes the practical test for the additional rating, has logged—

(*1*) At least 100 hours of flight time in airplanes in the same class as the airplane for which the type rating is sought and which requires a type rating; and

(*2*) At least 25 hours of flight time in airplanes of the same type for which the type rating is sought.

(5) An applicant meeting only the requirements of paragraph (g)(4)(ii)(A) and (B) of this section will be issued an additional rating, or an airline transport pilot certificate with an added rating, as applicable, with a limitation. The limitation shall state: ''This certificate is subject to pilot-in-command limitations for the additional rating.''

(6) An applicant who has been issued a certificate with the limitation specified in paragraph (g)(5) of this section—

(i) May not act as pilot in command of the aircraft for which an additional rating was obtained under the provisions of this section until the limitation is removed from the certificate; and

(ii) May have the limitation removed by accomplishing 15 hours of supervised operating experience as pilot in command under the supervision of a qualified and current pilot in command, in the seat normally occupied by the pilot in command, in an airplane of the same type for which the limitation applies.

(7) An applicant who does not meet the requirements of paragraph (g)(3)(ii)(A) through (E) or (g)(4)(ii)(A) and (B) of this section may be issued an airline transport pilot certificate or an additional rating to that pilot certificate after successful completion of one of the following requirements—

(i) An approved course at a part 142 training center that includes all training and testing for that certificate or rating, followed by training and testing on the following tasks, which must be successfully completed on a static airplane or in flight, as appropriate—

(A) Preflight inspection;

(B) Normal takeoff;

(C) Normal ILS approach;

(D) Missed approach; and

(E) Normal landing.

(ii) An approved course at a part 142 training center that complies with paragraphs (g)(8) and (g)(9) of this section and includes all training and testing for a certificate or rating.

(8) An applicant meeting only the requirements of paragraph (g)(7)(ii) of this section will be issued an additional rating or an airline transport pilot certificate with an additional rating, as applicable, with a limitation. The limitation shall state: ''This certificate is subject to pilot-in-command limitations for the additional rating.''

(9) An applicant issued a pilot certificate with the limitation specified in paragraph (g)(8) of this section—

(i) May not act as pilot in command of the aircraft for which an additional rating was obtained under the provisions of this section until the limitation is removed from the certificate; and

(ii) May have the limitation removed by accomplishing 25 hours of supervised operating experience as pilot in command under the supervision of a qualified and current pilot in command, in the seat normally occupied by the pilot in command, in an airplane of the same type for which the limitation applies.

(h) *Use of a flight simulator or flight training device for a helicopter rating.* If a flight simulator or flight training device is used for accomplishing all of the training and the required practical test for an airline transport pilot certificate with a helicopter class rating and type rating, if applicable, the applicant, flight simulator, and flight training device are subject to the following requirements:

(1) The flight simulator and flight training device must represent that helicopter type if the rating involves a type rating in a helicopter, or is representative of a helicopter if the applicant is only seeking a helicopter class rating and does not require a type rating.

(2) The flight simulator and flight training device must be used in accordance with an approved course at a training center certificated under part 142 of this chapter.

(3) All training and testing requirements (except preflight inspection) must be accomplished by the applicant to receive a helicopter class rating and type rating, if applicable, without limitations and—

(i) The flight simulator must be qualified and approved as a Level C or Level D; and

(ii) The applicant must meet the aeronautical experience requirements of § 61.161 of this part and at least one of the following—

(A) Hold a type rating for a turbine-powered helicopter, or have been designated by a military service as a pilot in command of a turbine-powered helicopter, if a turbine-powered helicopter type rating is sought;

(B) Have at least 1,200 hours of flight time, of which 500 hours must be in turbine-powered helicopters;

(C) Have at least 500 hours of flight time in the same type helicopter as the helicopter for which the type rating is sought; or

(D) Have at least 1,000 hours of flight time in at least two different helicopters requiring a type rating.

(4) Subject to the limitation of paragraph (h)(5) of this section, an applicant who does not meet the requirements of paragraph (h)(3) of this section may complete all training and testing (except for preflight inspection) for an additional rating if—

(i) The flight simulator is qualified and approved as Level C or Level D; and

(ii) The applicant meets the aeronautical experience requirements of § 61.161 of this part and, since the beginning of the 12th calendar month before the month in which the applicant completes the practical test for the additional rating, has logged—

(A) At least 100 hours of flight time in helicopters; and

(B) At least 15 hours of flight time in helicopters of the same type of helicopter for which the type rating is sought.

(5) An applicant meeting only the requirements of paragraph (h)(4)(ii) (A) and (B) of this section will be issued an additional rating or an airline transport pilot certificate with a limitation. The limitation shall state: ''This certificate is subject to pilot-in-command limitations for the additional rating.''

(6) An applicant who has been issued a certificate with the limitation specified in paragraph (h)(5) of this section—

(i) May not act as pilot in command of the helicopter for which an additional rating was obtained under the provisions of this section until the limitation is removed from the certificate; and

(ii) May have the limitation removed by accomplishing 15 hours of supervised operating experience as pilot in command under the supervision of a qualified and current pilot in command, in the seat normally occupied by the pilot in command, in a helicopter of the same type for which the limitation applies.

(7) An applicant who does not meet the requirements of paragraph (h)(3)(ii) (A) through (D), or (h)(4)(ii) (A) and (B) of this section may be issued an airline transport pilot certificate or an additional rating to that pilot certificate after successful completion of one of the following requirements—

(i) An approved course at a part 142 training center that includes all training and testing for that certificate or rating, followed by training and testing on the following tasks, which must be successfully completed on a static aircraft or in flight, as appropriate—

(A) Preflight inspection;

(B) Normal takeoff from a hover;

(C) Manually flown precision approach; and

(D) Steep approach and landing to an off-airport heliport; or

(ii) An approved course at a training center that includes all training and testing for that certificate or rating and compliance with paragraphs (h)(8) and (h)(9) of this section.

(8) An applicant meeting only the requirements of paragraph (h)(7)(ii) of this section will be issued an additional rating or an airline transport pilot certificate with an additional rating, as applicable, with a limitation. The limitation shall state: ''This certificate is subject to pilot-in-command limitations for the additional rating.''

(9) An applicant issued a certificate with the limitation specified in paragraph (h)(8) of this section—

(i) May not act as pilot in command of the aircraft for which an additional rating was obtained under the provisions of this section until the limitation is removed from the certificate; and

(ii) May have the limitation removed by accomplishing 25 hours of supervised operating experience as pilot in command under the supervision of a qualified and current pilot in command, in the seat normally occupied by the pilot in command, in an aircraft of the same type for which the limitation applies.

(i) *Use of a flight simulator or flight training device for a powered-lift rating.* If a flight simulator or flight training device is used for accomplishing all of the training and the required practical test for an airline transport pilot certificate with a powered-lift category rating and type rating, if applicable, the applicant, flight simulator, and flight training device are subject to the following requirements:

(1) The flight simulator and flight training device must represent that powered-lift type, if the rating involves a type rating in a powered-lift, or is representative of a powered-lift if the applicant is only seeking a powered-lift category rating and does not require a type rating.

(2) The flight simulator and flight training device must be used in accordance with an approved course at a training center certificated under part 142 of this chapter.

(3) All training and testing requirements (except preflight inspection) must be accomplished by the applicant to receive a powered-lift category rating and type rating, if applicable, without limitations; and—

(i) The flight simulator must be qualified and approved as Level C or Level D; and

(ii) The applicant must meet the aeronautical experience requirements

of § 61.163 of this part and at least one of the following—

(A) Hold a type rating for a turbine-powered powered-lift, or have been designated by a military service as a pilot in command of a turbine-powered powered-lift, if a turbine-powered powered-lift type rating is sought;

(B) Have at least 1,200 hours of flight time, of which 500 hours must be in turbine-powered powered-lifts;

(C) Have at least 500 hours of flight time in the same type of powered-lift for which the type rating is sought; or

(D) Have at least 1,000 hours of flight time in at least two different powered-lifts requiring a type rating.

(4) Subject to the limitation of paragraph (i)(5) of this section, an applicant who does not meet the requirements of paragraph (i)(3) of this section may complete all training and testing (except for preflight inspection) for an additional rating if—

(i) The flight simulator is qualified and approved as Level C or Level D; and

(ii) The applicant meets the aeronautical experience requirements of § 61.163 of this part and, since the beginning of the 12th calendar month before the month in which the applicant completes the practical test for the additional rating, has logged—

(A) At least 100 hours of flight time in powered-lifts; and

(B) At least 15 hours of flight time in powered-lifts of the same type of powered-lift for the type rating sought.

(5) An applicant meeting only the requirements of paragraph (i)(4)(ii) (A) and (B) of this section will be issued an additional rating or an airline transport pilot certificate with a limitation. The limitation shall state: ''This certificate is subject to pilot-in-command limitations for the additional rating.''

(6) An applicant who has been issued a certificate with the limitation specified in paragraph (i)(5) of this section—

(i) May not act as pilot in command of the powered-lift for which an additional rating was obtained under the provisions of this section until the limitation is removed from the certificate; and

(ii) May have the limitation removed by accomplishing 15 hours of supervised operating experience as pilot in command under the supervision of a qualified and current pilot in command, in the seat normally occupied by the pilot in command, in a powered-lift of the same type for which the limitation applies.

(7) An applicant who does not meet the requirements of paragraph (i)(3)(ii) (A) through (D) or (i)(4)(ii) (A) and (B) of this section may be issued an airline transport pilot certificate or an additional rating to that pilot certificate after successful completion of one of the following requirements—

(i) An approved course at a part 142 training center that includes all training and testing for that certificate or rating, followed by training and testing on the following tasks, which must be successfully completed on a static aircraft or in flight, as appropriate—

(A) Preflight inspection;

(B) Normal takeoff from a hover;

(C) Manually flown precision approach; and

(D) Steep approach and landing to an off-airport site; or

(ii) An approved course at a training center that includes all training and testing for that certificate or rating and is in compliance with paragraphs (i)(8) and (i)(9) of this section.

(8) An applicant meeting only the requirements of paragraph (i)(7)(ii) of this section will be issued an additional rating or an airline transport pilot certificate with an additional rating, as applicable, with a limitation. The limitation shall state: ''This certificate is subject to pilot-in-command limitations for the additional rating.''

(9) An applicant issued a pilot certificate with the limitation specified in paragraph (i)(8) of this section—

(i) May not act as pilot in command of the aircraft for which an additional rating was obtained under the provisions of this section until the limitation is removed from the certificate; and

(ii) May have the limitation removed by accomplishing 25 hours of supervised operating experience as pilot in command under the supervision of a qualified and current pilot in command, in the seat normally occupied by the pilot in command, in a powered-lift of the same type for which the limitation applies.

(j) *Waiver authority.* Unless the Administrator requires certain or all tasks to be performed, the examiner who conducts the practical test for an airline transport pilot certificate may waive any of the tasks for which the Administrator approves waiver authority.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40905, July 30, 1997; Amdt. 61–104, 63 FR 20288, Apr. 23, 1998; Amdt. 61–109, 68 FR 54560, Sept. 17, 2003]

§ 61.158 [Reserved]

§ 61.159 Aeronautical experience: Airplane category rating.

(a) Except as provided in paragraphs (b), (c), and (d) of this section, a person who is applying for an airline transport pilot certificate with an airplane category and class rating must have at least 1,500 hours of total time as a pilot that includes at least:

(1) 500 hours of cross-country flight time.

(2) 100 hours of night flight time.

(3) 75 hours of instrument flight time, in actual or simulated instrument conditions, subject to the following:

(i) Except as provided in paragraph (a)(3)(ii) of this section, an applicant may not receive credit for more than a total of 25 hours of simulated instrument time in a flight simulator or flight training device.

(ii) A maximum of 50 hours of training in a flight simulator or flight training device may be credited toward the instrument flight time requirements of paragraph (a)(3) of this section if the training was accomplished in a course conducted by a training center certificated under part 142 of this chapter.

(iii) Training in a flight simulator or flight training device must be accomplished in a flight simulator or flight training device, representing an airplane.

(4) 250 hours of flight time in an airplane as a pilot in command, or as second in command performing the duties of pilot in command while under the supervision of a pilot in command, or any combination thereof, which includes at least—

(i) 100 hours of cross-country flight time; and

(ii) 25 hours of night flight time.

(5) Not more than 100 hours of the total aeronautical experience requirements of paragraph (a) of this section may be obtained in a flight simulator or flight training device that represents an airplane, provided the aeronautical experience was obtained in an approved course conducted by a training center certificated under part 142 of this chapter.

(b) A person who has performed at least 20 night takeoffs and landings to a full stop may substitute each additional night takeoff and landing to a full stop for 1 hour of night flight time to satisfy the requirements of paragraph (a)(2) of this section; however, not more than 25 hours of night flight time may be credited in this manner.

(c) A commercial pilot may credit the following second-in-command flight time or flight-engineer flight time toward the 1,500 hours of total time as a pilot required by paragraph (a) of this section:

(1) Second-in-command time, provided the time is acquired in an airplane—

(i) Required to have more than one pilot flight crewmember by the airplane's flight manual, type certificate, or the regulations under which the flight is being conducted;

(ii) Engaged in operations under subpart K of part 91, part 121, or part 135 of this chapter for which a second in command is required; or

(iii) That is required by the operating rules of this chapter to have more than one pilot flight crewmember.

(2) Flight-engineer time, provided the time—

(i) Is acquired in an airplane required to have a flight engineer by the airplane's flight manual or type certificate;

(ii) Is acquired while engaged in operations under part 121 of this chapter for which a flight engineer is required;

(iii) Is acquired while the person is participating in a pilot training program approved under part 121 of this chapter; and

(iv) Does not exceed more than 1 hour for each 3 hours of flight engineer flight time for a total credited time of no more than 500 hours.

(d) An applicant may be issued an airline transport pilot certificate with

the endorsement, ''Holder does not meet the pilot in command aeronautical experience requirements of ICAO,'' as prescribed by Article 39 of the Convention on International Civil Aviation, if the applicant:

(1) Credits second-in-command or flight-engineer time under paragraph (c) of this section toward the 1,500 hours total flight time requirement of paragraph (a) of this section;

(2) Does not have at least 1,200 hours of flight time as a pilot, including no more than 50 percent of his or her second-in-command time and none of his or her flight-engineer time; and

(3) Otherwise meets the requirements of paragraph (a) of this section.

(e) When the applicant specified in paragraph (d) of this section presents satisfactory evidence of the accumulation of 1,200 hours of flight time as a pilot including no more than 50 percent of his or her second-in-command flight time and none of his or her flight-engineer time, the applicant is entitled to an airline transport pilot certificate without the endorsement prescribed in that paragraph.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40906, July 30, 1997; Amdt. 61–104, 63 FR 20288, Apr. 23, 1998; Amdt. 61–109, 68 FR 54560, Sept. 17, 2003]

§ 61.161 Aeronautical experience: Rotorcraft category and helicopter class rating.

(a) A person who is applying for an airline transport pilot certificate with a rotorcraft category and helicopter class rating, must have at least 1,200 hours of total time as a pilot that includes at least:

(1) 500 hours of cross-country flight time;

(2) 100 hours of night flight time, of which 15 hours are in helicopters;

(3) 200 hours of flight time in helicopters, which includes at least 75 hours as a pilot in command, or as second in command performing the duties of a pilot in command under the supervision of a pilot in command, or any combination thereof; and

(4) 75 hours of instrument flight time in actual or simulated instrument meteorological conditions, of which at least 50 hours are obtained in flight with at least 25 hours in helicopters as a pilot in command, or as second in command performing the duties of a pilot in command under the supervision of a pilot in command, or any combination thereof.

(b) Training in a flight simulator or flight training device may be credited toward the instrument flight time requirements of paragraph (a)(4) of this section, subject to the following:

(1) Training in a flight simulator or a flight training device must be accomplished in a flight simulator or flight training device that represents a rotorcraft.

(2) Except as provided in paragraph (b)(3) of this section, an applicant may receive credit for not more than a total of 25 hours of simulated instrument time in a flight simulator and flight training device.

(3) A maximum of 50 hours of training in a flight simulator or flight training device may be credited toward the instrument flight time requirements of paragraph (a)(4) of this section if the aeronautical experience is accomplished in an approved course conducted by a training center certificated under part 142 of this chapter.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40906, July 30, 1997; Amdt. 61–104, 63 FR 20289, Apr. 23, 1998]

§ 61.163 Aeronautical experience: Powered-lift category rating.

(a) A person who is applying for an airline transport pilot certificate with a powered-lift category rating must have at least 1,500 hours of total time as a pilot that includes at least:

(1) 500 hours of cross-country flight time;

(2) 100 hours of night flight time;

(3) 250 hours in a powered-lift as a pilot in command, or as a second in command performing the duties of a pilot in command under the supervision of a pilot in command, or any combination thereof, which includes at least—

(i) 100 hours of cross-country flight time; and

(ii) 25 hours of night flight time.

(4) 75 hours of instrument flight time in actual or simulated instrument conditions, subject to the following:

(i) Except as provided in paragraph (a)(4)(ii) of this section, an applicant

may not receive credit for more than a total of 25 hours of simulated instrument time in a flight simulator or flight training device.

(ii) A maximum of 50 hours of training in a flight simulator or flight training device may be credited toward the instrument flight time requirements of paragraph (a)(4) of this section if the training was accomplished in a course conducted by a training center certificated under part 142 of this chapter.

(iii) Training in a flight simulator or flight training device must be accomplished in a flight simulator or flight training device that represents a powered-lift.

(b) Not more than 100 hours of the total aeronautical experience requirements of paragraph (a) of this section may be obtained in a flight simulator or flight training device that represents a powered-lift, provided the aeronautical experience was obtained in an approved course conducted by a training center certificated under part 142 of this chapter.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40906, July 30, 1997; Amdt. 61–104, 63 FR 20289, Apr. 23, 1998]

§ 61.165 Additional aircraft category and class ratings.

(a) *Rotorcraft category and helicopter class rating.* A person applying for an airline transport certificate with a rotorcraft category and helicopter class rating who holds an airline transport pilot certificate with another aircraft category rating must:

(1) Meet the eligibility requirements of § 61.153 of this part;

(2) Pass a knowledge test on the aeronautical knowledge areas of § 61.155(c) of this part;

(3) Comply with the requirements in § 61.157(b) of this part, if appropriate;

(4) Meet the applicable aeronautical experience requirements of § 61.161 of this part; and

(5) Pass the practical test on the areas of operation of § 61.157(e)(4) of this part.

(b) *Airplane category rating with a single-engine class rating.* A person applying for an airline transport certificate with an airplane category and single-engine class rating who holds an airline transport pilot certificate with another aircraft category rating must:

(1) Meet the eligibility requirements of § 61.153 of this part;

(2) Pass a knowledge test on the aeronautical knowledge areas of § 61.155(c) of this part;

(3) Comply with the requirements in § 61.157(b) of this part, if appropriate;

(4) Meet the applicable aeronautical experience requirements of § 61.159 of this part; and

(5) Pass the practical test on the areas of operation of § 61.157(e)(1) of this part.

(c) *Airplane category rating with a multiengine class rating.* A person applying for an airline transport certificate with an airplane category and multiengine class rating who holds an airline transport certificate with another aircraft category rating must:

(1) Meet the eligibility requirements of § 61.153 of this part;

(2) Pass a knowledge test on the aeronautical knowledge areas of § 61.155(c) of this part;

(3) Comply with the requirements in § 61.157(b) of this part, if appropriate;

(4) Meet the applicable aeronautical experience requirements of § 61.159 of this part; and

(5) Pass the practical test on the areas of operation of § 61.157(e)(2) of this part.

(d) *Powered-lift category.* A person applying for an airline transport pilot certificate with a powered-lift category rating who holds an airline transport certificate with another aircraft category rating must:

(1) Meet the eligibility requirements of § 61.153 of this part;

(2) Pass a required knowledge test on the aeronautical knowledge areas of § 61.155(c) of this part;

(3) Comply with the requirements in § 61.157(b) of this part, if appropriate;

(4) Meet the applicable aeronautical experience requirements of § 61.163 of this part; and

(5) Pass the required practical test on the areas of operation of § 61.157(e)(3) of this part.

(e) *Additional class rating within the same aircraft category.* A person applying for an airline transport certificate with an additional class rating who

holds an airline transport certificate in the same aircfaft category must—

(1) Meet the eligibility requirements of § 61.153, except paragraph (f) of that section;

(2) Comply with the requirements in § 61.157(b) of this part, if applicable;

(3) Meet the applicable aeronautical experience requirements of subpart G of this part; and

(4) Pass a practical test on the areas of operation of § 61.157(e) appropriate to the aircraft rating sought.

(f) *Category class ratings for the operation of aircraft with experimental certificates.* Notwithstanding the provisions of paragraphs (a) through (e) of this section, a person holding an airline transport certificate may apply for a category and class rating limited to a specific make and model of experimental aircraft, provided—

(1) The person has logged at least 5 hours flight time while acting as pilot in command in the same category, class, make, and model of aircraft that has been issued an experimental certificate;

(2) The person has received a logbook endorsement from an authorized instructor who has determined that he or she is proficient to act as pilot in command of the same category, class, make, and model of aircraft for which application is made; and

(3) The flight time specified in paragraph (f)(1) of this section must be logged between September 1, 2004 and August 31, 2005.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40906, July 30, 1997; Amdt. 61–110, 69 FR 44869, July 27, 2004]

§ 61.167 Privileges.

(a) A person who holds an airline transport pilot certificate is entitled to the same privileges as those afforded a person who holds a commercial pilot certificate with an instrument rating.

(b) An airline transport pilot may instruct—

(1) Other pilots in air transportation service in aircraft of the category, class, and type, as applicable, for which the airline transport pilot is rated and endorse the logbook or other training record of the person to whom training has been given;

(2) In flight simulators, and flight training devices representing the aircraft referenced in paragraph (b)(1) of this section, when instructing under the provisions of this section and endorse the logbook or other training record of the person to whom training has been given;

(3) Only as provided in this section, unless the airline transport pilot also holds a flight instructor certificate, in which case the holder may exercise the instructor privileges of subpart H of part 61 for which he or she is rated; and

(4) In an aircraft, only if the aircraft has functioning dual controls, when instructing under the provisions of this section.

(c) Excluding briefings and debriefings, an airline transport pilot may not instruct in aircraft, flight simulators, and flight training devices under this section—

(1) For more than 8 hours in any 24-consecutive-hour period; or

(2) For more than 36 hours in any 7-consecutive-day period.

(d) An airline transport pilot may not instruct in Category II or Category III operations unless he or she has been trained and successfully tested under Category II or Category III operations, as applicable.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40907, July 30, 1997]

§§ 61.169–69.171 [Reserved]

Subpart H—Flight Instructors Other than Flight Instructors With a Sport Pilot Rating

§ 61.181 Applicability.

This subpart prescribes the requirements for the issuance of flight instructor certificates and ratings (except for flight instructor certificates with a sport pilot rating), the conditions under which those certificates and ratings are necessary, and the limitations on those certificates and ratings.

[Doc. No. FAA–2001–11133, 69 FR 44869, July 27, 2004]

§ 61.183 Eligibility requirements.

To be eligible for a flight instructor certificate or rating a person must:

(a) Be at least 18 years of age;

(b) Be able to read, speak, write, and understand the English language. If the applicant is unable to meet one of these requirements due to medical reasons, then the Administrator may place such operating limitations on that applicant's flight instructor certificate as are necessary;

(c) Hold either a commercial pilot certificate or airline transport pilot certificate with:

(1) An aircraft category and class rating that is appropriate to the flight instructor rating sought; and

(2) An instrument rating, or privileges on that person's pilot certificate that are appropriate to the flight instructor rating sought, if applying for—

(i) A flight instructor certificate with an airplane category and single-engine class rating;

(ii) A flight instructor certificate with an airplane category and multiengine class rating;

(iii) A flight instructor certificate with a powered-lift rating; or

(iv) A flight instructor certificate with an instrument rating.

(d) Receive a logbook endorsement from an authorized instructor on the fundamentals of instructing listed in § 61.185 of this part appropriate to the required knowledge test;

(e) Pass a knowledge test on the areas listed in § 61.185(a)(1) of this part, unless the applicant:

(1) Holds a flight instructor certificate or ground instructor certificate issued under this part;

(2) Holds a current teacher's certificate issued by a State, county, city, or municipality that authorizes the person to teach at an educational level of the 7th grade or higher; or

(3) Is employed as a teacher at an accredited college or university.

(f) Pass a knowledge test on the aeronautical knowledge areas listed in § 61.185(a)(2) and (a)(3) of this part that are appropriate to the flight instructor rating sought;

(g) Receive a logbook endorsement from an authorized instructor on the areas of operation listed in § 61.187(b) of this part, appropriate to the flight instructor rating sought;

(h) Pass the required practical test that is appropriate to the flight instructor rating sought in an:

(1) Aircraft that is representative of the category and class of aircraft for the aircraft rating sought; or

(2) Flight simulator or approved flight training device that is representative of the category and class of aircraft for the rating sought, and used in accordance with a course at a training center certificated under part 142 of this chapter.

(i) Accomplish the following for a flight instructor certificate with an airplane or a glider rating:

(1) Receive a logbook endorsement from an authorized instructor indicating that the applicant is competent and possesses instructional proficiency in stall awareness, spin entry, spins, and spin recovery procedures after providing the applicant with flight training in those training areas in an airplane or glider, as appropriate, that is certificated for spins; and

(2) Demonstrate instructional proficiency in stall awareness, spin entry, spins, and spin recovery procedures. However, upon presentation of the endorsement specified in paragraph (i)(1) of this section an examiner may accept that endorsement as satisfactory evidence of instructional proficiency in stall awareness, spin entry, spins, and spin recovery procedures for the practical test, provided that the practical test is not a retest as a result of the applicant failing the previous test for deficiencies in the knowledge or skill of stall awareness, spin entry, spins, or spin recovery instructional procedures. If the retest is a result of deficiencies in the ability of an applicant to demonstrate knowledge or skill of stall awareness, spin entry, spins, or spin recovery instructional procedures, the examiner must test the person on stall awareness, spin entry, spins, and spin recovery instructional procedures in an airplane or glider, as appropriate, that is certificated for spins;

(j) Log at least 15 hours as pilot in command in the category and class of aircraft that is appropriate to the flight instructor rating sought; and

(k) Comply with the appropriate sections of this part that apply to the flight instructor rating sought.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40907, July 30, 1997]

§ 61.185 Aeronautical knowledge.

(a) A person who is applying for a flight instructor certificate must receive and log ground training from an authorized instructor on:

(1) Except as provided in paragraph (b) of this section, the fundamentals of instructing, including:

(i) The learning process;

(ii) Elements of effective teaching;

(iii) Student evaluation and testing;

(iv) Course development;

(v) Lesson planning; and

(vi) Classroom training techniques.

(2) The aeronautical knowledge areas for a recreational, private, and commercial pilot certificate applicable to the aircraft category for which flight instructor privileges are sought; and

(3) The aeronautical knowledge areas for the instrument rating applicable to the category for which instrument flight instructor privileges are sought.

(b) The following applicants do not need to comply with paragraph (a)(1) of this section:

(1) The holder of a flight instructor certificate or ground instructor certificate issued under this part;

(2) The holder of a current teacher's certificate issued by a State, county, city, or municipality that authorizes the person to teach at an educational level of the 7th grade or higher; or

(3) A person employed as a teacher at an accredited college or university.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40907, July 30, 1997]

§ 61.187 Flight proficiency.

(a) *General.* A person who is applying for a flight instructor certificate must receive and log flight and ground training from an authorized instructor on the areas of operation listed in this section that apply to the flight instructor rating sought. The applicant's logbook must contain an endorsement from an authorized instructor certifying that the person is proficient to pass a practical test on those areas of operation.

(b) *Areas of operation.* (1) For an airplane category rating with a single-engine class rating:

(i) Fundamentals of instructing;

(ii) Technical subject areas;

(iii) Preflight preparation;

(iv) Preflight lesson on a maneuver to be performed in flight;

(v) Preflight procedures;

(vi) Airport and seaplane base operations;

(vii) Takeoffs, landings, and go-arounds;

(viii) Fundamentals of flight;

(ix) Performance maneuvers;

(x) Ground reference maneuvers;

(xi) Slow flight, stalls, and spins;

(xii) Basic instrument maneuvers;

(xiii) Emergency operations; and

(xiv) Postflight procedures.

(2) For an airplane category rating with a multiengine class rating:

(i) Fundamentals of instructing;

(ii) Technical subject areas;

(iii) Preflight preparation;

(iv) Preflight lesson on a maneuver to be performed in flight;

(v) Preflight procedures;

(vi) Airport and seaplane base operations;

(vii) Takeoffs, landings, and go-arounds;

(viii) Fundamentals of flight;

(ix) Performance maneuvers;

(x) Ground reference maneuvers;

(xi) Slow flight and stalls;

(xii) Basic instrument maneuvers;

(xiii) Emergency operations;

(xiv) Multiengine operations; and

(xv) Postflight procedures.

(3) For a rotorcraft category rating with a helicopter class rating:

(i) Fundamentals of instructing;

(ii) Technical subject areas;

(iii) Preflight preparation;

(iv) Preflight lesson on a maneuver to be performed in flight;

(v) Preflight procedures;

(vi) Airport and heliport operations;

(vii) Hovering maneuvers;

(viii) Takeoffs, landings, and go-arounds;

(ix) Fundamentals of flight;

(x) Performance maneuvers;

(xi) Emergency operations;

(xii) Special operations; and

(xiii) Postflight procedures.

(4) For a rotorcraft category rating with a gyroplane class rating:

(i) Fundamentals of instructing;
(ii) Technical subject areas;
(iii) Preflight preparation;
(iv) Preflight lesson on a maneuver to be performed in flight;
(v) Preflight procedures;
(vi) Airport operations;
(vii) Takeoffs, landings, and go-arounds;
(viii) Fundamentals of flight;
(ix) Performance maneuvers;
(x) Flight at slow airspeeds;
(xi) Ground reference maneuvers;
(xii) Emergency operations; and
(xiii) Postflight procedures.
(5) For a powered-lift category rating:
(i) Fundamentals of instructing;
(ii) Technical subject areas;
(iii) Preflight preparation;
(iv) Preflight lesson on a maneuver to be performed in flight;
(v) Preflight procedures;
(vi) Airport and heliport operations;
(vii) Hovering maneuvers;
(viii) Takeoffs, landings, and go-arounds;
(ix) Fundamentals of flight;
(x) Performance maneuvers;
(xi) Ground reference maneuvers;
(xii) Slow flight and stalls;
(xiii) Basic instrument maneuvers;
(xiv) Emergency operations;
(xv) Special operations; and
(xvi) Postflight procedures.
(6) For a glider category rating:
(i) Fundamentals of instructing;
(ii) Technical subject areas;
(iii) Preflight preparation;
(iv) Preflight lesson on a maneuver to be performed in flight;
(v) Preflight procedures;
(vi) Airport and gliderport operations;
(vii) Launches, landings, and go-arounds;
(viii) Fundamentals of flight;
(ix) Performance speeds;
(x) Soaring techniques;
(xi) Performance maneuvers;
(xii) Slow flight, stalls, and spins;
(xiii) Emergency operations; and
(xiv) Postflight procedures.
(7) For an instrument rating with the appropriate aircraft category and class rating:
(i) Fundamentals of instructing;
(ii) Technical subject areas;
(iii) Preflight preparation;
(iv) Preflight lesson on a maneuver to be performed in flight;
(v) Air traffic control clearances and procedures;
(vi) Flight by reference to instruments;
(vii) Navigation aids;
(viii) Instrument approach procedures;
(ix) Emergency operations; and
(x) Postflight procedures.
(c) The flight training required by this section may be accomplished:
(1) In an aircraft that is representative of the category and class of aircraft for the rating sought; or
(2) In a flight simulator or flight training device representative of the category and class of aircraft for the rating sought, and used in accordance with an approved course at a training center certificated under part 142 of this chapter.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40907, July 30, 1997]

§ 61.189 Flight instructor records.

(a) A flight instructor must sign the logbook of each person to whom that instructor has given flight training or ground training.
(b) A flight instructor must maintain a record in a logbook or a separate document that contains the following:
(1) The name of each person whose logbook or student pilot certificate that instructor has endorsed for solo flight privileges, and the date of the endorsement; and
(2) The name of each person that instructor has endorsed for a knowledge test or practical test, and the record shall also indicate the kind of test, the date, and the results.
(c) Each flight instructor must retain the records required by this section for at least 3 years.

§ 61.191 Additional flight instructor ratings.

(a) A person who applies for an additional flight instructor rating on a flight instructor certificate must meet the eligibility requirements listed in § 61.183 of this part that apply to the flight instructor rating sought.
(b) A person who applies for an additional rating on a flight instructor certificate is not required to pass the

knowledge test on the areas listed in § 61.185(a)(1) of this part.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40907, July 30, 1997]

§ 61.193 Flight instructor privileges.

A person who holds a flight instructor certificate is authorized within the limitations of that person's flight instructor certificate and ratings to give training and endorsements that are required for, and relate to:

(a) A student pilot certificate;

(b) A pilot certificate;

(c) A flight instructor certificate;

(d) A ground instructor certificate;

(e) An aircraft rating;

(f) An instrument rating;

(g) A flight review, operating privilege, or recency of experience requirement of this part;

(h) A practical test; and

(i) A knowledge test.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40907, July 30, 1997]

§ 61.195 Flight instructor limitations and qualifications.

A person who holds a flight instructor certificate is subject to the following limitations:

(a) *Hours of training.* In any 24-consecutive-hour period, a flight instructor may not conduct more than 8 hours of flight training.

(b) *Aircraft ratings.* A flight instructor may not conduct flight training in any aircraft for which the flight instructor does not hold:

(1) A pilot certificate and flight instructor certificate with the applicable category and class rating; and

(2) If appropriate, a type rating.

(c) *Instrument Rating.* A flight instructor who provides instrument flight training for the issuance of an instrument rating or a type rating not limited to VFR must hold an instrument rating on his or her flight instructor certificate and pilot certificate that is appropriate to the category and class of aircraft in which instrument training is being provided.

(d) *Limitations on endorsements.* A flight instructor may not endorse a:

(1) Student pilot's certificate or logbook for solo flight privileges, unless that flight instructor has—

(i) Given that student the flight training required for solo flight privileges required by this part; and

(ii) Determined that the student is prepared to conduct the flight safely under known circumstances, subject to any limitations listed in the student's logbook that the instructor considers necessary for the safety of the flight.

(2) Student pilot's certificate and logbook for a solo cross-country flight, unless that flight instructor has determined the student's flight preparation, planning, equipment, and proposed procedures are adequate for the proposed flight under the existing conditions and within any limitations listed in the logbook that the instructor considers necessary for the safety of the flight;

(3) Student pilot's certificate and logbook for solo flight in a Class B airspace area or at an airport within Class B airspace unless that flight instructor has—

(i) Given that student ground and flight training in that Class B airspace or at that airport; and

(ii) Determined that the student is proficient to operate the aircraft safely.

(4) Logbook of a recreational pilot, unless that flight instructor has—

(i) Given that pilot the ground and flight training required by this part; and

(ii) Determined that the recreational pilot is proficient to operate the aircraft safely.

(5) Logbook of a pilot for a flight review, unless that instructor has conducted a review of that pilot in accordance with the requirements of § 61.56(a) of this part; or

(6) Logbook of a pilot for an instrument proficiency check, unless that instructor has tested that pilot in accordance with the requirements of § 61.57(d) of this part.

(e) *Training in an aircraft that requires a type rating.* A flight instructor may not give flight training in an aircraft that requires the pilot in command to hold a type rating unless the flight instructor holds a type rating for that aircraft on his or her pilot certificate.

(f) *Training received in a multiengine airplane, a helicopter, or a powered-lift.* A flight instructor may not give training

required for the issuance of a certificate or rating in a multiengine airplane, a helicopter, or a powered-lift unless that flight instructor has at least 5 flight hours of pilot-in-command time in the specific make and model of multiengine airplane, helicopter, or powered-lift, as appropriate.

(g) *Position in aircraft and required pilot stations for providing flight training.* (1) A flight instructor must perform all training from in an aircraft that complies with the requirements of § 91.109 of this chapter.

(2) A flight instructor who provides flight training for a pilot certificate or rating issued under this part must provide that flight training in an aircraft that meets the following requirements—

(i) The aircraft must have at least two pilot stations and be of the same category, class, and type, if appropriate, that applies to the pilot certificate or rating sought.

(ii) For single-place aircraft, the presolo flight training must have been provided in an aircraft that has two pilot stations and is of the same category, class, and type, if appropriate.

(h) *Qualifications of the flight instructor for training first-time flight instructor applicants.* (1) The ground training provided to an initial applicant for a flight instructor certificate must be given by an authorized instructor who—

(i) Holds a current ground or flight instructor certificate with the appropriate rating, has held that certificate for at least 24 months, and has given at least 40 hours of ground training; or

(ii) Holds a current ground or flight instructor certificate with the appropriate rating, and has given at least 100 hours of ground training in an FAA-approved course.

(2) Except for an instructor who meets the requirements of paragraph (h)(3)(ii) of this section, a flight instructor who provides training to an initial applicant for a flight instructor certificate must—

(i) Meet the eligibility requirements prescribed in § 61.183 of this part;

(ii) Hold the appropriate flight instructor certificate and rating;

(iii) Have held a flight instructor certificate for at least 24 months;

(iv) For training in preparation for an airplane, rotorcraft, or powered-lift rating, have given at least 200 hours of flight training as a flight instructor; and

(v) For training in preparation for a glider rating, have given at least 80 hours of flight training as a flight instructor.

(3) A flight instructor who serves as a flight instructor in an FAA-approved course for the issuance of a flight instructor rating must hold a current flight instructor certificate with the appropriate rating and pass the required initial and recurrent flight instructor proficiency tests, in accordance with the requirements of the part under which the FAA-approved course is conducted, and must—

(i) Meet the requirements of paragraph (h)(2) of this section; or

(ii) Have trained and endorsed at least five applicants for a practical test for a pilot certificate, flight instructor certificate, ground instructor certificate, or an additional rating, and at least 80 percent of those applicants passed that test on their first attempt; and

(A) Given at least 400 hours of flight training as a flight instructor for training in an airplane, a rotorcraft, or for a powered-lift rating; or

(B) Given at least 100 hours of flight training as a flight instructor, for training in a glider rating.

(i) *Prohibition against self-endorsements.* A flight instructor shall not make any self-endorsement for a certificate, rating, flight review, authorization, operating privilege, practical test, or knowledge test that is required by this part.

(j) *Additional qualifications required to give training in Category II or Category III operations.* A flight instructor may not give training in Category II or Category III operations unless the flight instructor has been trained and tested in Category II or Category III operations, pursuant to § 61.67 or § 61.68 of this part, as applicable.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40907, July 30, 1997]

§ 61.197 Renewal of flight instructor certificates.

(a) A person who holds a flight instructor certificate that has not expired may renew that certificate by—

(1) Passing a practical test for—

(i) One of the ratings listed on the current flight instructor certificate; or

(ii) An additional flight instructor rating; or

(2) Presenting to an authorized FAA Flight Standards Inspector—

(i) A record of training students showing that, during the preceding 24 calendar months, the flight instructor has endorsed at least five students for a practical test for a certificate or rating and at least 80 percent of those students passed that test on the first attempt;

(ii) A record showing that, within the preceding 24 calendar months, the flight instructor has served as a company check pilot, chief flight instructor, company check airman, or flight instructor in a part 121 or part 135 operation, or in a position involving the regular evaluation of pilots; or

(iii) A graduation certificate showing that, within the preceding 3 calendar months, the person has successfully completed an approved flight instructor refresher course consisting of ground training or flight training, or a combination of both.

(b) The expiration month of a renewed flight instructor certificate shall be 24 calendar months from—

(1) The month the renewal requirements of paragraph (a) of this section are accomplished; or

(2) The month of expiration of the current flight instructor certificate provided—

(i) The renewal requirements of paragraph (a) of this section are accomplished within the 3 calendar months preceding the expiration month of the current flight instructor certificate, and

(ii) If the renewal is accomplished under paragraph (a)(2)(iii) of this section, the approved flight instructor refresher course must be completed within the 3 calendar months preceding the expiration month of the current flight instructor certificate.

(c) The practical test required by paragraph (a)(1) of this section may be accomplished in a flight simulator or flight training device if the test is accomplished pursuant to an approved course conducted by a training center certificated under part 142 of this chapter.

[Doc. No. 25910, 63 FR 20289, Apr. 23, 1998]

§ 61.199 Expired flight instructor certificates and ratings.

(a) *Flight instructor certificates.* The holder of an expired flight instructor certificate may exchange that certificate for a new certificate with the same ratings by passing a practical test as prescribed in § 61.183(h) of this part for one of the ratings listed on the expired flight instructor certificate.

(b) *Flight instructor ratings.* (1) A flight instructor rating or a limited flight instructor rating on a pilot certificate is no longer valid and may not be exchanged for a similar rating or a flight instructor certificate.

(2) The holder of a flight instructor rating or a limited flight instructor rating on a pilot certificate may be issued a flight instructor certificate with the current ratings, but only if the person passes the required knowledge and practical test prescribed in this subpart for the issuance of the current flight instructor certificate and rating.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997, as amended by Amdt. 61–104, 63 FR 20289, Apr. 23, 1998]

§ 61.201 [Reserved]

Subpart I—Ground Instructors

§ 61.211 Applicability.

This subpart prescribes the requirements for the issuance of ground instructor certificates and ratings, the conditions under which those certificates and ratings are necessary, and the limitations upon those certificates and ratings.

§ 61.213 Eligibility requirements.

(a) To be eligible for a ground instructor certificate or rating a person must:

(1) Be at least 18 years of age;

(2) Be able to read, write, speak, and understand the English language. If the

applicant is unable to meet one of these requirements due to medical reasons, then the Administrator may place such operating limitations on that applicant's ground instructor certificate as are necessary;

(3) Except as provided in paragraph (b) of this section, pass a knowledge test on the fundamentals of instructing to include—

(i) The learning process;

(ii) Elements of effective teaching;

(iii) Student evaluation and testing;

(iv) Course development;

(v) Lesson planning; and

(vi) Classroom training techniques.

(4) Pass a knowledge test on the aeronautical knowledge areas in—

(i) For a basic ground instructor rating §§ 61.97, 61.105, and 61.309;

(ii) For an advanced ground instructor rating §§ 61.97, 61.105, 61.125, 61.155, and 61.309; and

(iii) For an instrument ground instructor rating, § 61.65.

(b) The knowledge test specified in paragraph (a)(3) of this section is not required if the applicant:

(1) Holds a ground instructor certificate or flight instructor certificate issued under this part;

(2) Holds a current teacher's certificate issued by a State, county, city, or municipality that authorizes the person to teach at an educational level of the 7th grade or higher; or

(3) Is employed as a teacher at an accredited college or university.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997, as amended by Amdt. 61–110, 69 FR 44869, July 27, 2004]

§ 61.215 Ground instructor privileges.

(a) A person who holds a basic ground instructor rating is authorized to provide—

(1) Ground training in the aeronautical knowledge areas required for the issuance of a sport pilot certificate, recreational pilot certificate, private pilot certificate, or associated ratings under this part;

(2) Ground training required for a sport pilot, recreational pilot, and private pilot flight review; and

(3) A recommendation for a knowledge test required for the issuance of a sport pilot certificate, recreational pilot certificate, or private pilot certificate under this part.

(b) A person who holds an advanced ground instructor rating is authorized to provide:

(1) Ground training in the aeronautical knowledge areas required for the issuance of any certificate or rating under this part;

(2) Ground training required for any flight review; and

(3) A recommendation for a knowledge test required for the issuance of any certificate under this part.

(c) A person who holds an instrument ground instructor rating is authorized to provide:

(1) Ground training in the aeronautical knowledge areas required for the issuance of an instrument rating under this part;

(2) Ground training required for an instrument proficiency check; and

(3) A recommendation for a knowledge test required for the issuance of an instrument rating under this part.

(d) A person who holds a ground instructor certificate is authorized, within the limitations of the ratings on the ground instructor certificate, to endorse the logbook or other training record of a person to whom the holder has provided the training or recommendation specified in paragraphs (a) through (c) of this section.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997, as amended by Amdt. 61–110, 69 FR 44869, July 27, 2004]

§ 61.217 Recent experience requirements.

The holder of a ground instructor certificate may not perform the duties of a ground instructor unless, within the preceding 12 months:

(a) The person has served for at least 3 months as a ground instructor; or

(b) The person has received an endorsement from an authorized ground or flight instructor certifying that the person has demonstrated safisfactory proficiency in the subject areas prescribed in § 61.213 (a)(3) and (a)(4), as applicable.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61–103, 62 FR 40907, July 30, 1997]

Subpart J—Sport Pilots

SOURCE: Docket No. FAA–2001–11133, 69 FR 44869, July 27, 2004, unless otherwise noted.

§ 61.301 What is the purpose of this subpart and to whom does it apply?

(a) This subpart prescribes the following requirements that apply to a sport pilot certificate:

(1) Eligibility.

(2) Aeronautical knowledge.

(3) Flight proficiency.

(4) Aeronautical experience.

(5) Endorsements.

(6) Privileges and limits.

(7) Transition provisions for registered ultralight pilots.

(b) Other provisions of this part apply to the logging of flight time and testing.

(c) This subpart applies to applicants for, and holders of, sport pilot certificates. It also applies to holders of recreational pilot certificates and higher, as provided in § 61.303.

§ 61.303 If I want to operate a light-sport aircraft, what operating limits and endorsement requirements in this subpart must I comply with?

(a) Use the following table to determine what operating limits and endorsement requirements in this subpart, if any, apply to you when you operate a light-sport aircraft. The medical certificate specified in this table must be valid. If you hold a recreational pilot certificate, but not a medical certificate, you must comply with cross-country requirements in § 61.101 (c), even if your flight does not exceed 50 nautical miles from your departure airport. You must also comply with requirements in other subparts of this part that apply to your certificate and the operation you conduct.

If you hold	And you hold	Then you may operate	And
(1) A medical certificate	(i) A sport pilot certificate, ...	(A) Any light sport aircraft for which you hold the endorsements required for its category, class, make and model,	(*1*) You must hold any other endorsements required by this subpart, and comply with the limitations in § 61.315.
	(ii) At least a recreational pilot certificate with a category and class rating,	(A) Any light sport aircraft in that category and class,	(*1*) You do not have to hold any of the endorsements required by this subpart, nor do you have to comply with the limitations in § 61.315.
	(iii) At least a recreational pilot certificate but not a rating for the category and class of light sport aircraft you operate,	(A) That light sport aircraft, only if you hold the endorsements required in § 61.321 for its category and class,	(*1*) You must comply with the limitations in § 61.315, except § 61.315(c)(14) and, if a private pilot or higher, § 61.315(c)(7).
(2) Only a U.S. driver's license	(i) A sport pilot certificate,	(A) Any light sport aircraft for which you hold the endorsements required for its category, class, make and model,	(*1*) You must hold any other endorsements required by this subpart, and comply with the limitations in § 61.315.
	(ii) At least a recreational pilot certificate with a category and class rating,	(A) Any light sport aircraft in that category and class,	(*1*) You do not have to hold any of the endorsements required by this subpart, but you must comply with the limitations in § 61.315.
	(iii) At least a recreational pilot certificate but not a rating for the category and class of light-sport aircraft you operate,	(A) That light sport aircraft, only if you hold the endorsements required in § 61.321 for its category and class,	(*1*) You must comply with the limitations in § 61.315, except § 61.315(c)(14) and, if a private pilot or higher, § 61.315(c)(7).
(3) Neither a medical certificate nor a U.S. driver's license	(i) A sport pilot certificate,	(A) Only a light sport glider or balloon for which you hold the endorsements required for its category, class, make and model,	(*1*) You must hold any other endorsements required by this subpart, and comply with the limitations in § 61.315.
	(ii) At least a private pilot certificate with a category and class rating for glider or balloon,	(A) Only a light sport glider or balloon in that category and class,	(*1*) You do not have to hold any of the endorsements required by this subpart, but you must comply with the limitations in § 61.315.

If you hold	And you hold	Then you may operate	And
	(iii) At least a private pilot certificate but not a rating for glider or balloon,	(A) Only a light sport glider or balloon, if you hold the endorsements required in § 61.321 for its category and class,	(*1*) You must comply with the limitations in § 61.315, except § 61.315(c)(14) and, if a private pilot or higher, § 61.315(c)(7).

(b) A person using a current and valid U.S. driver's license to meet the requirements of this paragraph must—

(1) Comply with each restriction and limitation imposed by that person's U.S. driver's license and any judicial or administrative order applying to the operation of a motor vehicle;

(2) Have been found eligible for the issuance of at least a third-class airman medical certificate at the time of his or her most recent application (if the person has applied for a medical certificate);

(3) Not have had his or her most recently issued medical certificate (if the person has held a medical certificate) suspended or revoked or most recent Authorization for a Special Issuance of a Medical Certificate withdrawn; and

(4) Not know or have reason to know of any medical condition that would make that person unable to operate a light-sport aircraft in a safe manner.

§ 61.305 What are the age and language requirements for a sport pilot certificate?

(a) To be eligible for a sport pilot certificate you must:

(1) Be at least 17 years old (or 16 years old if you are applying to operate a glider or balloon).

(2) Be able to read, speak, write, and understand English. If you cannot read, speak, write, and understand English because of medical reasons, the FAA may place limits on your certificate as are necessary for the safe operation of light-sport aircraft.

§ 61.307 What tests do I have to take to obtain a sport pilot certificate?

To obtain a sport pilot certificate, you must pass the following tests:

(a) *Knowledge test.* You must pass a knowledge test on the applicable aeronautical knowledge areas listed in § 61.309. Before you may take the knowledge test for a sport pilot certificate, you must receive a logbook endorsement from the authorized instructor who trained you or reviewed and evaluated your home-study course on the aeronautical knowledge areas listed in § 61.309 certifying you are prepared for the test.

(b) *Practical test.* You must pass a practical test on the applicable areas of operation listed in §§ 61.309 and 61.311. Before you may take the practical test for a sport pilot certificate, you must receive a logbook endorsement from the authorized instructor who provided you with flight training on the areas of operation specified in §§ 61.309 and 61.311 in preparation for the practical test. This endorsement certifies that you meet the applicable aeronautical knowledge and experience requirements and are prepared for the practical test.

§ 61.309 What aeronautical knowledge must I have to apply for a sport pilot certificate?

Except as specified in § 61.329, to apply for a sport pilot certificate you must receive and log ground training from an authorized instructor or complete a home-study course on the following aeronautical knowledge areas:

(a) Applicable regulations of this chapter that relate to sport pilot privileges, limits, and flight operations.

(b) Accident reporting requirements of the National Transportation Safety Board.

(c) Use of the applicable portions of the aeronautical information manual and FAA advisory circulars.

(d) Use of aeronautical charts for VFR navigation using pilotage, dead reckoning, and navigation systems, as appropriate.

(e) Recognition of critical weather situations from the ground and in flight, windshear avoidance, and the procurement and use of aeronautical weather reports and forecasts.

(f) Safe and efficient operation of aircraft, including collision avoidance,

and recognition and avoidance of wake turbulence.

(g) Effects of density altitude on takeoff and climb performance.

(h) Weight and balance computations.

(i) Principles of aerodynamics, powerplants, and aircraft systems.

(j) Stall awareness, spin entry, spins, and spin recovery techniques, as applicable.

(k) Aeronautical decision making and risk management.

(l) Preflight actions that include—

(1) How to get information on runway lengths at airports of intended use, data on takeoff and landing distances, weather reports and forecasts, and fuel requirements; and

(2) How to plan for alternatives if the planned flight cannot be completed or if you encounter delays.

§ 61.311 What flight proficiency requirements must I meet to apply for a sport pilot certificate?

Except as specified in § 61.329, to apply for a sport pilot certificate you must receive and log ground and flight training from an authorized instructor on the following areas of operation, as appropriate, for airplane single-engine land or sea, glider, gyroplane, airship, balloon, powered parachute land or sea, and weight-shift-control aircraft land or sea privileges:

(a) Preflight preparation.

(b) Preflight procedures.

(c) Airport, seaplane base, and gliderport operations, as applicable.

(d) Takeoffs (or launches), landings, and go-arounds.

(e) Performance maneuvers, and for gliders, performance speeds.

(f) Ground reference maneuvers (not applicable to gliders and balloons).

(g) Soaring techniques (applicable only to gliders).

(h) Navigation.

(i) Slow flight (not applicable to lighter-than-air aircraft and powered parachutes).

(j) Stalls (not applicable to lighter-than-air aircraft, gyroplanes, and powered parachutes).

(k) Emergency operations.

(l) Post-flight procedures.

§ 61.313 What aeronautical experience must I have to apply for a sport pilot certificate?

Except as specified in § 61.329, use the following table to determine the aeronautical experience you must have to apply for a sport pilot certificate:

If you are applying for a sport pilot certificate with . . .	Then you must log at least . . .	Which must include at least . . .
(a) Airplane category and single-engine land or sea class privileges,	(1) 20 hours of flight time, including at least 15 hours of flight training from an authorized instructor in a single-engine airplane and at least 5 hours of solo flight training in the areas of operation listed in § 61.311,	(i) 2 hours of cross-country flight training, (ii) 10 takeoffs and landings to a full stop (with each landing involving a flight in the traffic pattern) at an airport, (iii) One solo cross-country flight of at least 75 nautical miles total distance, with a full-stop landing at a minimum of two points and one segment of the flight consisting of a straight-line distance of at least 25 nautical miles between the takeoff and landing locations, and (iv) 3 hours of flight training on those areas of operation specified in § 61.311 preparing for the practical test within 60 days before the date of the test.
(b) Glider category privileges, and you have not logged at least 20 hours of flight time in a heavier-than-air aircraft,	(1) 10 hours of flight time in a glider, including 10 flights in a glider receiving flight training from an authorized instructor and at least 2 hours of solo flight training in the areas of operation listed in § 61.311,	(i) Five solo launches and landings, and (ii) 3 hours of flight training on those areas of operation specified in § 61.311 preparing for the practical test within 60 days before the date of the test.
(c) Glider category privileges, and you have logged 20 hours flight time in a heavier-than-air aircraft,	(1) 3 hours of flight time in a glider, including five flights in a glider while receiving flight training from an authorized instructor and at least 1 hour of solo flight training in the areas of operation listed in § 61.311,	(i) Three solo launches and landings, and (ii) 3 hours of flight training on those areas of operation specified in § 61.311, preparing for the practical test within 60 days before the date of the test.

If you are applying for a sport pilot certificate with . . .	Then you must log at least . . .	Which must include at least . . .
(d) Rotorcraft category and gyroplane class privileges,	(1) 20 hours of flight time, including 15 hours of flight training from an authorized instructor in a gyroplane and at least 5 hours of solo flight training in the areas of operation listed in § 61.311,	(i) 2 hours of cross-country flight training, (ii) 10 takeoffs and landings to a full stop (with each landing involving a flight in the traffic pattern) at an airport, (iii) One solo cross-country flight of at least 50 nautical miles total distance, with a full-stop landing at a minimum of two points, and one segment of the flight consisting of a straight-line distance of at least 25 nautical miles between the takeoff and landing locations, and (iv) 3 hours of flight training on those areas of operation specified in § 61.311 preparing for the practical test within 60 days before the date of the test.
(e) Lighter-than-air category and airship class privileges,	(1) 20 hours of flight time, including 15 hours of flight training from an authorized instructor in an airship and at least 3 hours performing the duties of pilot in command in an airship with an authorized instructor in the areas of operation listed in § 61.311,	(i) 2 hours of cross-country flight training, (ii) Three takeoffs and landings to a full stop (with each landing involving a flight in the traffic pattern) at an airport, (iii) One cross-country flight of at least 25 nautical miles between the takeoff and landing locations, and (iv) 3 hours of flight training on those areas of operation specified in § 61.311 preparing for the practical test within 60 days before the date of the test.
(f) Lighter-than-air category and balloon class privileges,	(1) 7 hours of flight time in a balloon, including three flights with an authorized instructor and one flight performing the duties of pilot in command in a balloon with an authorized instructor in the areas of operation listed in § 61.311,	(i) 2 hours of cross-country flight training, and (ii) 3 hours of flight training on those areas of operation specified in § 61.311 preparing for the practical test within 60 days before the date of the test.
(g) Powered parachute category land or sea class privileges,	(1) 12 hours of flight time in a powered parachute, including 10 hours flight training and, and at least 2 hours solo flight training in the areas of operation listed in § 61.311.	(i) 1 hour of cross-country flight training, (ii) 20 takeoffs and landings to a full stop in a powered parachute with each landing involving flight in the traffic pattern at an airport; (iii) 10 solo takeoffs and landings to a full stop (with each landing involving a flight in the traffic pattern) at an airport, (iv) One solo flight with a landing at a different airport and one segment of the flight consisting of a straight-line distance of at least 10 nautical miles between takeoff and landing locations, and (v) 3 hours of flight training on those areas of operation specified in § 61.311 preparing for the practical test within 60 days before the date of the test.
(h) Weight-shift-control aircraft category land or sea class privileges,	(1) 20 hours of light time, including 15 hours of flight training from an authorized instructor in a weight-shift-control aircraft and at least 5 hours of solo flight training in the areas of operation listed in § 61.311,	(i) 2 hours of cross-country flight training, (ii) 10 takeoffs and landings to a full stop (with each landing involving a flight in the traffic pattern) at an airport, (iii) One solo cross-country flight of at least 50 nautical miles total distance, with a full-stop landing at a minimum of two points, and one segment of the flight consisting of a straight-line distance of at least 25 nautical miles between takeoff and landing locations, and (iv) 3 hours of flight training on those areas of operation specified in § 61.311 preparing for the practical test within 60 days before the date of the test.

§ 61.315 What are the privileges and limits of my sport pilot certificate?

(a) If you hold a sport pilot certificate you may act as pilot in command of a light-sport aircraft, except as specified in paragraph (c) of this section.

(b) You may share the operating expenses of a flight with a passenger, provided the expenses involve only fuel, oil, airport expenses, or aircraft rental fees. You must pay at least half the operating expenses of the flight.

(c) You may not act as pilot in command of a light-sport aircraft:

(1) That is carrying a passenger or property for compensation or hire.

(2) For compensation or hire.

(3) In furtherance of a business.

(4) While carrying more than one passenger.

(5) At night.

(6) In Class A airspace.

(7) In Class B, C, and D airspace, at an airport located in Class B, C, or D airspace, and to, from, through, or at an airport having an operational control tower unless you have met the requirements specified in § 61.325.

(8) Outside the United States, unless you have prior authorization from the country in which you seek to operate. Your sport pilot certificate carries the limit ''Holder does not meet ICAO requirements.''

(9) To demonstrate the aircraft in flight to a prospective buyer if you are an aircraft salesperson.

(10) In a passenger-carrying airlift sponsored by a charitable organization.

(11) At an altitude of more than 10,000 feet MSL.

(12) When the flight or surface visibility is less than 3 statute miles.

(13) Without visual reference to the surface.

(14) If the aircraft has a V_H that exceeds 87 knots CAS, unless you have met the requirements of § 61.327.

(15) Contrary to any operating limitation placed on the airworthiness certificate of the aircraft being flown.

(16) Contrary to any limit or endorsement on your pilot certificate, airman medical certificate, or any other limit or endorsement from an authorized instructor.

(17) Contrary to any restriction or limitation on your U.S. driver's license or any restriction or limitation imposed by judicial or administrative order when using your driver's license to satisfy a requirement of this part.

(18) While towing any object.

(19) As a pilot flight crewmember on any aircraft for which more than one pilot is required by the type certificate of the aircraft or the regulations under which the flight is conducted.

§ 61.317 Is my sport pilot certificate issued with aircraft category and class ratings?

Your sport pilot certificate does not list aircraft category and class ratings. When you successfully pass the practical test for a sport pilot certificate, regardless of the light-sport aircraft privileges you seek, the FAA will issue you a sport pilot certificate without any category and class ratings. The FAA will provide you with a logbook endorsement for the category, class, and make and model of aircraft in which you are authorized to act as pilot in command.

§ 61.319 Can I operate a make and model of aircraft other than the make and model aircraft for which I have received an endorsement?

If you hold a sport pilot certificate you may operate any make and model of light-sport aircraft in the same category and class and within the same set of aircraft as the make and model of aircraft for which you have received an endorsement.

§ 61.321 How do I obtain privileges to operate an additional category or class of light-sport aircraft?

If you hold a sport pilot certificate and seek to operate an additional category or class of light-sport aircraft, you must—

(a) Receive a logbook endorsement from the authorized instructor who trained you on the applicable aeronautical knowledge areas specified in § 61.309 and areas of operation specified in § 61.311. The endorsement certifies you have met the aeronautical knowledge and flight proficiency requirements for the additional light-sport aircraft privilege you seek;

(b) Successfully complete a proficiency check from an authorized instructor other than the instructor who

trained you on the aeronautical knowledge areas and areas of operation specified in §§ 61.309 and 61.311 for the additional light-sport aircraft privilege you seek;

(c) Complete an application for those privileges on a form and in a manner acceptable to the FAA and present this application to the authorized instructor who conducted the proficiency check specified in paragraph (b) of this section; and

(d) Receive a logbook endorsement from the instructor who conducted the proficiency check specified in paragraph (b) of this section certifying you are proficient in the applicable areas of operation and aeronautical knowledge areas, and that you are authorized for the additional category and class light-sport aircraft privilege.

§ 61.323 How do I obtain privileges to operate a make and model of light-sport aircraft in the same category and class within a different set of aircraft?

If you hold a sport pilot certificate and seek to operate a make and model of light-sport aircraft in the same category and class but within a different set of aircraft as the make and model of aircraft for which you have received an endorsement, you must—

(a) Receive and log ground and flight training from an authorized instructor in a make and model of light-sport aircraft that is within the same set of aircraft as the make and model of aircraft you intend to operate;

(b) Receive a logbook endorsement from the authorized instructor who provided you with the aircraft specific training specified in paragraph (a) of this section certifying you are proficient to operate the specific make and model of light-sport aircraft.

§ 61.325 How do I obtain privileges to operate a light-sport aircraft at an airport within, or in airspace within, Class B, C, and D airspace, or in other airspace with an airport having an operational control tower?

If you hold a sport pilot certificate and seek privileges to operate a light-sport aircraft in Class B, C, or D airspace, at an airport located in Class B, C, or D airspace, or to, from, through, or at an airport having an operational control tower, you must receive and log ground and flight training. The authorized instructor who provides this training must provide a logbook endorsement that certifies you are proficient in the following aeronautical knowledge areas and areas of operation:

(a) The use of radios, communications, navigation system/facilities, and radar services.

(b) Operations at airports with an operating control tower to include three takeoffs and landings to a full stop, with each landing involving a flight in the traffic pattern, at an airport with an operating control tower.

(c) Applicable flight rules of part 91 of this chapter for operations in Class B, C, and D airspace and air traffic control clearances.

§ 61.327 How do I obtain privileges to operate a light-sport aircraft that has a V_H greater than 87 knots CAS?

If you hold a sport pilot certificate and you seek to operate a light-sport aircraft that has a V_H greater than 87 knots CAS you must—

(a) Receive and log ground and flight training from an authorized instructor in an aircraft that has a V_H greater than 87 knots CAS; and

(b) Receive a logbook endorsement from the authorized instructor who provided the training specified in paragraph (a) of this section certifying that you are proficient in the operation of light-sport aircraft with a V_H greater than 87 knots CAS.

§ 61.329 Are there special provisions for obtaining a sport pilot certificate for persons who are registered ultralight pilots with an FAA-recognized ultralight organization?

(a) If you are a registered ultralight pilot with an FAA-recognized ultralight organization use the following table to determine how to obtain a sport pilot certificate.

If you are . . .	Then you must . . .
(1) A registered ultralight pilot with an FAA-recognized ultralight organization on or before September 1, 2004, and you want to apply for a sport pilot certificate	(i) Not later than January 31, 2007—

If you are . . .	Then you must . . .
	(A) Meet the eligibility requirements in §§ 61.305 and 61.23, but not the aeronautical knowledge requirements specified in § 61.309, the flight proficiency requirements specified in § 61.311, and the aeronautical experience requirements specified in § 61.313, (B) Pass the knowledge test for a sport pilot certificate specified in § 61.307 or the knowledge test for a flight instructor certificate with a sport pilot rating specified in § 61.405, (C) Pass the practical test for a sport pilot certificate specified in § 61.307, (D) Provide the FAA with a certified copy of your ultralight pilot records from an FAA-recognized ultralight organization, and those records must (*1*) Document that you are a registered ultralight pilot with that FAA-recognized ultralight organization, and (*2*) Indicate that you are recognized to operate each category and class of aircraft for which you seek sport pilot privileges.
(2) A registered ultralight pilot with an FAA-recognized ultralight organization after September 1, 2004, and you want to apply for a sport pilot certificate	(i) Meet the eligibility requirements in §§ 61.305 and 61.23, (ii) Meet the aeronautical knowledge requirements specified in § 61.309, the flight proficiency requirements specified in § 61.311, and aeronautical experience requirements specified in § 61.313; however, you may credit your ultralight aeronautical experience in accordance with § 61.52 toward the requirements in §§ 61.309, 61.311, and 61.313, (iii) Pass the knowledge and practical tests for a sport pilot certificate specified in § 61.307, and (iv) Provide the FAA with a certified copy of your ultralight pilot records from an FAA-recognized ultralight organization, and those records must (A) Document that you are a registered ultralight pilot with that FAA-recognized ultralight organization, and (B) Indicate that you are recognized to operate the category and class of aircraft for which you seek sport pilot privileges.

(b) When you successfully pass the practical test for a sport pilot certificate, the FAA will issue you a sport pilot certificate without any category and class ratings. The FAA will provide you with a logbook endorsement for the category, class, and make and model of aircraft in which you have successfully passed the practical test and for which you are authorized to act as pilot in command. If you meet the provisions of paragraph (a)(1) of this section, the FAA will provide you with a logbook endorsement for each category, class, and make and model of aircraft listed on the ultralight pilot records you provide to the FAA.

Subpart K—Flight Instructors With a Sport Pilot Rating

SOURCE: Doc. No. FAA–2001–11133, 69 FR 44875, July 27, 2004, unless otherwise noted.

§ 61.401 What is the purpose of this subpart?

(a) This part prescribes the following requirements that apply to a flight instructor certificate with a sport pilot rating:

(1) Eligibility.

(2) Aeronautical knowledge.

(3) Flight proficiency.

(4) Endorsements.

(5) Privileges and limits.

(6) Transition provisions for registered ultralight flight instructors.

(b) Other provisions of this part apply to the logging of flight time and testing.

§ 61.403 What are the age, language, and pilot certificate requirements for a flight instructor certificate with a sport pilot rating?

To be eligible for a flight instructor certificate with a sport pilot rating you must:

(a) Be at least 18 years old.

(b) Be able to read, speak, write, and understand English. If you cannot read, speak, write, and understand English because of medical reasons, the FAA may place limits on your certificate as are necessary for the safe operation of light-sport aircraft.

(c) Hold at least a current and valid sport pilot certificate with category

and class ratings or privileges, as applicable, that are appropriate to the flight instructor privileges sought.

§ 61.405 What tests do I have to take to obtain a flight instructor certificate with a sport pilot rating?

To obtain a flight instructor certificate with a sport pilot rating you must pass the following tests:

(a) *Knowledge test.* Before you take a knowledge test, you must receive a logbook endorsement certifying you are prepared for the test from an authorized instructor who trained you or evaluated your home-study course on the aeronautical knowledge areas listed in § 61.407. You must pass knowledge tests on—

(1) The fundamentals of instructing listed in § 61.407(a), unless you meet the requirements of § 61.407(c); and

(2) The aeronautical knowledge areas for a sport pilot certificate applicable to the aircraft category and class for which flight instructor privileges are sought.

(b) *Practical test.* (1) Before you take the practical test, you must—

(i) Receive a logbook endorsement from the authorized instructor who provided you with flight training on the areas of operation specified in § 61.409 that apply to the category and class of aircraft privileges you seek. This endorsement certifies you meet the applicable aeronautical knowledge and experience requirements and are prepared for the practical test;

(ii) If you are seeking privileges to provide instruction in an airplane or glider, receive a logbook endorsement from an authorized instructor indicating that you are competent and possess instructional proficiency in stall awareness, spin entry, spins, and spin recovery procedures after you have received flight training in those training areas in an airplane or glider, as appropriate, that is certificated for spins;

(2) You must pass a practical test—

(i) On the areas of operation listed in § 61.409 that are appropriate to the category and class of aircraft privileges you seek;

(ii) In an aircraft representative of the category and class of aircraft for the privileges you seek;

(iii) In which you demonstrate that you are able to teach stall awareness, spin entry, spins, and spin recovery procedures if you are seeking privileges to provide instruction in an airplane or glider. If you have not failed a practical test based on deficiencies in your ability to demonstrate knowledge or skill in these areas and you provide the endorsement required by paragraph (b)(1)(ii) of this section, an examiner may accept the endorsement instead of the demonstration required by this paragraph. If you are taking a test because you previously failed a test based on not meeting the requirements of this paragraph, you must pass a practical test on stall awareness, spin entry, spins, and spin recovery instructional competency and proficiency in the applicable category and class of aircraft that is certificated for spins.

§ 61.407 What aeronautical knowledge must I have to apply for a flight instructor certificate with a sport pilot rating?

(a) Except as specified in paragraph (c) of this section you must receive and log ground training from an authorized instructor on the fundamentals of instruction that includes:

(1) The learning process.

(2) Elements of effective teaching.

(3) Student evaluation and testing.

(4) Course development.

(5) Lesson planning.

(6) Classroom training techniques.

(b) You must receive and log ground training from an authorized instructor on the aeronautical knowledge areas applicable to a sport pilot certificate for the aircraft category and class in which you seek flight instructor privileges.

(c) You do not have to meet the requirements of paragraph (a) of this section if you—

(1) Hold a flight instructor certificate or ground instructor certificate issued under this part;

(2) Hold a current teacher's certificate issued by a State, county, city, or municipality; or

(3) Are employed as a teacher at an accredited college or university.

§ 61.409 What flight proficiency requirements must I meet to apply for a flight instructor certificate with a sport pilot rating?

You must receive and log ground and flight training from an authorized instructor on the following areas of operation for the aircraft category and class in which you seek flight instructor privileges:

(a) Technical subject areas.

(b) Preflight preparation.

(c) Preflight lesson on a maneuver to be performed in flight.

(d) Preflight procedures.

(e) Airport, seaplane base, and gliderport operations, as applicable.

(f) Takeoffs (or launches), landings, and go-arounds.

(g) Fundamentals of flight.

(h) Performance maneuvers and for gliders, performance speeds.

(i) Ground reference maneuvers (except for gliders and lighter-than-air).

(j) Soaring techniques.

(k) Slow flight (not applicable to lighter-than-air and powered parachutes).

(l) Stalls (not applicable to lighter-than-air, powered parachutes, and gyroplanes).

(m) Spins (applicable to airplanes and gliders).

(n) Emergency operations.

(o) Tumble entry and avoidance techniques (applicable to weight-shift-control aircraft).

(p) Post-flight procedures.

§ 61.411 What aeronautical experience must I have to apply for a flight instructor certificate with a sport pilot rating?

Use the following table to determine the experience you must have for each aircraft category and class:

If you are applying for a flight instructor certificate with a sport pilot rating for . . .	Then you must log at least . . .	Which must include at least . . .
(a) Airplane category and single-engine class privileges,	(1) 150 hours of flight time as a pilot, ...	(i) 100 hours of flight time as pilot in command in powered aircraft, (ii) 50 hours of flight time in a single-engine airplane, (iii) 25 hours of cross-country flight time, (iv) 10 hours of cross-country flight time in a single-engine airplane, and (v) 15 hours of flight time as pilot in command in a single-engine airplane that is a light-sport aircraft.
(b) Glider category privileges,	(1) 25 hours of flight time as pilot in command in a glider, 100 flights in a glider, and 15 flights as pilot in command in a glider that is a light-sport aircraft, or. (2) 100 hours in heavier-than-air aircraft, 20 flights in a glider, and 15 flights as pilot in command in a glider that is a light-sport aircraft.	
(c) Rotorcraft category and gyroplane class privileges,	(1) 125 hours of flight time as a pilot, ...	(i) 100 hours of flight time as pilot in command in powered aircraft, (ii) 50 hours of flight time in a gyroplane, (iii) 10 hours of cross-country flight time, (iv) 3 hours of cross-country flight time in a gyroplane, and (v) 15 hours of flight time as pilot in command in a gyroplane that is a light-sport aircraft.
(d) Lighter-than-air category and airship class privileges,	(1) 100 hours of flight time as a pilot, ...	(i) 40 hours of flight time in an airship, (ii) 20 hours of pilot in command time in an airship, (iii) 10 hours of cross-country flight time, (iv) 5 hours of cross-country flight time in an airship, and (v) 15 hours of flight time as pilot in command in an airship that is a light-sport aircraft.
(e) Lighter-than-air category and balloon class privileges,	(1) 35 hours of flight time as pilot-in-command,	(i) 20 hours of flight time in a balloon, (ii) 10 flights in a balloon, and (iii) 5 flights as pilot in command in a balloon that is a light-sport aircraft.

If you are applying for a flight instructor certificate with a sport pilot rating for . . .	Then you must log at least . . .	Which must include at least . . .
(f) Weight-shift-control aircraft category privileges,	(1) 150 hours of flight time as a pilot, ...	(i) 100 hours of flight time as pilot in command in powered aircraft, (ii) 50 hours of flight time in a weight-shift-control aircraft, (iii) 25 hours of cross-country flight time, (iv) 10 hours of cross-country flight time in a weight-shift-control aircraft, and (v) 15 hours of flight time as pilot in command in a weight-shift-control aircraft that is a light-sport aircraft.
(g) Powered-parachute category privileges,	(1) 100 hours of flight time as a pilot, ...	(i) 75 hours of flight time as pilot in command in powered aircraft, (ii) 50 hours of flight time in a powered parachute, (iii) 15 hours of cross-country flight time, (iv) 5 hours of cross-country flight time in a powered parachute, and (v) 15 hours of flight time as pilot in command in a powered parachute that is a light-sport aircraft.

§ 61.413 What are the privileges of my flight instructor certificate with a sport pilot rating?

If you hold a fight flight instructor certificate with a sport pilot rating, you are authorized, within the limits of your certificate and rating, to provide training and logbook endorsements for—

(a) A student pilot seeking a sport pilot certificate;

(b) A sport pilot certificate;

(c) A flight instructor certificate with a sport pilot rating;

(d) A powered parachute or weight-shift-control aircraft rating;

(e) Sport pilot privileges;

(f) A flight review or operating privilege for a sport pilot;

(g) A practical test for a sport pilot certificate, a private pilot certificate with a powered parachute or weight-shift-control aircraft rating or a flight instructor certificate with a sport pilot rating;

(h) A knowledge test for a sport pilot certificate, a private pilot certificate with a powered parachute or weight-shift-control aircraft rating or a flight instructor certificate with a sport pilot rating; and

(i) A proficiency check for an additional category, class, or make and model privilege for a sport pilot certificate or a flight instructor certificate with a sport pilot rating.

§ 61.415 What are the limits of a flight instructor certificate with a sport pilot rating?

If you hold a flight instructor certificate with a sport pilot rating, you are subject to the following limits:

(a) You may not provide ground or flight training in any aircraft for which you do not hold:

(1) A sport pilot certificate with applicable category and class privileges and make and model privileges or a pilot certificate with the applicable category and class rating; and

(2) Applicable category and class privileges for your flight instructor certificate with a sport pilot rating.

(b) You may not provide ground or flight training for a private pilot certificate with a powered parachute or weight-shift-control aircraft rating unless you hold:

(1) At least a private pilot certificate with the applicable category and class rating; and

(2) Applicable category and class privileges for your flight instructor certificate with a sport pilot rating.

(c) You may not conduct more than 8 hours of flight training in any 24-consecutive-hour period.

(d) You may not endorse a:

(1) Student pilot's certificate or logbook for solo flight privileges, unless you have—

(i) Given that student the flight training required for solo flight privileges required by this part; and

(ii) Determined that the student is prepared to conduct the flight safely under known circumstances, subject to any limitations listed in the student's logbook that you consider necessary for the safety of the flight.

(2) Student pilot's certificate and logbook for a solo cross-country flight, unless you have determined the student's flight preparation, planning, equipment, and proposed procedures are adequate for the proposed flight under the existing conditions and within any limitations listed in the logbook that you consider necessary for the safety of the flight.

(3) Student pilot's certificate and logbook for solo flight in Class B, C, and D airspace areas, at an airport within Class B, C, or D airspace and to from, through or on an airport having an operational control tower, unless that you have—

(i) Given that student ground and flight training in that airspace or at that airport; and

(ii) Determined that the student is proficient to operate the aircraft safely.

(4) Logbook of a pilot for a flight review, unless you have conducted a review of that pilot in accordance with the requirements of § 61.56.

(e) You may not provide flight training in an aircraft unless you have at least 5 hours of flight time in a make and model of light-sport aircraft within the same set of aircraft as the aircraft in which you are providing training.

(f) You may not provide training to operate a light-sport aircraft in Class B, C, and D airspace, at an airport located in Class B, C, or D airspace, and to, from, through, or at an airport having an operational control tower, unless you have the endorsement specified in § 61.325, or are otherwise authorized to conduct operations in this airspace and at these airports.

(g) You may not provide training in a light-sport aircraft with a V_H greater than 87 knots CAS unless you have the endorsement specified in § 61.327, or are otherwise authorized to operate that light-sport aircraft.

(h) You must perform all training in an aircraft that complies with the requirements of § 91.109 of this chapter.

(i) If you provide flight training for a certificate, rating or privilege, you must provide that flight training in an aircraft that meets the following:

(1) The aircraft must have at least two pilot stations and be of the same category and class appropriate to the certificate, rating or privilege sought.

(2) For single place aircraft, pre-solo flight training must be provided in an aircraft that has two pilot stations and is of the same category and class appropriate to the certificate, rating, or privilege sought.

§ 61.417 Will my flight instructor certificate with a sport pilot rating list aircraft category and class ratings?

Your flight instructor certificate does not list aircraft category and class ratings. When you successfully pass the practical test for a flight instructor certificate with a sport pilot rating, regardless of the light-sport aircraft privileges you seek, the FAA will issue you a flight instructor certificate with a sport pilot rating without any category and class ratings. The FAA will provide you with a logbook endorsement for the category and class of light-sport aircraft you are authorized to provide training in.

§ 61.419 How do I obtain privileges to provide training in an additional category or class of light-sport aircraft?

If you hold a flight instructor certificate with a sport pilot rating and seek to provide training in an additional category or class of light-sport aircraft you must—

(a) Receive a logbook endorsement from the authorized instructor who trained you on the applicable areas of operation specified in § 61.409 certifying you have met the aeronautical knowledge and flight proficiency requirements for the additional category and class flight instructor privilege you seek;

(b) Successfully complete a proficiency check from an authorized instructor other than the instructor who trained you on the areas specified in § 61.409 for the additional category and

class flight instructor privilege you seek;

(c) Complete an application for those privileges on a form and in a manner acceptable to the FAA and present this application to the authorized instructor who conducted the proficiency check specified in paragraph (b) of this section; and

(d) Receive a logbook endorsement from the instructor who conducted the proficiency check specified in paragraph (b) of this section certifying you are proficient in the areas of operation and authorized for the additional category and class flight instructor privilege.

§ 61.421 May I give myself an endorsement?

No. If you hold a flight instructor certificate with a sport pilot rating, you may not give yourself an endorsement for any certificate, privilege, rating, flight review, authorization, practical test, knowledge test, or proficiency check required by this part.

§ 61.423 What are the recordkeeping requirements for a flight instructor with a sport pilot rating?

(a) As a flight instructor with a sport pilot rating you must:

(1) Sign the logbook of each person to whom you have given flight training or ground training.

(2) Keep a record of the name, date, and type of endorsement for:

(i) Each person whose logbook or student pilot certificate you have endorsed for solo flight privileges.

(ii) Each person for whom you have provided an endorsement for a knowledge test, practical test, or proficiency check, and the record must indicate the kind of test or check, and the results.

(iii) Each person whose logbook you have endorsed as proficient to operate—

(A) An additional category or class of light-sport aircraft;

(B) An additional make and model of light-sport aircraft;

(C) In Class B, C, and D airspace; at an airport located in Class B, C, or D airspace; and to, from, through, or at an airport having an operational control tower; and

(D) A light-sport aircraft with a V_H greater than 87 knots CAS.

(iv) Each person whose logbook you have endorsed as proficient to provide flight training in an additional—

(A) Category or class of light-sport aircraft; and

(B) Make and model of light-sport aircraft.

(b) Within 10 days after providing an endorsement for a person to operate or provide training in an additional category and class of light-sport aircraft you must—

(1) Complete, sign, and submit to the FAA the application presented to you to obtain those privileges; and

(2) Retain a copy of the form.

(c) You must keep the records listed in this section for 3 years. You may keep these records in a logbook or a separate document.

§ 61.425 How do I renew my flight instructor certificate?

If you hold a flight instructor certificate with a sport pilot rating you may renew your certificate in accordance with the provisions of § 61.197.

§ 61.427 What must I do if my flight instructor certificate with a sport pilot rating expires?

You may exchange your expired flight instructor certificate with a sport pilot rating for a new certificate with a sport pilot rating and any other rating on that certificate by passing a practical test as prescribed in § 61.405(b) or § 61.183(h) for one of the ratings listed on the expired flight instructor certificate. The FAA will reinstate any privilege authorized by the expired certificate.

§ 61.429 May I exercise the privileges of a flight instructor certificate with a sport pilot rating if I hold a flight instructor certificate with another rating?

If you hold a current and valid flight instructor certificate, a commercial pilot certificate with an airship rating, or a commercial pilot certificate with a balloon rating issued under this part, and you seek to exercise the privileges of a flight instructor certificate with a sport pilot rating, you may do so without any further showing of proficiency, subject to the following limits:

(a) You are limited to the aircraft category and class ratings listed on your flight instructor certificate, commercial pilot certificate with an airship rating, or commercial pilot certificate with a balloon rating, as appropriate, when exercising your flight instructor privileges and the privileges specified in § 61.413.

(b) You must comply with the limits specified in § 61.415 and the recordkeeping requirements of § 61.423.

(c) If you want to exercise the privileges of your flight instructor certificate, commercial pilot certificate with an airship rating, or commercial pilot certificate with a balloon rating, as appropriate, in a category, class, or make and model of light-sport aircraft for which you are not currently rated, you must meet all applicable requirements to provide training in an additional category or class of light-sport aircraft specified in § 61.419.

§ 61.431 Are there special provisions for obtaining a flight instructor certificate with a sport pilot rating for persons who are registered ultralight instructors with an FAA-recognized ultralight organization?

If you are a registered ultralight instructor with an FAA-recognized ultralight organization on or before September 1, 2004, and you want to apply for a flight instructor certificate with a sport pilot rating, not later than January 31, 2008—

(a) You must hold either a current and valid sport pilot certificate, a current recreational pilot certificate and meet the requirements § 61.101(c), or at least a current and valid private pilot certificate issued under this part.

(b) You must meet the eligibility requirements in §§ 61.403 and 61.23. You do not have to meet the aeronautical knowledge requirements specified in § 61.407, the flight proficiency requirements specified in § 61.409 and the aeronautical experience requirements specified in § 61.411, except you must meet the minimum total flight time requirements in the category and class of light-sport aircraft specified in § 61.411.

(c) You do not have to meet the aeronautical knowledge requirement specified in § 61.407(a) if you have passed an FAA-recognized ultralight organization's fundamentals of instruction knowledge test.

(d) You must submit a certified copy of your ultralight pilot records from the FAA-recognized ultralight organization. Those records must—

(1) Document that you are a registered ultralight flight instructor with that FAA-recognized ultralight organization; and

(2) Indicate that you are recognized to operate and provide training in the category and class of aircraft for which you seek privileges.

(e) You must pass the knowledge test and practical test for a flight instructor certificate with a sport pilot rating applicable to the aircraft category and class for which you seek flight instructor privileges.

PART 63—CERTIFICATION: FLIGHT CREWMEMBERS OTHER THAN PILOTS

SPECIAL FEDERAL AVIATION REGULATION NO. 93 [NOTE]

SPECIAL FEDERAL AVIATION REGULATION NO. 100–1 [NOTE]

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APPENDIX C TO PART 63—FLIGHT ENGINEER TRAINING COURSE REQUIREMENTS

AUTHORITY: 49 U.S.C. 106(g), 40113, 44701–44703, 44707, 44709–44711, 45102–45103, 45301–45302.

SPECIAL FEDERAL AVIATION REGULATION NO. 93

EDITORIAL NOTE: For the text of SFAR No. 93, see part 61 of this chapter.

SPECIAL FEDERAL AVIATION REGULATION NO. 100–1

EDITORIAL NOTE: For the text of SFAR No. 100–1, see part 61 of this chapter.

EFFECTIVE DATE NOTE: By Doc. No. FAA–2005–15431, 70 FR 37948, June 30, 2005, SFAR No. 100–1 was added, effective June 30, 2005 through June 20, 2010.

Subpart A—General

SOURCE: Docket No. 1179, 27 FR 7969, Aug. 10, 1962, unless otherwise noted.

§ 63.1 Applicability.

This part prescribes the requirements for issuing flight engineer and flight navigator certificates and the general operating rules for holders of those certificates.

§ 63.2 Certification of foreign flight crewmembers other than pilots.

A person who is neither a United States citizen nor a resident alien is issued a certificate under this part (other than under § 63.23 or § 63.42) outside the United States only when the Administrator finds that the certificate is needed for the operation of a U.S.-registered civil aircraft.

(Secs. 313, 601, 602, Federal Aviation Act of 1958, as amended (49 U.S.C. 1354, 1421, and 1422); sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c)); Title V, Independent Offices Appropriations Act of 1952 (31 U.S.C. 483(a)); sec. 28, International Air Transportation Competition Act of 1979 (49 U.S.C. 1159(b)))

[Doc. No. 22052, 47 FR 35693, Aug. 18, 1982]

§ 63.3 Certificates and ratings required.

(a) No person may act as a flight engineer of a civil aircraft of U.S. registry unless he has in his personal possession a current flight engineer certificate with appropriate ratings issued to him under this part and a second-class (or higher) medical certificate issued to him under part 67 of this chapter within the preceding 12 months. However, when the aircraft is operated within a foreign country, a current flight engineer certificate issued by the country in which the aircraft is operated, with evidence of current medical qualification for that certificate, may be used. Also, in the case of a flight engineer certificate issued under § 63.42, evidence of current medical qualification accepted for the issue of that certificate is used in place of a medical certificate.

(b) No person may act as a flight navigator of a civil aircraft of U.S. registry unless he has in his personal possession a current flight navigator certificate issued to him under this part and a second-class (or higher) medical certificate issued to him under part 67 of this chapter within the preceding 12 months. However, when the aircraft is operated within a foreign country, a current flight navigator certificate issued by the country in which the aircraft is operated, with evidence of current medical qualification for that certificate, may be used.

(c) Each person who holds a flight engineer or flight navigator certificate, or medical certificate, shall present either or both for inspection upon the request of the Administrator or an authorized representative of the National

Transportation Safety Board, or of any Federal, State, or local law enforcement officer.

(Secs. 3, 6, 9, 80 Stat. 931, 49 U.S.C. 1652, 1655, 1657)

[Doc. No. 1179, 27 FR 7969, Aug. 10, 1962, as amended by Amdt. 63–1, 27 FR 10410, Oct. 25, 1962; Amdt. 63–3, 30 FR 14559, Nov. 23, 1965; Amdt. 63–7, 31 FR 13523, Oct. 20, 1966; Doc. No. 8084, 32 FR 5769, Apr. 11, 1967; Amdt. 63–9, 33 FR 18613, Dec. 17, 1968; Amdt. 63–11, 35 FR 5320, Mar. 31, 1970]

§ 63.11 Application and issue.

(a) An application for a certificate and appropriate class rating, or for an additional rating, under this part must be made on a form and in a manner prescribed by the Administrator. Each person who applies for airmen certification services to be administered outside the United States for any certificate or rating issued under this part must show evidence that the fee prescribed in appendix A of part 187 of this chapter has been paid.

(b) An applicant who meets the requirements of this part is entitled to an appropriate certificate and appropriate class ratings.

(c) Unless authorized by the Administrator, a person whose flight engineer certificate is suspended may not apply for any rating to be added to that certificate during the period of suspension.

(d) Unless the order of revocation provides otherwise, a person whose flight engineer or flight navigator certificate is revoked may not apply for the same kind of certificate for 1 year after the date of revocation.

(Secs. 313, 601, 602, Federal Aviation Act of 1958, as amended (49 U.S.C. 1354, 1421, and 1422); sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c)); Title V, Independent Offices Appropriations Act of 1952 (31 U.S.C. 483(a)); sec. 28, International Air Transportation Competition Act of 1979 (49 U.S.C. 1159(b)))

[Doc. No. 1179, 27 FR 7969, Aug. 10, 1962, as amended by Amdt. 63–3, 30 FR 14559, Nov. 23, 1965; Amdt. 63–7, 31 FR 13523, Oct. 20, 1966; Amdt. 63–22, 47 FR 35693, Aug. 16, 1982; Amdt. 63–35, 72 FR 18558, Apr. 12, 2007]

§ 63.12 Offenses involving alcohol or drugs.

(a) A conviction for the violation of any Federal or state statute relating to the growing, processing, manufacture, sale, disposition, possession, transportation, or importation of narcotic drugs, marihuana, or depressant or stimulant drugs or substances is grounds for—

(1) Denial of an application for any certificate or rating issued under this part for a period of up to 1 year after the date of final conviction; or

(2) Suspension or revocation of any certificate or rating issued under this part.

(b) The commission of an act prohibited by §91.17(a) or §91.19(a) of this chapter is grounds for—

(1) Denial of an application for a certificate or rating issued under this part for a period of up to 1 year after the date of that act; or

(2) Suspension or revocation of any certificate or rating issued under this part.

[Doc. No. 21956, 50 FR 15379, Apr. 17, 1985, as amended by Amdt. 63–27, 54 FR 34330, Aug. 18, 1989]

§ 63.12a Refusal to submit to an alcohol test or to furnish test results.

A refusal to submit to a test to indicate the percentage by weight of alcohol in the blood, when requested by a law enforcement officer in accordance with §91.11(c) of this chapter, or a refusal to furnish or authorize the release of the test results when requested by the Administrator in accordance with §91.17 (c) or (d) of this chapter, is grounds for—

(a) Denial of an application for any certificate or rating issued under this part for a period of up to 1 year after the date of that refusal; or

(b) Suspension or revocation of any certificate or rating issued under this part.

[Docket No. 21956, 51 FR 1229, Jan. 9, 1986, as amended by Amdt. 63–27, 54 FR 34330, Aug. 18, 1989]

§ 63.12b Refusal to submit to a drug or alcohol test.

(a) This section applies to an individual who holds a certificate under this part and is subject to the types of testing required under appendix I to part 121 or appendix J to part 121 of this chapter.

(b) Refusal by the holder of a certificate issued under this part to take a drug test required under the provisions of appendix I to part 121 or an alcohol test required under the provisions of appendix J to part 121 is grounds for—

(1) Denial of an application for any certificate or rating issued under this part for a period of up to 1 year after the date of such refusal; and

(2) Suspension or revocation of any certificate or rating issued under this part.

[Amdt. 63–29, 59 FR 7389, Feb. 15, 1994, as amended by Amdt. 63–34, 71 FR 35763, June 21, 2006]

§ 63.13 Temporary certificate.

A certificate effective for a period of not more than 120 days may be issued to a qualified applicant, pending review of his application and supplementary documents and the issue of the certificate for which he applied.

[Doc. No. 1179, 27 FR 7969, Aug. 10, 1962, as amended by Amdt. 63–19, 43 FR 22639, May 25, 1978]

§ 63.14 Security disqualification.

(a) *Eligibility standard.* No person is eligible to hold a certificate, rating, or authorization issued under this part when the Transportation Security Administration (TSA) has notified the FAA in writing that the person poses a security threat.

(b) *Effect of the issuance by the TSA of an Initial Notification of Threat Assessment.* (1) The FAA will hold in abeyance pending the outcome of the TSA's final threat assessment review an application for any certificate, rating, or authorization under this part by any person who has been issued an Initial Notification of Threat Assessment by the TSA.

(2) The FAA will suspend any certificate, rating, or authorization issued under this part after the TSA issues to the holder an Initial Notification of Threat Assessment.

(c) *Effect of the issuance by the TSA of a Final Notification of Threat Assessment.* (1) The FAA will deny an application for any certificate, rating, or authorization under this part to any person who has been issued a Final Notification of Threat Assessment.

(2) The FAA will revoke any certificate, rating, or authorization issued under this part after the TSA has issued to the holder a Final Notification of Threat Assessment.

[Doc. No. FAA–2003–14293, 68 FR 3774, Jan. 24, 2003]

§ 63.15 Duration of certificates.

(a) Except as provided in § 63.23 and paragraph (b) of this section, a certificate or rating issued under this part is effective until it is surrendered, suspended, or revoked.

(b) A flight engineer certificate (with any amendment thereto) issued under § 63.42 expires at the end of the 24th month after the month in which the certificate was issued or renewed. However, the holder may exercise the privileges of that certificate only while the foreign flight engineer license on which that certificate is based is effective.

(c) Any certificate issued under this part ceases to be effective if it is surrendered, suspended, or revoked. The holder of any certificate issued under this part that is suspended or revoked shall, upon the Administrator's request, return it to the Administrator.

(Sec. 6, 80 Stat. 937, 49 U.S.C. 1655; secs. 313, 601, 602, Federal Aviation Act of 1958, as amended (49 U.S.C. 1354, 1421, and 1422); sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c)); Title V, Independent Offices Appropriations Act of 1952 (31 U.S.C. 483(a)); sec. 28, International Air Transportation Competition Act of 1979 (49 U.S.C. 1159(b)))

[Doc. No. 8846, 33 FR 18613, Dec. 17, 1968, as amended by Amdt. 63–22, 47 FR 35693, Aug. 16, 1982]

§ 63.15a [Reserved]

§ 63.16 Change of name; replacement of lost or destroyed certificate.

(a) An application for a change of name on a certificate issued under this part must be accompanied by the applicant's current certificate and the marriage license, court order, or other document verifying the change. The documents are returned to the applicant after inspection.

(b) An application for a replacement of a lost or destroyed certificate is made by letter to the Department of Transportation, Federal Aviation Administration, Airman Certification

Branch, Post Office Box 25082, Oklahoma City, OK 73125. The letter must—

(1) Contain the name in which the certificate was issued, the permanent mailing address (including zip code), social security number (if any), and date and place of birth of the certificate holder, and any available information regarding the grade, number, and date of issue of the certificate, and the ratings on it; and

(2) Be accompanied by a check or money order for $2, payable to the Federal Aviation Administration.

(c) An application for a replacement of a lost or destroyed medical certificate is made by letter to the Department of Transportation, Federal Aviation Administration, Civil Aeromedical Institute, Aeromedical Certification Branch, Post Office Box 25082, Oklahoma City, OK 73125, accompanied by a check or money order for $2.00.

(d) A person whose certificate issued under this part or medical certificate, or both, has been lost may obtain a telegram from the Federal Aviation Administration confirming that it was issued. The telegram may be carried as a certificate for a period not to exceed 60 days pending his receiving a duplicate under paragraph (b) or (c) of this section, unless he has been notified that the certificate has been suspended or revoked. The request for such a telegram may be made by prepaid telegram, stating the date upon which a duplicate certificate was requested, or including the request for a duplicate and a money order for the necessary amount. The request for a telegraphic certificate should be sent to the office prescribed in paragraph (b) or (c) of this section, as appropriate. However, a request for both at the same time should be sent to the office prescribed in paragraph (b) of this section.

[Doc. No. 7258, 31 FR 13523, Oct. 20, 1966, as amended by Doc. No. 8084, 32 FR 5769, Apr. 11, 1967; Amdt. 63–12, 35 FR 14075, Sept. 4, 1970; Amdt. 63–13, 36 FR 28654, Feb. 11, 1971]

§ 63.17 Tests: General procedure.

(a) Tests prescribed by or under this part are given at times and places, and by persons, designated by the Administrator.

(b) The minimum passing grade for each test is 70 percent.

§ 63.18 Written tests: Cheating or other unauthorized conduct.

(a) Except as authorized by the Administrator, no person may—

(1) Copy, or intentionally remove, a written test under this part;

(2) Give to another, or receive from another, any part or copy of that test;

(3) Give help on that test to, or receive help on that test from, any person during the period that test is being given.

(4) Take any part of that test in behalf of another person;

(5) Use any material or aid during the period that test is being given; or

(6) Intentionally cause, assist, or participate in any act prohibited by this paragraph.

(b) No person who commits an act prohibited by paragraph (a) of this section is eligible for any airman or ground instructor certificate or rating under this chapter for a period of 1 year after the date of that act. In addition, the commission of that act is a basis for suspending or revoking any airman or ground instructor certificate or rating held by that person.

[Doc. No. 4086, 30 FR 2196, Feb. 18, 1965]

§ 63.19 Operations during physical deficiency.

No person may serve as a flight engineer or flight navigator during a period of known physical deficiency, or increase in physical deficiency, that would make him unable to meet the physical requirements for his current medical certificate.

§ 63.20 Applications, certificates, logbooks, reports, and records; falsification, reproduction, or alteration.

(a) No person may make or cause to be made—

(1) Any fraudulent or intentionally false statement on any application for a certificate or rating under this part;

(2) Any fraudulent or intentionally false entry in any logbook, record, or report that is required to be kept, made, or used, to show compliance with any requirement for any certificate or rating under this part;

(3) Any reproduction, for fraudulent purpose, of any certificate or rating under this part; or

(4) Any alteration of any certificate or rating under this part.

(b) The commission by any person of an act prohibited under paragraph (a) of this section is a basis for suspending or revoking any airman or ground instructor certificate or rating held by that person.

[Doc. No. 4086, 30 FR 2196, Feb. 18, 1965]

§ 63.21 Change of address.

Within 30 days after any change in his permanent mailing address, the holder of a certificate issued under this part shall notify the Department of Transportation, Federal Aviation Administration, Airman Certification Branch, Post Office Box 25082, Oklahoma City, OK 73125, in writing, of his new address.

[Doc. No. 10536, 35 FR 14075, Sept. 4, 1970]

§ 63.23 Special purpose flight engineer and flight navigator certificates: Operation of U.S.-registered civil airplanes leased by a person not a U.S. citizen.

(a) *General.* The holder of a current foreign flight engineer or flight navigator certificate, license, or authorization issued by a foreign contracting State to the Convention on International Civil Aviation, who meets the requirements of this section, may hold a special purpose flight engineer or flight navigator certificate, as appropriate, authorizing the holder to perform flight engineer or flight navigator duties on a civil airplane of U.S. registry, leased to a person not a citizen of the United States, carrying persons or property for compensation or hire. Special purpose flight engineer and flight navigator certificates are issued under this section only for airplane types that can have a maximum passenger seating configuration, excluding any flight crewmember seat, of more than 30 seats or a maximum payload capacity (as defined in §135.2(e) of this chapter) of more than 7,500 pounds.

(b) *Eligibility.* To be eligible for the issuance, or renewal, of a certificate under this section, an applicant must present the following to the Administrator:

(1) A current foreign flight engineer or flight navigator certificate, license, or authorization issued by the aeronautical authority of a foreign contracting State to the Convention on International Civil Aviation or a facsimile acceptable to the Administrator. The certificate or license must authorize the applicant to perform the flight engineer or flight navigator duties to be authorized by a certificate issued under this section on the same airplane type as the leased airplane.

(2) A current certification by the lessee of the airplane—

(i) Stating that the applicant is employed by the lessee;

(ii) Specifying the airplane type on which the applicant will perform flight engineer or flight navigator duties; and

(iii) Stating that the applicant has received ground and flight instruction which qualifies the applicant to perform the duties to be assigned on the airplane.

(3) Documentation showing that the applicant currently meets the medical standards for the foreign flight engineer or flight navigator certificate, license, or authorization required by paragraph (b)(1) of this section, except that a U.S. medical certificate issued under part 67 of this chapter is not evidence that the applicant meets those standards unless the State which issued the applicant's foreign flight engineer or flight navigator certificate, license, or authorization accepts a U.S. medical certificate as evidence of medical fitness for a flight engineer or flight navigator certificate, license, or authorization.

(c) *Privileges.* The holder of a special purpose flight engineer or flight navigator certificate issued under this section may exercise the same privileges as those shown on the certificate, license, or authorization specified in paragraph (b)(1) of this section, subject to the limitations specified in this section.

(d) *Limitations.* Each certificate issued under this section is subject to the following limitations:

(1) It is valid only—

(i) For flights between foreign countries and for flights in foreign air commerce;

(ii) While it and the certificate, license, or authorization required by paragraph (b)(1) of this section are in

the certificate holder's personal possession and are current;

(iii) While the certificate holder is employed by the person to whom the airplane described in the certification required by paragraph (b)(2) of this section is leased;

(iv) While the certificate holder is performing flight engineer or flight navigator duties on the U.S.-registered civil airplane described in the certification required by paragraph (b)(2) of this section; and

(v) While the medical documentation required by paragraph (b)(3) of this section is in the certificate holder's personal possession and is currently valid.

(2) Each certificate issued under this section contains the following:

(i) The name of the person to whom the U.S.-registered civil airplane is leased.

(ii) The type of airplane.

(iii) The limitation: ''Issued under, and subject to, § 63.23 of the Federal Aviation Regulations.''

(iv) The limitation: ''Subject to the privileges and limitations shown on the holder's foreign flight (engineer or navigator) certificate, license, or authorization.''

(3) Any additional limitations placed on the certificate which the Administrator considers necessary.

(e) *Termination.* Each special purpose flight engineer or flight navigator certificate issued under this section terminates—

(1) When the lease agreement for the airplane described in the certification required by paragraph (b)(2) of this section terminates;

(2) When the foreign flight engineer or flight navigator certificate, license, or authorization, or the medical documentation required by paragraph (b) of this section is suspended, revoked, or no longer valid; or

(3) After 24 months after the month in which the special purpose flight engineer or flight navigator certificate was issued.

(f) *Surrender of certificate.* The certificate holder shall surrender the special purpose flight engineer or flight navigator certificate to the Administrator within 7 days after the date it terminates.

(g) *Renewal.* The certificate holder may have the certificate renewed by complying with the requirements of paragraph (b) of this section at the time of application for renewal.

(Secs. 313(a), 601, and 602, Federal Aviation Act of 1958; as amended (49 U.S.C. 1354(a), 1421, and 1422); sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c)))

[Doc. No. 19300, 45 FR 5672, Jan. 24, 1980]

Subpart B—Flight Engineers

AUTHORITY: Secs. 313(a), 601, and 602, Federal Aviation Act of 1958; 49 U.S.C. 1354, 1421, 1422.

SOURCE: Docket No. 6458, 30 FR 14559, Nov. 23, 1965, unless otherwise noted.

§ 63.31 Eligibility requirements; general.

To be eligible for a flight engineer certificate, a person must—

(a) Be at least 21 years of age;

(b) Be able to read, speak, and understand the English language, or have an appropriate limitation placed on his flight engineer certificate;

(c) Hold at least a second-class medical certificate issued under part 67 of this chapter within the 12 months before the date he applies, or other evidence of medical qualification accepted for the issue of a flight engineer certificate under § 63.42; and

(d) Comply with the requirements of this subpart that apply to the rating he seeks.

(Sec. 6, 80 Stat. 937, 49 U.S.C. 1655)

[Doc. No. 6458, 30 FR 14559, Nov. 23, 1965, as amended by Amdt. 63–9, 33 FR 18614, Dec. 17, 1968]

§ 63.33 Aircraft ratings.

(a) The aircraft class ratings to be placed on flight engineer certificates are—

(1) Reciprocating engine powered;

(2) Turbopropeller powered; and

(3) Turbojet powered.

(b) To be eligible for an additional aircraft class rating after his flight engineer certificate with a class rating is issued to him, an applicant must pass the written test that is appropriate to the class of airplane for which an additional rating is sought, and—

(1) Pass the flight test for that class of aircraft; or

(2) Satisfactorily complete an approved flight engineer training program that is appropriate to the additional class rating sought.

§ 63.35 Knowledge requirements.

(a) An applicant for a flight engineer certificate must pass a written test on the following:

(1) The regulations of this chapter that apply to the duties of a flight engineer.

(2) The theory of flight and aerodynamics.

(3) Basic meteorology with respect to engine operations.

(4) Center of gravity computations.

(b) An applicant for the original or additional issue of a flight engineer class rating must pass a written test for that airplane class on the following:

(1) Preflight.

(2) Airplane equipment.

(3) Airplane systems.

(4) Airplane loading.

(5) Airplane procedures and engine operations with respect to limitations.

(6) Normal operating procedures.

(7) Emergency procedures.

(8) Mathematical computation of engine operations and fuel consumption.

(c) Before taking the written tests prescribed in paragraphs (a) and (b) of this section, an applicant for a flight engineer certificate must present satisfactory evidence of having completed one of the experience requirements of § 63.37. However, he may take the written tests before acquiring the flight training required by § 63.37.

(d) An applicant for a flight engineer certificate or rating must have passed the written tests required by paragraphs (a) and (b) of this section since the beginning of the 24th calendar month before the month in which the flight is taken. However, this limitation does not apply to an applicant for a flight engineer certificate or rating if—

(1) The applicant—

(i) Within the period ending 24 calendar months after the month in which the applicant passed the written test, is employed as a flight crewmember or mechanic by a U.S. air carrier or commercial operator operating either under part 121 or as a commuter air carrier under part 135 (as defined in part 298 of this title) and is employed by such a certificate holder at the time of the flight test;

(ii) If employed as a flight crewmember, has completed initial training, and, if appropriate, transition or upgrade training; and

(iii) Meets the recurrent training requirements of the applicable part or, for mechanics, meets the recency of experience requirements of part 65; or

(2) Within the period ending 24 calendar months after the month in which the applicant passed the written test, the applicant participated in a flight engineer or maintenance training program of a U.S. scheduled military air transportation service and is currently participating in that program.

(e) An air carrier or commercial operator with an approved training program under part 121 of this chapter may, when authorized by the Administrator, provide as part of that program a written test that it may administer to satisfy the test required for an additional rating under paragraph (b) of this section.

(Sec. 6, 80 Stat. 937, 49 U.S.C. 1655; secs. 313(a), 601 through 605 of the Federal Aviation Act of 1958 (49 U.S.C. 1354(a), 1421 through 1425); sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c)); and 14 CFR 11.49)

[Doc. No. 1179, 27 FR 7969, Aug. 10, 1962, as amended by Amdt. 63–17, 40 FR 32830, Aug. 5, 1975; Doc. 63–21, 47 FR 13316, Mar. 29, 1982]

§ 63.37 Aeronautical experience requirements.

(a) Except as otherwise specified therein, the flight time used to satisfy the aeronautical experience requirements of paragraph (b) of this section must have been obtained on an airplane—

(1) On which a flight engineer is required by this chapter; or

(2) That has at least three engines that are rated at least 800 horsepower each or the equivalent in turbine-powered engines.

(b) An applicant for a flight engineer certificate with a class rating must present, for the class rating sought, satisfactory evidence of one of the following:

(1) At least 3 years of diversified practical experience in aircraft and aircraft engine maintenance (of which at least 1 year was in maintaining multiengine aircraft with engines rated at least 800 horsepower each, or the equivalent in turbine engine powered aircraft), and at least 5 hours of flight training in the duties of a flight engineer.

(2) Graduation from at least a 2-year specialized aeronautical training course in maintaining aircraft and aircraft engines (of which at least 6 calendar months were in maintaining multiengine aircraft with engines rated at least 800 horsepower each or the equivalent in turbine engine powered aircraft), and at least 5 hours of flight training in the duties of a flight engineer.

(3) A degree in aeronautical, electrical, or mechanical engineering from a recognized college, university, or engineering school; at least 6 calendar months of practical experience in maintaining multiengine aircraft with engines rated at least 800 horsepower each, or the equivalent in turbine engine powered aircraft; and at least 5 hours of flight training in the duties of a flight engineer.

(4) At least a commercial pilot certificate with an instrument rating and at least 5 hours of flight training in the duties of a flight engineer.

(5) At least 200 hours of flight time in a transport category airplane (or in a military airplane with at least two engines and at least equivalent weight and horsepower) as pilot in command or second in command performing the functions of a pilot in command under the supervision of a pilot in command.

(6) At least 100 hours of flight time as a flight engineer.

(7) Within the 90–day period before he applies, successful completion of an approved flight engineer ground and flight course of instruction as provided in appendix C of this part.

(Sec. 6, 80 Stat. 937, 49 U.S.C. 1655)

[Doc. No. 6458, 30 FR 14559, Nov. 23, 1965, as amended by Amdt. 63–5, 31 FR 9047, July 1, 1966; Amdt. 63–17, 40 FR 32830, Aug. 5, 1975]

§ 63.39 Skill requirements.

(a) An applicant for a flight engineer certificate with a class rating must pass a practical test on the duties of a flight engineer in the class of airplane for which a rating is sought. The test may only be given on an airplane specified in § 63.37(a).

(b) The applicant must—

(1) Show that he can satisfactorily perform preflight inspection, servicing, starting, pretakeoff, and postlanding procedures;

(2) In flight, show that he can satisfactorily perform the normal duties and procedures relating to the airplane, airplane engines, propellers (if appropriate), systems, and appliances; and

(3) In flight, in an airplane simulator, or in an approved flight engineer training device, show that he can satisfactorily perform emergency duties and procedures and recognize and take appropriate action for malfunctions of the airplane, engines, propellers (if appropriate), systems and appliances.

§ 63.41 Retesting after failure.

An applicant for a flight engineer certificate who fails a written test or practical test for that certificate may apply for retesting—

(a) After 30 days after the date he failed that test; or

(b) After he has received additional practice or instruction (flight, synthetic trainer, or ground training, or any combination thereof) that is necessary, in the opinion of the Administrator or the applicant's instructor (if the Administrator has authorized him to determine the additional instruction necessary) to prepare the applicant for retesting.

§ 63.42 Flight engineer certificate issued on basis of a foreign flight engineer license.

(a) *Certificates issued.* The holder of a current foreign flight engineer license issued by a contracting State to the Convention on International Civil Aviation, who meets the requirements of this section, may have a flight engineer certificate issued to him for the operation of civil aircraft of U.S. registry. Each flight engineer certificate issued under this section specifies the number and State of issuance of the foreign flight engineer license on which

it is based. If the holder of the certificate cannot read, speak, or understand the English language, the Administrator may place any limitation on the certificate that he considers necessary for safety.

(b) *Medical standards and certification.* An applicant must submit evidence that he currently meets the medical standards for the foreign flight engineer license on which the application for a certificate under this section is based. A current medical certificate issued under part 67 of this chapter will be excepted as evidence that the applicant meets those standards. However, a medical certificate issued under part 67 of this chapter is not evidence that the applicant meets those standards outside the United States unless the State that issued the applicant's foreign flight engineer license also accepts that medical certificate as evidence of the applicant's physical fitness for his foreign flight engineer license.

(c) *Ratings issued.* Aircraft class ratings listed on the applicant's foreign flight engineer license, in addition to any issued to him after testing under the provisions of this part, are placed on the applicant's flight engineer certificate. An applicant without an aircraft class rating on his foreign flight engineer license may be issued a class rating if he shows that he currently meets the requirements for exercising the privileges of his foreign flight engineer license on that class of aircraft.

(d) *Privileges and limitations.* The holder of a flight engineer certificate issued under this section may act as a flight engineer of a civil aircraft of U.S. registry subject to the limitations of this part and any additional limitations placed on his certificate by the Administrator. He is subject to these limitations while he is acting as a flight engineer of the aircraft within or outside the United States. However, he may not act as flight engineer or in any other capacity as a required flight crewmember, of a civil aircraft of U.S. registry that is carrying persons or property for compensation or hire.

(e) *Renewal of certificate and ratings.* The holder of a certificate issued under this section may have that certificate and the ratings placed thereon renewed if, at the time of application for renewal, the foreign flight engineer license on which that certificate is based is in effect. Application for the renewal of the certificate and ratings thereon must be made before the expiration of the certificate.

(Sec. 6, 80 Stat. 937, 49 U.S.C. 1655)

[Doc. No. 8846, 33 FR 18614, Dec. 17, 1968, as amended by Amdt. 63–20, 45 FR 5673, Jan. 24, 1980]

§ 63.43 Flight engineer courses.

An applicant for approval of a flight engineer course must submit a letter to the Administrator requesting approval, and must also submit three copies of each course outline, a description of the facilities and equipment, and a list of the instructors and their qualifications. An air carrier or commercial operator with an approved flight engineer training course under part 121 of this chapter may apply for approval of a training course under this part by letter without submitting the additional information required by this paragraph. Minimum requirements for obtaining approval of a flight engineer course are set forth in appendix C of this part.

Subpart C—Flight Navigators

AUTHORITY: Secs. 313(a), 314, 601, and 607; 49 U.S.C. 1354(a), 1355, 1421, and 1427.

SOURCE: Docket No. 1179, 27 FR 7970, Aug. 10, 1962, unless otherwise noted.

§ 63.51 Eligibility requirements; general.

To be eligible for a flight navigator certificate, a person must—

(a) Be at least 21 years of age;

(b) Be able to read, write, speak, and understand the English language;

(c) Hold at least a second-class medical certificate issued under part 67 of this chapter within the 12 months before the date he applies; and

(d) Comply with §§ 63.53, 63.55, and 63.57.

§ 63.53 Knowledge requirements.

(a) An applicant for a flight navigator certificate must pass a written test on—

(1) The regulations of this chapter that apply to the duties of a flight navigator;

(2) The fundamentals of flight navigation, including flight planning and cruise control;

(3) Practical meteorology, including analysis of weather maps, weather reports, and weather forecasts; and weather sequence abbreviations, symbols, and nomenclature;

(4) The types of air navigation facilities and procedures in general use;

(5) Calibrating and using air navigation instruments;

(6) Navigation by dead reckoning;

(7) Navigation by celestial means;

(8) Navigation by radio aids;

(9) Pilotage and map reading; and

(10) Interpretation of navigation aid identification signals.

(b) A report of the test is mailed to the applicant. A passing grade is evidence, for a period of 24 months after the test, that the applicant has complied with this section.

[Doc. No. 1179, 27 FR 7970, Aug. 10 1962, as amended by Amdt. 63–19, 43 FR 22639, May 25, 1978]

§ 63.55 Experience requirements.

(a) An applicant for a flight navigator certificate must be a graduate of a flight navigator course approved by the Administrator or present satisfactory documentary evidence of—

(1) Satisfactory determination of his position in flight at least 25 times by night by celestial observations and at least 25 times by day by celestial observations in conjunction with other aids; and

(2) At least 200 hours of satisfactory flight navigation including celestial and radio navigation and dead reckoning.

A pilot who has logged 500 hours of cross-country flight time, of which at least 100 hours were at night, may be credited with not more than 100 hours for the purposes of paragraph (a)(2) of this section.

(b) Flight time used exclusively for practicing long-range navigation methods, with emphasis on celestial navigation and dead reckoning, is considered to be satisfactory navigation experience for the purposes of paragraph (a) of this section. It must be substantiated by a logbook, by records of an armed force or a certificated air carrier, or by a letter signed by a certificated flight navigator and attached to the application.

§ 63.57 Skill requirements.

(a) An applicant for a flight navigator certificate must pass a practical test in navigating aircraft by—

(1) Dead reckoning;

(2) Celestial means; and

(3) Radio aids to navigation.

(b) An applicant must pass the written test prescribed by § 63.53 before taking the test under this section. However, if a delay in taking the test under this section would inconvenience the applicant or an air carrier, he may take it before he receives the result of the written test, or after he has failed the written test.

(c) The test requirements for this section are set forth in appendix A of this part.

[Doc. No. 1179, 27 FR 7970, Aug. 10, 1962, as amended by Amdt. 63–19, 43 FR 22639, May 25, 1978]

§ 63.59 Retesting after failure.

(a) An applicant for a flight navigator certificate who fails a written or practical test for that certificate may apply for retesting—

(1) After 30 days after the date he failed that test; or

(2) Before the 30 days have expired if the applicant presents a signed statement from a certificated flight navigator, certificated ground instructor, or any other qualified person approved by the Administrator, certifying that that person has given the applicant additional instruction in each of the subjects failed and that person considers the applicant ready for retesting.

(b) A statement from a certificated flight navigator, or from an operations official of an approved navigator course, is acceptable, for the purposes of paragraph (a)(2) of this section, for the written test and for the flight test. A statement from a person approved by the Administrator is acceptable for the written tests. A statement from a supervising or check navigator with the United States Armed Forces is acceptable for the written test and for the practical test.

(c) If the applicant failed the flight test, the additional instruction must have been administered in flight.

[Doc. No. 1179, 27 FR 7970, Aug. 10, 1962, as amended by Amdt. 63–19, 43 FR 22640, May 25, 1978]

§ 63.61 Flight navigator courses.

An applicant for approval of a flight navigator course must submit a letter to the Administrator requesting approval, and must also submit three copies of the course outline, a description of his facilities and equipment, and a list of the instructors and their qualifications. Requirements for the course are set forth in appendix B to this part.

APPENDIX A TO PART 63—TEST REQUIREMENTS FOR FLIGHT NAVIGATOR CERTIFICATE

(a) *Demonstration of skill.* An applicant will be required to pass practical tests on the prescribed subjects. These tests may be given by FAA inspectors and designated flight navigator examiners.

(b) *The examination.* The practical examination consists of a ground test and a flight test as itemized on the examination check sheet. Each item must be completed satisfactorily in order for the applicant to obtain a passing grade. Items 5, 6, 7 of the ground test may be completed orally, and items 17, 22, 23, 34, 36, 37, 38, and 39 of the flight test may be completed by an oral examination when a lack of ground facilities or navigation equipment makes such procedure necessary. In these cases a notation to that effect shall be made in the ''Remarks'' space on the check sheet.

(c) *Examination procedure.* (1) An applicant will provide an aircraft in which celestial observations can be taken in all directions. Minimum equipment shall include a table for plotting, a drift meter or absolute altimeter, an instrument for taking visual bearings, and a radio direction finder.

(2) More than one flight may be used to complete the flight test and any type of flight pattern may be used. The test will be conducted chiefly over water whenever practicable, and without regard to radio range legs or radials. If the test is conducted chiefly over land, a chart should be used which shows very little or no topographical and aeronautical data. The total flight time will cover a period of at least four hours. Only one applicant may be examined at one time, and no applicant may perform other than navigator duties during the examination.

(3) When the test is conducted with an aircraft belonging to an air carrier, the navigation procedures should conform with those set forth in the carrier's operations manual. Items of the flight test which are not performed during the routine navigation of the flight will be completed by oral examination after the flight or at times during flight which the applicant indicates may be used for tests on those items. Since in-flight weather conditions, the reliability of the weather forecast, and the stability of the aircraft will have considerable effect on an applicant's performance, good judgment must be used by the agent or examiner in evaluating the tests.

(d) *Ground test.* For the ground test, in the order of the numbered items on the examination check sheet, an applicant will be required to:

(1) Identify without a star identifier, at least six navigational stars and all planets available for navigation at the time of the examination and explain the method of identification.

(2) Identify two additional stars with a star identifier or sky diagrams and explain identification procedure.

(3) Precompute a time-altitude curve for a period of about 20 minutes and take 10 single observations of a celestial body which is rising or setting rapidly. The intervals between observations should be at least one minute. Mark each observation on the graph to show accuracy. All observations, after corrections, shall plot within 8 minutes of arc from the time-altitude curve, and the average error shall not exceed 5 minutes of arc.

(4) Take and plot one 3-star fix and 3 LOP's of the sun. Plotted fix or an average of LOP's must fall within 5 miles of the actual position of the observer.

(5) Demonstrate or explain the compensation and swinging of a liquid-type magnetic compass.

(6) Demonstrate or explain a method of aligning one type of drift meter.

(7) Demonstrate or explain a method of aligning an astro-compass or periscopic sextant.

(e) *Flight test.* For the flight test, in the order of the numbered items on the examination check sheet, an applicant will be required to:

(1) Demonstrate his ability to read weather symbols and interpret synoptic surface and upper air weather maps with particular emphasis being placed on winds.

(2) Prepare a flight plan by zones from the forecast winds or pressure data of an upper air chart and the operator's data.

(3) Compute from the operator's data the predicted fuel consumption for each zone of the flight, including the alternate.

(4) Determine the point-of-no-return for the flight with all engines running and the equitime point with one engine inoperative. Graphical methods which are part of the

company's operations manual may be used for these computations.

(5) Prepare a cruise control (howgozit) chart from the operator's data.

(6) Enter actual fuel consumed on the cruise control chart and interpret the variations of the actual curve from the predicted curve.

(7) Check the presence on board and operating condition of all navigation equipment. Normally a check list will be used. This check will include a time tick or chronometer comparison. Any lack of thoroughness during this check will justify this item being graded unsatisfactory.

(8) Locate emergency equipment, such as, the nearest fire extinguisher, life preserver, life rafts, exits, axe, first aid kits, etc.

(9) Recite the navigator's duties and stations during emergencies for the type of aircraft used for the test.

(10) Demonstrate the proper use of a flux gate compass or gyrosyn compass (when available), with special emphasis on the caging methods and the location of switches, circuit breakers, and fuses. If these compasses are not part of the aircraft's equipment, an oral examination will be given.

(11) Be accurate and use good judgment when setting and altering headings. Erroneous application of variation, deviation, or drift correction, or incorrect measurement of course on the chart will be graded as unsatisfactory.

(12) Demonstrate or explain the use of characteristics of various chart projections used in long-range air navigation, including the plotting of courses and bearings, and the measuring of distances.

(13) Demonstrate ability to identify designated landmarks by the use of a sectional or WAC chart.

(14) Use a computer with facility and accuracy for the computation of winds, drift correction and drift angles, ground speeds, ETA's, fuel loads, etc.

(15) Determine track, ground speed, and wind by the double drift method. When a drift meter is not part of the aircraft's equipment, an oral examination on the use of the drift meter and a double drift problem shall be completed.

(16) Determine ground speed and wind by the timing method with a drift meter. When a drift meter is not part of the aircraft's equipment, an oral examination on the procedure and a problem shall be completed.

(17) Demonstrate the use of air plot for determining wind between fixes and for plotting pressure lines of position when using pressure and absolute altimeter comparisons.

(18) Give ETA's to well defined check points at least once each hour after the second hour of flight. The average error shall not be more than 5 percent of the intervening time intervals, and the maximum error of any one ETA shall not be more than 10 percent.

(19) Demonstrate knowledge and use of D/F equipment and radio facility information. Grading on this item will be based largely on the applicant's selection of those radio aids which will be of most value to his navigation, the manner with which he uses equipment, including filter box controls, and the precision with which he reads bearings. The aircraft's compass heading and all compass corrections must be considered for each bearing.

(20) Use care in tuning to radio stations to insure maximum reception of signal and check for interference signals. Receiver will be checked to ascertain that antenna and BFO (Voice-CW) switches are in correct positions.

(21) Identify at least three radio stations using International Morse code only for identification. The agent or examiner will tune in these stations so that the applicant will have no knowledge of the direction, distance, or frequency of the stations.

(22) Take at least one radio bearing by manual use of the loop. The agent or examiner will check the applicant's bearing by taking a manual bearing on the same station immediately after the applicant.

(23) Show the use of good judgment in evaluating radio bearings, and explain why certain bearings may be of doubtful value.

(24) Determine and apply correctly the correction required to be made to radio bearings before plotting them on a Mercator chart, and demonstrate the ability to plot bearings accurately on charts of the Mercator and Lambert conformal projections.

(25) Compute the compass heading, ETA, and fuel remaining if it is assumed that the flight would be diverted to an alternate airport at a time specified by the agent or examiner.

(26) Check the counter scales of a Loran receiver for accuracy, and explain the basic (face) adjustments which affect tuning and counter alignment. A guide sheet may be used for this test.

(27) Demonstrate a knowledge of the basic principle of Loran and the ability to tune a Loran receiver, to match signals, to read time differences, to plot Loran LOP's, and to identify and use sky waves.

(28) Take and plot bearings from a consol station and explain the precautions which must be taken when tuning a radio receiver for consol signals. Also, discuss those conditions which affect the reliability of consol bearings.

(29) Demonstrate the ability to properly operate and read an absolute altimeter.

(30) Determine the ''D'' factors for a series of compared readings of an absolute altimeter and a pressure altimeter.

(31) Determine drift angle or lateral displacement from the true headingline by application of Bellamy's formula or a variation thereof.

(32) Interpret the altimeter comparison data with respect to the pressure system found at flight level. From this data evaluate the accuracy of the prognostic weather map used for flight planning and apply this analysis to the navigation of the flight.

(33) Interpret single LOP's for most probable position, and show how a series of single LOP's of the same body may be used to indicate the probable track and ground speed. Also, show how a series of single LOP's (celestial or radio) from the same celestial body or radio station may be used to determine position when the change of azimuth or bearing is 30° or more between observations.

(34) Select one of the celestial LOP's used during the flight and explain how to make a single line of position approach to a point selected by the agent or examiner, giving headings, times, and ETA's.

(35) Demonstrate the proper use of an astro-compass or periscopic sextant for taking bearings.

(36) Determine compass deviation as soon as possible after reaching cruising altitude and whenever there is a change of compass heading of 15° or more.

(37) Take celestial fixes at hourly intervals when conditions permit. The accuracy of these fixes shall be checked by means of a Loran, radio, or visual fix whenever practicable. After allowing for the probable error of a Loran, radio, or visual fix, a celestial fix under favorable conditions should plot within 10 miles of the actual position.

(38) Select celestial bodies for observation, when possible, whose azimuths will differ by approximately 120° for a 3-body fix and will differ by approximately 90° for a 2-body fix. The altitudes of the selected bodies should be between 25° and 75° whenever practicable.

(39) Have POMAR and any other required reports ready for transmission at time of schedule, and be able to inform the pilot in command promptly with regard to the aircraft's position and progress in comparison with the flight plan.

(40) Keep a log with sufficient legible entries to provide a record from which the flight could be retraced.

(41) Note significant weather changes which might influence the drift or ground speed of the aircraft, such as, temperature, ''D'' factors, frontal conditions, turbulence, etc.

(42) Determine the wind between fixes as a regular practice.

(43) Estimate the time required and average ground speed during a letdown, under conditions specified by the pilot in command.

(44) Work with sufficient speed to determine the aircraft's position hourly by celestial means and also make all other observations and records pertinent to the navigation. The applicant should be able to take the observation, compute, and plot a celestial LOP within a time limit of 8 minutes; take and plot a Loran LOP within a time limit of 3 minutes for ground waves and 4 minutes for sky waves; observe the absolute and pressure altimeters and compute the drift or lateral displacement within a time limit of 3 minutes.

(45) Be accurate in reading instruments and making computations. Errors which are made and corrected without affecting the navigation will be disregarded unless they cause considerable loss of time.

An uncorrected error in computation (including reading instruments and books) which will affect the reported position more than 25 miles, the heading more than 3°, or any ETA more than 15 minutes will cause this item to be graded unsatisfactory.

(46) Be alert to changing weather or other conditions during flight which might affect the navigation. An applicant should not fail to take celestial observations just prior to encountering a broken or overcast sky condition; and he should not fail to take a bearing on a radio station, which operates at scheduled intervals and which would be a valuable aid to the navigation.

(47) Show a logical choice and sequence in using the various navigation methods according to time and accuracy, and check the positions determined by one method against positions determined by other methods.

(48) Use a logical sequence in performing the various duties of a navigator and plan work according to a schedule. The more important duties should not be neglected for others of less importance.

APPENDIX B TO PART 63—FLIGHT NAVIGATOR TRAINING COURSE REQUIREMENTS

(a) *Training course outline*—(1) *Format.* The ground course outline and the flight course outline shall be combined in one looseleaf binder and shall include a table of contents, divided into two parts—ground course and flight course. Each part of the table of contents must contain a list of the major subjects, together with hours allotted to each subject and the total classroom and flight hours.

(2) *Ground course outline.* (i) It is not mandatory that a course outline have the subject headings arranged exactly as listed in this paragraph. Any arrangement of general headings and subheadings will be satisfactory provided all the subject material listed here is included and the acceptable minimum number of hours is assigned to each subject. Each general subject shall be broken down into detail showing items to be covered.

(ii) If any agency desires to include additional subjects in the ground training curriculum, such as international law, flight hygiene, or others which are not required, the hours allotted these additional subjects may not be included in the minimum classroom hours.

(iii) The following subjects with classroom hours are considered the minimum coverage for a ground training course for flight navigators:

Subject	Classroom hours
Federal Aviation Administration	5
To include Parts 63, 91, and 121 of this chapter.	
Meteorology	40
To include:	
Basic weather principles.	
Temperature.	
Pressure.	
Winds.	
Moisture in the atmosphere.	
Stability.	
Clouds.	
Hazards.	
Air masses.	
Front weather.	
Fog.	
Thunderstorms.	
Icing.	
World weather and climate.	
Weather maps and weather reports.	
Forecasting.	
International Morse code:	
Ability to receive code groups of letters and numerals at a speed of eight words per minute	
Navigation instruments (exclusive of radio and radar)	20
To include:	
Compasses.	
Pressure altimeters.	
Airspeed indicators.	
Driftmeters.	
Bearing indicators.	
Aircraft octants.	
Instrument calibration and alignment.	
Charts and pilotage	15
To include:	
Chart projections.	
Chart symbols.	
Principles of pilotage.	
Dead reckoning	30
To include:	
Air plot.	
Ground plot.	
Calculation of ETA.	
Vector analysis.	
Use of computer.	
Search.	
Absolute altimeter with:	
Applications	15
To include:	
Principles of construction.	
Operating instructions.	
Use of Bellamy's formula.	
Flight planning with single drift correction.	
Radio and long-range navigational aids	35
To include:	
Principles of radio transmission and reception.	
Radio aids to navigation.	
Government publications.	
Airborne D/F equipment.	
Errors of radio bearings.	
Quadrantal correction.	
Plotting radio bearings.	
ICAO Q code for direction finding.	
Loran.	
Consol.	
Celestial navigation	150
To include:	
The solar system.	
The celestial sphere.	
The astronomical triangle.	
Theory of lines of position.	
Use of the Air Almanac.	
Time and its applications.	
Navigation tables.	
Precomputation.	
Celestial line of position approach.	
Star identification.	
Corrections to celestial observations.	
Flight planning and cruise control	25
To include:	
The flight plan.	
Fuel consumption charts.	
Methods of cruise control.	
Flight progress chart.	
Point-of-no-return.	
Equitime point.	
Long-range flight problems	15
Total (exclusive of final examinations)	350

(3) *Flight course outline.* (i) A minimum of 150 hours of supervised flight training shall be given, of which at least 50 hours of flight training must be given at night, and celestial navigation must be used during flights which total at least 125 hours.

(ii) A maximum of 50 hours of the required flight training may be obtained in acceptable types of synthetic flight navigator training devices.

(iii) Flights should be at least four hours in length and should be conducted off civil airways. Some training on long-range flights is desirable, but is not required. There is no limit to the number of students that may be trained on one flight, but at least one astrodrome or one periscopic sextant mounting must be provided for each group of four students.

(iv) Training must be given in dead reckoning, pilotage, radio navigation, celestial navigation, and the use of the absolute altimeter.

(b) *Equipment.* (1) Classroom equipment shall include one table at least 24″ × 32″ in dimensions for each student.

(2) Aircraft suitable for the flight training must be available to the approved course operator to insure that the flight training may be completed without undue delay.

The approved course operator may contract or obtain written agreements with aircraft

operators for the use of suitable aircraft. A copy of the contract or written agreement with an aircraft operator shall be attached to each of the three copies of the course outline submitted for approval. In all cases, the approved course operator is responsible for the nature and quality of instruction given during flight.

(c) *Instructors.* (1) Sufficient classroom instructors must be available to prevent an excessive ratio of students to instructors. Any ratio in excess of 20 to 1 will be considered unsatisfactory.

(2) At least one ground instructor must hold a valid flight navigator certificate, and be utilized to coordinate instruction of ground school subjects.

(3) Each instructor who conducts flight training must hold a valid flight navigator certificate.

(d) *Revision of training course.* (1) Requests for revisions to course outlines, facilities, and equipment shall follow procedures for original approval of the course. Revisions should be submitted in such form that an entire page or pages of the approved outline can be removed and replaced by the revisions.

(2) The list of instructors may be revised at any time without request for approval, provided the minimum requirement of paragraph (e) of this section is maintained.

(e) *Credit for previous training and experience.* (1) Credit may be granted by an operator to students for previous training and experience which is provable and comparable to portions of the approved curriculum. When granting such credit, the approved course operator should be fully cognizant of the fact that he is responsible for the proficiency of his graduates in accordance with subdivision (i) of paragraph (3) of this section.

(2) Where advanced credit is allowed, the operator shall evaluate the student's previous training and experience in accordance with the normal practices of accredited technical schools. Before credit is given for any ground school subject or portion thereof, the student must pass an appropriate examination given by the operator. The results of the examination, the basis for credit allowance, and the hours credited shall be incorporated as a part of the student's records.

(3) Credit up to a maximum of 50 hours toward the flight training requirement may be given to pilots who have logged at least 500 hours while a member of a flight crew which required a certificated flight navigator or the Armed Forces equivalent. A similar credit may also be given to a licensed deck officer of the Maritime Service who has served as such for at least one year on ocean-going vessels. One-half of the flight time credited under the terms of this paragraph may be applied toward the 50 hours of flight training required at night.

(f) *Students records and reports.* Approval of a course shall not be continued in effect unless the course operator keeps an accurate record of each student, including a chronological log of all instruction, subjects covered and course examinations and grades, and unless he prepares and transmits to the local Flight Standards District Office not later than January 31 of each year, a report containing the following information for the previous calendar year:

(1) The names of all students graduated, together with their school grades for ground and flight subjects.

(2) The names of all students failed or dropped, together with their school grades and reasons for dropping.

(g) *Quality of instruction.* Approval of a course shall not be continued in effect unless at least 80 percent of the students who apply within 90 days after graduation are able to qualify on the first attempt for certification as flight navigators.

(h) *Statement of graduation.* Each student who successfully completes an approved flight navigator course shall be given a statement of graduation.

(i) *Inspections.* Approved course operations will be inspected by authorized representatives of the Administrator as often as deemed necessary to insure that instruction is maintained at the required standards, but the period between inspections shall not exceed 12 months.

(j) *Change of ownership, name, or location—*(1) *Change of ownership.* Approval of a flight navigator course shall not be continued in effect after the course has changed ownership. The new owner must obtain a new approval by following the procedure prescribed for original approval.

(2) *Change in name.* An approved course changed in name but not changed in ownership shall remain valid if the change is reported by the approved course operator to the local Flight Standards District Office. A letter of approval under the new name will be issued by the regional office.

(3) *Change in location.* An approved course shall remain in effect even though the approved course operator changes location if the change is reported without delay by the operator to the local Flight Standards District Office, which will inspect the facilities to be used. If they are found to be adequate, a letter of approval showing the new location will be issued by the regional office.

(k) *Cancellation of approval.* (1) Failure to meet or maintain any of the requirements set forth in this section for the approval or operation of an approved flight navigator course shall be considered sufficient reason for cancellation of the approval.

(2) If an operator should desire voluntary cancellation of his approved course, he should submit the effective letter of approval and a written request for cancellation

to the Administrator through the local Flight Standards District Office.

(l) *Duration.* The authority to operate an approved flight navigator course shall expire 24 months after the last day of the month of issuance.

(m) *Renewal.* Application for renewal of authority to operate an approved flight navigator course may be made by letter to the local Flight Standards District Office at any time within 60 days before to the expiration date. Renewal of approval will depend upon the course operator meeting the current conditions for approval and having a satisfactory record as an operator.

[Doc. No. 1179, 27 FR 7970, Aug. 10, 1962, as amended by Amdt. 63–6, 31 FR 9211, July 6, 1966; Amdt. 63–28, 54 FR 39291, Sept. 25, 1989]

APPENDIX C TO PART 63—FLIGHT ENGINEER TRAINING COURSE REQUIREMENTS

(a) *Training course outline*—(1) *Format.* The ground course outline and the flight course outline are independent. Each must be contained in a looseleaf binder to include a table of contents. If an applicant desires approval of both a ground school course and a flight school course, they must be combined in one looseleaf binder that includes a separate table of contents for each course. Separate course outlines are required for each type of airplane.

(2) *Ground course outline.* (i) It is not mandatory that the subject headings be arranged exactly as listed in this paragraph. Any arrangement of subjects is satisfactory if all the subject material listed here is included and at least the minimum programmed hours are assigned to each subject. Each general subject must be broken down into detail showing the items to be covered.

(ii) If any course operator desires to include additional subjects in the ground course curriculum, such as international law, flight hygiene, or others that are not required, the hours allotted these additional subjects may not be included in the minimum programmed classroom hours.

(iii) The following subjects and classroom hours are the minimum programmed coverage for the initial approval of a ground training course for flight engineers. Subsequent to initial approval of a ground training course an applicant may apply to the Administrator for a reduction in the programmed hours. Approval of a reduction in the approved programmed hours is based on improved training effectiveness due to improvements in methods, training aids, quality of instruction, or any combination thereof.

Subject	Classroom hours
Federal Aviation Regulations	10
To include the regulations of this chapter that apply to flight engineers	
Theory of Flight and Aerodynamics	10
Airplane Familiarization	90
To include as appropriate:	
Specifications.	
Construction features.	
Flight controls.	
Hydraulic systems.	
Pneumatic systems.	
Electrical systems.	
Anti-icing and de-icing systems.	
Pressurization and air-conditioning systems.	
Vacuum systems.	
Pilot static systems.	
Instrument systems.	
Fuel and oil systems.	
Emergency equipment.	
Engine Familiarization	45
To include as appropriate:	
Specifications.	
Construction features.	
Lubrication.	
Ignition.	
Carburetor and induction, supercharging and fuel control systems	
Accessories.	
Propellers.	
Instrumentation.	
Emergency equipment.	
Normal Operations (Ground and Flight)	50
To include as appropriate:	
Servicing methods and procedures.	
Operation of all the airplane systems.	
Operation of all the engine systems.	
Loading and center of gravity computations.	
Cruise control (normal, long range, maximum endurance)	
Power and fuel computation.	
Meteorology as applicable to engine operation	
Emergency Operations	80
To include as appropriate:	
Landing gear, brakes, flaps, speed brakes, and leading edge devices	
Pressurization and air-conditioning.	
Portable fire extinguishers.	
Fuselage fire and smoke control.	
Loss of electrical power.	
Engine fire control.	
Engine shut-down and restart.	
Oxygen.	
Total (exclusive of final tests)	235

The above subjects, except Theory of Flight and Aerodynamics, and Regulations must apply to the same type of airplane in which the student flight engineer is to receive flight training.

(3) Flight Course Outline. (i) The flight training curriculum must include at least 10 hours of flight instruction in an airplane specified in §63.37(a). The flight time required for the practical test may not be credited as part of the required flight instruction.

(ii) All of the flight training must be given in the same type airplane.

(iii) As appropriate to the airplane type, the following subjects must be taught in the flight training course:

SUBJECT
NORMAL DUTIES, PROCEDURES AND OPERATIONS
To include as appropriate:
Airplane preflight.
Engine starting, power checks, pretakeoff, postlanding and shut-down procedures.
Power control.
Temperature control.
Engine operation analysis.
Operation of all systems.
Fuel management.
Logbook entries.
Pressurization and air conditioning.
RECOGNITION AND CORRECTION OF IN-FLIGHT MALFUNCTIONS
To include:
Analysis of abnormal engine operation.
Analysis of abnormal operation of all systems.
Corrective action.
EMERGENCY OPERATIONS IN FLIGHT
To include as appropriate:
Engine fire control.
Fuselage fire control.
Smoke control.
Loss of power or pressure in each system.
Engine overspeed.
Fuel dumping.
Landing gear, spoilers, speed brakes, and flap extension and retraction.
Engine shut-down and restart.
Use of oxygen.

(iv) If the Administrator finds a simulator or flight engineer training device to accurately reproduce the design, function, and control characteristics, as pertaining to the duties and responsibilities of a flight engineer on the type of airplane to be flown, the flight training time may be reduced by a ratio of 1 hour of flight time to 2 hours of airplane simulator time, or 3 hours of flight engineer training device time, as the case may be, subject to the following limitations:

(*a*) Except as provided in subdivision (*b*) of this paragraph, the required flight instruction time in an airplane may not be less than 5 hours.

(*b*) As to a flight engineer student holding at least a commercial pilot certificate with an instrument rating, airplane simulator or a combination of airplane simulator and flight engineer training device time may be submitted for up to all 10 hours of the required flight instruction time in an airplane. However, not more than 15 hours of flight engineer training device time may be substituted for flight instruction time.

(v) To obtain credit for flight training time, airplane simulator time, or flight engineer training device time, the student must occupy the flight engineer station and operate the controls.

(b) *Classroom equipment.* Classroom equipment should consist of systems and procedural training devices, satisfactory to the Administrator, that duplicate the operation of the systems of the airplane in which the student is to receive his flight training.

(c) *Contracts or agreements.* (1) An approved flight engineer course operator may contract with other persons to obtain suitable airplanes, airplane simulators, or other training devices or equipment.

(2) An operator who is approved to conduct both the flight engineer ground course and the flight engineer flight course may contract with others to conduct one course or the other in its entirety but may not contract with others to conduct both courses for the same airplane type.

(3) An operator who has approval to conduct a flight engineer ground course or flight course for a type of airplane, but not both courses, may not contract with another person to conduct that course in whole or in part.

(4) An operator who contracts with another to conduct a flight engineer course may not authorize or permit the course to be conducted in whole or in part by a third person.

(5) In all cases, the course operator who is approved to operate the course is responsible for the nature and quality of the instruction given.

(6) A copy of each contract authorized under this paragraph must be attached to each of the 3 copies of the course outline submitted for approval.

(d) *Instructors.* (1) Only certificated flight engineers may give the flight instruction required by this appendix in an airplane, simulator, or flight engineer training device.

(2) There must be a sufficient number of qualified instructors available to prevent an excess ratio of students to instructors.

(e) *Revisions.* (1) Requests for revisions of the course outlines, facilities or equipment must follow the procedures for original approval of the course. Revisions must be submitted in such form that an entire page or pages of the approved outline can be removed and replaced by the revisions.

(2) The list of instructors may be revised at any time without request for approval, if the requirements of paragraph (d) of this appendix are maintained.

(f) *Ground school credits.* (1) Credit may be granted a student in the ground school course by the course operator for comparable previous training or experience that the student can show by written evidence: however, the course operator must still meet the quality of instruction as described in paragraph (h) of this appendix.

(2) Before credit for previous training or experience may be given, the student must

pass a test given by the course operator on the subject for which the credit is to be given. The course operator shall incorporate results of the test, the basis for credit allowance, and the hours credited as part of the student's records.

(g) *Records and reports.* (1) The course operator must maintain, for at least two years after a student graduates, fails, or drops from a course, a record of the student's training, including a chronological log of the subject course, attendance examinations, and grades.

(2) Except as provided in paragraph (3) of this section, the course operator must submit to the Administrator, not later than January 31 of each year, a report for the previous calendar year's training, to include:

(i) Name, enrollment and graduation date of each student;

(ii) Ground school hours and grades of each student;

(iii) Flight, airplane simulator, flight engineer training device hours, and grades of each student; and

(iv) Names of students failed or dropped, together with their school grades and reasons for dropping.

(3) Upon request, the Administrator may waive the reporting requirements of paragraph (2) of this section for an approved flight engineer course that is part of an approved training course under subpart N of part 121 of this chapter.

(h) *Quality of instruction.* (1) Approval of a ground course is discontinued whenever less than 80 percent of the students pass the FAA written test on the first attempt.

(2) Approval of a flight course is discontinued whenever less than 80 percent of the students pass the FAA practical test on the first attempt.

(3) Notwithstanding paragraphs (1) and (2) of this section, approval of a ground or flight course may be continued when the Administrator finds—

(i) That the failure rate was based on less than a representative number of students; or

(ii) That the course operator has taken satisfactory means to improve the effectiveness of the training.

(i) *Time limitation.* Each student must apply for the written test and the flight test within 90 days after completing the ground school course.

(j) *Statement of course completion.* (1) The course operator shall give to each student who successfully completes an approved flight engineer ground school training course, and passes the FAA written test, a statement of successful completion of the course that indicates the date of training, the type of airplane on which the ground course training was based, and the number of hours received in the ground school course.

(2) The course operator shall give each student who successfully completes an approved flight engineer flight course, and passed the FAA practical test, a statement of successful completion of the flight course that indicates the dates of the training, the type of airplane used in the flight course, and the number of hours received in the flight course.

(3) A course operator who is approved to conduct both the ground course and the flight course may include both courses in a single statement of course completion if the provisions of paragraphs (1) and (2) of this section are included.

(4) The requirements of this paragraph do not apply to an air carrier or commercial operator with an approved training course under part 121 of this chapter providing the student receives a flight engineer certificate upon completion of that course.

(k) *Inspections.* Each course operator shall allow the Administrator at any time or place, to make any inspection necessary to ensure that the quality and effectiveness of the instruction are maintained at the required standards.

(l) *Change of ownership, name, or location.* (1) Approval of a flight engineer ground course or flight course is discontinued if the ownership of the course changes. The new owner must obtain a new approval by following the procedure prescribed for original approval.

(2) Approval of a flight engineer ground course or flight course does not terminate upon a change in the name of the course that is reported to the Administrator within 30 days. The Administrator issues a new letter of approval, using the new name, upon receipt of notice within that time.

(3) Approval of a flight engineer ground course or flight course does not terminate upon a change in location of the course that is reported to the Administrator within 30 days. The Administrator issues a new letter of approval, showing the new location, upon receipt of notice within that time, if he finds the new facilities to be adequate.

(m) *Cancellation of approval.* (1) Failure to meet or maintain any of the requirements of this appendix for the approval of a flight engineer ground course or flight course is reason for cancellation of the approval.

(2) If a course operator desires to voluntarily terminate the course, he should notify the Administrator in writing and return the last letter of approval.

(n) *Duration.* Except for a course operated as part of an approved training course under subpart N of part 121 of this chapter, the approval to operate a flight engineer ground course or flight course terminates 24 months after the last day of the month of issue.

(o) *Renewal.* (1) Renewal of approval to operate a flight engineer ground course or flight course is conditioned upon the course operator's meeting the requirements of this appendix.

(2) Application for renewal may be made to the Administrator at any time after 60 days before the termination date.

(p) *Course operator approvals.* An applicant for approval of a flight engineer ground course, or flight course, or both, must meet all of the requirements of this appendix concerning application, approval, and continuing approval of that course or courses.

(q) *Practical test eligibility.* An applicant for a flight engineer certificate and class rating under the provisions of §63.37(b)(6) is not eligible to take the practical test unless he has successfully completed an approved flight engineer ground school course in the same type of airplane for which he has completed an approved flight engineer flight course.

[Doc. No. 6458, 30 FR 14560, Nov. 23, 1965, as amended by Amdt. 63–15, 37 FR 9758, May 17, 1972]

PART 65—CERTIFICATION: AIRMEN OTHER THAN FLIGHT CREWMEMBERS

SPECIAL FEDERAL AVIATION REGULATION NO. 100–1 [NOTE]
SPECIAL FEDERAL AVIATION REGULATION NO. 103

Subpart A—General

Sec.
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65.11 Application and issue.
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Subpart F—Parachute Riggers

65.111 Certificate required.
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65.115 Senior parachute rigger certificate: Experience, knowledge, and skill requirements.
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65.121 Type ratings.
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APPENDIX A TO PART 65—AIRCRAFT DISPATCHER COURSES

AUTHORITY: 49 U.S.C. 106(g). 40113, 44701–44703, 44707, 44709–44711, 45102–45103, 45301–45302.

SOURCE: Docket No. 1179, 27 FR 7973, Aug. 10, 1962, unless otherwise noted.

SPECIAL FEDERAL AVIATION REGULATION NO. 100–1

EDITORIAL NOTE: For the text of SFAR No. 100–1, see part 61 of this chapter.

EFFECTIVE DATE NOTE: By Doc. No. FAA–2005–15431, 70 FR 37948, June 30, 2005, SFAR No. 100–1 was added, effective June 30, 2005 through June 20, 2010.

SPECIAL FEDERAL AVIATION REGULATION NO. 103—PROCESS FOR REQUESTING WAIVER OF MANDATORY SEPARATION AGE FOR A FEDERAL AVIATION ADMINISTRATION AIR TRAFFIC CONTROL SPECIALIST IN FLIGHT SERVICE STATIONS, ENROUTE OR TERMINAL FACILITIES, AND THE DAVID J. HURLEY AIR TRAFFIC CONTROL SYSTEM COMMAND CENTER

1. *To whom does this SFAR apply?* This Special Federal Aviation Regulation (SFAR) applies to you if you are an air traffic control specialist (ATCS) employed by the FAA in flight service stations, enroute facilities, terminal facilities, or at the David J. Hurley Air Traffic Control System Command Center who wishes to obtain a waiver of the mandatory separation age as provided by 5 U.S.C. section 8335(a).

2. *When must I file for a waiver?* No earlier than the beginning of the twelfth month before, but no later than the beginning of the sixth month before, the month in which you turn 56, your official chain-of-command must receive your written request asking for a waiver of mandatory separation.

3. *What if I do not file a request before six months before the month in which I turn 56?* If your official chain-of-command does not receive your written request for a waiver of mandatory separation before the beginning of the sixth month before the month in which you turn 56, your request will be denied.

4. *How will the FAA determine if my request meets the filing time requirements of this SFAR?*

a. We consider your request to be filed in a timely manner under this SFAR if your official chain-of-command receives it or it is postmarked:

i. After 12 a.m. on the first day of the twelfth month before the month in which you turn 56; and

ii. Before 12 a.m. of the first day of the sixth month before the month in which you turn 56.

b. If you file your request by mail and the postmark is not legible, we will consider it to comply with paragraph a.2 of this section if we receive it by 12 p.m. of the fifth day of the sixth month before the month in which you turn 56.

c. If the last day of the time period specified in paragraph a.2 or paragraph b falls on a Saturday, Sunday, or Federal holiday, we will consider the time period to end at 12 p.m. of the next business day.

5. *Where must I file my request for waiver and what must it include?*

a. You must file your request for waiver of mandatory separation in writing with the Air Traffic Manager in flight service stations, enroute facilities, terminal facilities, or the David J. Hurley Air Traffic Control System Command Center in which you are employed.

b. Your request for waiver must include all of the following:

i. Your name.

ii. Your current facility.

iii. Your starting date at the facility.

iv. A list of positions at the facility that you are certified in and how many hours it took to achieve certification at the facility.

v. Your area of specialty at the facility.

vi. Your shift schedule.

vii. Your statement that you have not been involved in an operational error, operational deviation or runway incursion in the last 5 years while working a control position;

viii. A list of all facilities where you have worked as a certified professional controller (CPC) including facility level and dates at each facility;

ix. Evidence of your exceptional skills and experience as a controller; and

x. Your signature.

6. *How will my waiver request be reviewed?*

a. Upon receipt of your request for waiver, the Air Traffic Manager of your facility will make a written recommendation that the Administrator either approve or deny your request. If the manager recommends approval of your request, he or she will certify in writing the accuracy of the information

you provided as evidence of your exceptional skills and experience as a controller.

b. The Air Traffic Manager will then forward the written recommendation with a copy of your request to the senior executive manager in the Air Traffic Manager's regional chain-of-command.

c. The senior executive manager in the regional chain-of-command will make a written recommendation that the Administrator either approve or deny your request. If the senior executive manager recommends approval of your request, he or she will certify in writing the accuracy of the information you have provided as evidence of exceptional skills and experience.

d. The senior executive manager in the regional chain-of-command will then forward his or her recommendation with a copy of your request to the appropriate Vice President at FAA Headquarters. Depending on the facility in which you are employed, the request will be forwarded to either the Vice President for Flight Services, the Vice President for Enroute and Oceanic Services, the Vice President for Terminal Services or the Vice President for Systems Operations. For example, if you work at a flight service station at the time that you request a waiver, the request will be forwarded to the Vice President for Flight Services.

e. The appropriate Vice President will review your request and make a written recommendation that the Administrator either approve or deny your request, which will be forwarded to the Administrator.

f. The Administrator will issue the final decision on your request.

7. *If I am granted a waiver, when will it expire?*

a. Waivers will be granted for a period of one year.

b. No later than 90-days prior to expiration of a waiver, you may request that the waiver be extended using the same process identified in section 6.

c. If you timely request an extension of the waiver and it is denied, you will receive a 60-day advance notice of your separation date simultaneously with notification of the denial.

d. If you do not request an extension of the waiver granted, you will receive a 60-day advance notice of your separation date.

e. Action to separate you from your covered position becomes effective on the last day of the month in which the 60-day notice expires.

8. *Under what circumstances may my waiver be terminated?*

a. The FAA/DOT may terminate your waiver under the following circumstances:

i. The needs of the FAA; or

ii. If you are identified as a primary contributor to an operational error/deviation or runway incursion.

b. If the waiver is terminated for either of the reasons identified in paragraph 1 of this section, the air traffic control specialist will receive a 60-day advance notice.

c. Action to separate you from your covered position becomes effective on the last day of the month in which the 60-day notice expires.

9. *Appeal of denial or termination of waiver request:* The denial or termination of a waiver of mandatory separation request is neither appealable nor grievable.

[Doc. No. FAA–2004–17334, 70 FR 1636, Jan. 7, 2005]

Subpart A—General

§ 65.1 Applicability.

This part prescribes the requirements for issuing the following certificates and associated ratings and the general operating rules for the holders of those certificates and ratings:

(a) Air-traffic control-tower operators.

(b) Aircraft dispatchers.

(c) Mechanics.

(d) Repairmen.

(e) Parachute riggers.

§ 65.3 Certification of foreign airmen other than flight crewmembers.

A person who is neither a U.S. citizen nor a resident alien is issued a certificate under subpart D of this part, outside the United States, only when the Administrator finds that the certificate is needed for the operation or continued airworthiness of a U.S.-registered civil aircraft.

[Doc. 65–28, 47 FR 35693, Aug. 16, 1982]

§ 65.11 Application and issue.

(a) Application for a certificate and appropriate class rating, or for an additional rating, under this part must be made on a form and in a manner prescribed by the Administrator. Each person who applies for airmen certification services to be administered outside the United States or for any certificate or rating issued under this part must show evidence that the fee prescribed in appendix A of part 187 of this chapter has been paid.

(b) An applicant who meets the requirements of this part is entitled to an appropriate certificate and rating.

(c) Unless authorized by the Administrator, a person whose air traffic control tower operator, mechanic, or parachute rigger certificate is suspended may not apply for any rating to be added to that certificate during the period of suspension.

(d) Unless the order of revocation provides otherwise—

(1) A person whose air traffic control tower operator, aircraft dispatcher, or parachute rigger certificate is revoked may not apply for the same kind of certificate for 1 year after the date of revocation; and

(2) A person whose mechanic or repairman certificate is revoked may not apply for either of those kinds of certificates for 1 year after the date of revocation.

[Doc. No. 1179, 27 FR 7973, Aug. 10, 1962, as amended by Amdt. 65–9, 31 FR 13524, Oct. 20, 1966; Amdt. 65–28, 47 FR 35693, Aug. 16, 1982; Amdt. 65–49, 72 FR 18559, Apr. 12, 2007]

§ 65.12 Offenses involving alcohol or drugs.

(a) A conviction for the violation of any Federal or state statute relating to the growing, processing, manufacture, sale, disposition, possession, transportation, or importation of narcotic drugs, marihuana, or depressant or stimulant drugs or substances is grounds for—

(1) Denial of an application for any certificate or rating issued under this part for a period of up to 1 year after the date of final conviction; or

(2) Suspension or revocation of any certificate or rating issued under this part.

(b) The commission of an act prohibited by § 91.19(a) of this chapter is grounds for—

(1) Denial of an application for a certificate or rating issued under this part for a period of up to 1 year after the date of that act; or

(2) Suspension or revocation of any certificate or rating issued under this part.

[Doc. No. 21956, 50 FR 15379, Apr. 17, 1985, as amended by Amdt. 65–34, 54 FR 34330, Aug. 18, 1989]

§ 65.13 Temporary certificate.

A certificate and ratings effective for a period of not more than 120 days may be issued to a qualified applicant, pending review of his application and supplementary documents and the issue of the certificate and ratings for which he applied.

[Doc. No. 1179, 27 FR 7973, Aug. 10, 1962, as amended by Amdt. 65–23, 43 FR 22640, May 25, 1978]

§ 65.14 Security disqualification.

(a) *Eligibility standard.* No person is eligible to hold a certificate, rating, or authorization issued under this part when the Transportation Security Administration (TSA) has notified the FAA in writing that the person poses a security threat.

(b) *Effect of the issuance by the TSA of an Initial Notification of Threat Assessment.* (1) The FAA will hold in abeyance pending the outcome of the TSA's final threat assessment review an application for any certificate, rating, or authorization under this part by any person who has been issued an Initial Notification of Threat Assessment by the TSA.

(2) The FAA will suspend any certificate, rating, or authorization issued under this part after the TSA issues to the holder an Initial Notification of Threat Assessment.

(c) *Effect of the issuance by the TSA of a Final Notification of Threat Assessment.* (1) The FAA will deny an application for any certificate, rating, or authorization under this part to any person who has been issued a Final Notification of Threat Assessment.

(2) The FAA will revoke any certificate, rating, or authorization issued under this part after the TSA has issued to the holder a Final Notification of Threat Assessment.

[Doc. No. FAA–2003–14293, 68 FR 3775, Jan. 24, 2003]

§ 65.15 Duration of certificates.

(a) Except for repairman certificates, a certificate or rating issued under this part is effective until it is surrendered, suspended, or revoked.

(b) Unless it is sooner surrendered, suspended, or revoked, a repairman certificate is effective until the holder is relieved from the duties for which the holder was employed and certificated.

(c) The holder of a certificate issued under this part that is suspended, revoked, or no longer effective shall return it to the Administrator.

[Doc. No. 22052, 47 FR 35693, Aug. 16, 1982]

§ 65.16 Change of name: Replacement of lost or destroyed certificate.

(a) An application for a change of name on a certificate issued under this part must be accompanied by the applicant's current certificate and the marriage license, court order, or other document verifying the change. The documents are returned to the applicant after inspection.

(b) An application for a replacement of a lost or destroyed certificate is made by letter to the Department of Transportation, Federal Aviation Administration, Airman Certification Branch, Post Office Box 25082, Oklahoma City, OK 73125. The letter must—

(1) Contain the name in which the certificate was issued, the permanent mailing address (including zip code), social security number (if any), and date and place of birth of the certificate holder, and any available information regarding the grade, number, and date of issue of the certificate, and the ratings on it; and

(2) Be accompanied by a check or money order for $2, payable to the Federal Aviation Administration.

(c) An application for a replacement of a lost or destroyed medical certificate is made by letter to the Department of Transportation, Federal Aviation Administration, Civil Aeromedical Institute, Aeromedical Certification Branch, Post Office Box 25082, Oklahoma City, OK 73125, accompanied by a check or money order for $2.00.

(d) A person whose certificate issued under this part or medical certificate, or both, has been lost may obtain a telegram from the FAA confirming that it was issued. The telegram may be carried as a certificate for a period not to exceed 60 days pending his receiving a duplicate certificate under paragraph (b) or (c) of this section, unless he has been notified that the certificate has been suspended or revoked. The request for such a telegram may be made by prepaid telegram, stating the date upon which a duplicate certificate was requested, or including the request for a duplicate and a money order for the necessary amount. The request for a telegraphic certificate should be sent to the office prescribed in paragraph (b) or (c) of this section, as appropriate. However, a request for both at the same time should be sent to the office prescribed in paragraph (b) of this section.

[Doc. No. 7258, 31 FR 13524, Oct. 20, 1966, as amended by Doc. No. 8084, 32 FR 5769, Apr. 11, 1967; Amdt. 65–16, 35 FR 14075, Sept. 4, 1970; Amdt. 65–17, 36 FR 2865, Feb. 11, 1971]

§ 65.17 Tests: General procedure.

(a) Tests prescribed by or under this part are given at times and places, and by persons, designated by the Administrator.

(b) The minimum passing grade for each test is 70 percent.

§ 65.18 Written tests: Cheating or other unauthorized conduct.

(a) Except as authorized by the Administrator, no person may—

(1) Copy, or intentionally remove, a written test under this part;

(2) Give to another, or receive from another, any part or copy of that test;

(3) Give help on that test to, or receive help on that test from, any person during the period that test is being given;

(4) Take any part of that test in behalf of another person;

(5) Use any material or aid during the period that test is being given; or

(6) Intentionally cause, assist, or participate in any act prohibited by this paragraph.

(b) No person who commits an act prohibited by paragraph (a) of this section is eligible for any airman or ground instructor certificate or rating under this chapter for a period of 1 year after the date of that act. In addition, the commission of that act is a basis for suspending or revoking any airman or ground instructor certificate or rating held by that person.

[Doc. No. 4086, 30 FR 2196, Feb. 18, 1965]

§ 65.19 Retesting after failure.

An applicant for a written, oral, or practical test for a certificate and rating, or for an additional rating under this part, may apply for retesting—

(a) After 30 days after the date the applicant failed the test; or

(b) Before the 30 days have expired if the applicant presents a signed statement from an airman holding the certificate and rating sought by the applicant, certifying that the airman has given the applicant additional instruction in each of the subjects failed and that the airman considers the applicant ready for retesting.

[Doc. No. 16383, 43 FR 22640, May 25, 1978]

§ 65.20 Applications, certificates, logbooks, reports, and records: Falsification, reproduction, or alteration.

(a) No person may make or cause to be made—

(1) Any fraudulent or intentionally false statement on any application for a certificate or rating under this part;

(2) Any fraudulent or intentionally false entry in any logbook, record, or report that is required to be kept, made, or used, to show compliance with any requirement for any certificate or rating under this part;

(3) Any reproduction, for fraudulent purpose, of any certificate or rating under this part; or

(4) Any alteration of any certificate or rating under this part.

(b) The commission by any person of an act prohibited under paragraph (a) of this section is a basis for suspending or revoking any airman or ground instructor certificate or rating held by that person.

[Doc. No. 4086, 30 FR 2196, Feb. 18, 1965]

§ 65.21 Change of address.

Within 30 days after any change in his permanent mailing address, the holder of a certificate issued under this part shall notify the Department of Transportation, Federal Aviation Administration, Airman Certification Branch, Post Office Box 25082, Oklahoma City, OK 73125, in writing, of his new address.

[Doc. No. 10536, 35 FR 14075, Sept. 4, 1970]

§ 65.23 Refusal to submit to a drug or alcohol test.

(a) *General.* This section applies to an individual who holds a certificate under this part and is subject to the types of testing required under appendix I to part 121 or appendix J to part 121 of this chapter.

(b) Refusal by the holder of a certificate issued under this part to take a drug test required under the provisions of appendix I to part 121 or an alcohol test required under the provisions of appendix J to part 121 is grounds for—

(1) Denial of an application for any certificate or rating issued under this part for a period of up to 1 year after the date of such refusal; and

(2) Suspension or revocation of any certificate or rating issued under this part.

[Amdt. 65–37, 59 FR 7389, Feb. 15, 1994, as amended by Amdt. 65–47, 71 FR 35763, June 21, 2006]

Subpart B—Air Traffic Control Tower Operators

SOURCE: Docket No. 10193, 35 FR 12326, Aug. 1, 1970, unless otherwise noted.

§ 65.31 Required certificates, and rating or qualification.

No person may act as an air traffic control tower operator at an air traffic control tower in connection with civil aircraft unless he—

(a) Holds an air traffic control tower operator certificate issued to him under this subpart;

(b) Holds a facility rating for that control tower issued to him under this subpart, or has qualified for the operating position at which he acts and is under the supervision of the holder of a facility rating for that control tower; and

For the purpose of this subpart, *operating position* means an air traffic control function performed within or directly associated with the control tower;

(c) Except for a person employed by the FAA or employed by, or on active duty with, the Department of the Air Force, Army, or Navy or the Coast Guard, holds at least a second-class medical certificate issued under part 67 of this chapter.

[Doc. No. 10193, 35 FR 12326, Aug. 1, 1970, as amended by Amdt. 65–25, 45 FR 18911, Mar. 24, 1980; Amdt. 65–31, 52 FR 17518, May 8, 1987]

§ 65.33 Eligibility requirements: General.

To be eligible for an air traffic control tower operator certificate a person must—

(a) Be at least 18 years of age;

(b) Be of good moral character;

(c) Be able to read, write, and understand the English language and speak it without accent or impediment of speech that would interfere with two-way radio conversation;

(d) Except for a person employed by the FAA or employed by, or on active duty with, the Department of the Air Force, Army, or Navy or the Coast Guard, hold at least a second-class medical certificate issued under part 67 of this chapter within the 12 months before the date application is made; and

(e) Comply with § 65.35.

[Doc. No. 10193, 35 FR 12326, Aug. 1, 1970, as amended by Amdt. 65–25, 45 FR 18911, Mar. 24, 1980; Amdt. 65–31, 52 FR 17518, May 8, 1987]

§ 65.35 Knowledge requirements.

Each applicant for an air traffic control tower operator certificate must pass a written test on—

(a) The flight rules in part 91 of this chapter:

(b) Airport traffic control procedures, and this subpart:

(c) En route traffic control procedures;

(d) Communications operating procedures;

(e) Flight assistance service;

(f) Air navigation, and aids to air navigation; and

(g) Aviation weather.

§ 65.37 Skill requirements: Operating positions.

No person may act as an air traffic control tower operator at any operating position unless he has passed a practical test on—

(a) Control tower equipment and its use;

(b) Weather reporting procedures and use of reports;

(c) Notices to Airmen, and use of the Airman's Information Manual;

(d) Use of operational forms;

(e) Performance of noncontrol operational duties; and

(f) Each of the following procedures that is applicable to that operating position and is required by the person performing the examination:

(1) The airport, including rules, equipment, runways, taxiways, and obstructions.

(2) The terrain features, visual checkpoints, and obstructions within the lateral boundaries of the surface areas of Class B, Class C, Class D, or Class E airspace designated for the airport.

(3) Traffic patterns and associated procedures for use of preferential runways and noise abatement.

(4) Operational agreements.

(5) The center, alternate airports, and those airways, routes, reporting points, and air navigation aids used for terminal air traffic control.

(6) Search and rescue procedures.

(7) Terminal air traffic control procedures and phraseology.

(8) Holding procedures, prescribed instrument approach, and departure procedures.

(9) Radar alignment and technical operation.

(10) The application of the prescribed radar and nonradar separation standard, as appropriate.

[Doc. No. 10193, 35 FR 12326, Aug. 1, 1991, as amended by Amdt. 65–36, 56 FR 65653, Dec. 17, 1991]

§ 65.39 Practical experience requirements: Facility rating.

Each applicant for a facility rating at any air traffic control tower must have satisfactorily served—

(a) As an air traffic control tower operator at that control tower without a facility rating for at least 6 months; or

(b) As an air traffic control tower operator with a facility rating at a different control tower for at least 6 months before the date he applies for the rating.

However, an applicant who is a member of an Armed Force of the United States meets the requirements of this section if he has satisfactorily served as an air traffic control tower operator for at least 6 months.

[Doc. No. 1179, 27 FR 7973, Aug. 10, 1962, as amended by Amdt. 65–19, 36 FR 21280, Nov. 5, 1971]

§ 65.41 Skill requirements: Facility ratings.

Each applicant for a facility rating at an air traffic control tower must have passed a practical test on each item listed in § 65.37 of this part that is applicable to each operating position at the control tower at which the rating is sought.

§ 65.43 Rating privileges and exchange.

(a) The holder of a senior rating on August 31, 1970, may at any time after that date exchange his rating for a facility rating at the same air traffic control tower. However, if he does not do so before August 31, 1971, he may not thereafter exercise the privileges of his senior rating at the control tower concerned until he makes the exchange.

(b) The holder of a junior rating on August 31, 1970, may not control air traffic, at any operating position at the control tower concerned, until he has met the applicable requirements of § 65.37 of this part. However, before meeting those requirements he may control air traffic under the supervision, where required, of an operator with a senior rating (or facility rating) in accordance with § 65.41 of this part in effect before August 31, 1970.

§ 65.45 Performance of duties.

(a) An air traffic control tower operator shall perform his duties in accordance with the limitations on his certificate and the procedures and practices prescribed in air traffic control manuals of the FAA, to provide for the safe, orderly, and expeditious flow of air traffic.

(b) An operator with a facility rating may control traffic at any operating position at the control tower at which he holds a facility rating. However, he may not issue an air traffic clearance for IFR flight without authorization from the appropriate facility exercising IFR control at that location.

(c) An operator who does not hold a facility rating for a particular control tower may act at each operating position for which he has qualified, under the supervision of an operator holding a facility rating for that control tower.

[Doc. No. 10193, 35 FR 12326, Aug. 1, 1970, as amended by Amdt. 65–16, 35 FR 14075, Sept. 4, 1970]

§ 65.46 Use of prohibited drugs.

(a) The following definitions apply for the purposes of this section:

(1) An *employee* is a person who performs an air traffic control function for an employer. For the purpose of this section, a person who performs such a function pursuant to a contract with an employer is considered to be performing that function for the employer.

(2) An ''employer'' means an air traffic control facility not operated by the FAA or by or under contract to the U.S. military that employs a person to perform an air traffic control function.

(b) Each employer shall provide each employee performing a function listed in appendix I to part 121 of this chapter and his or her supervisor with the training specified in that appendix. No employer may use any contractor to perform an air traffic control function unless that contractor provides each of its employees performing that function for the employer and his or her supervisor with the training specified in that appendix.

(c) No employer may knowingly use any person to perform, nor may any person perform for an employer, either directly or by contract, any air traffic control function while that person has a prohibited drug, as defined in appendix I to part 121 of this chapter, in his or her system.

(d) No employer shall knowingly use any person to perform, nor may any person perform for an employer, either directly or by contract, any air traffic control function if the person has a verified positive drug test result on or has refused to submit to a drug test required by appendix I to part 121 of this chapter and the person has not met the requirements of appendix I to part 121 of this chapter for returning to the performance of safety-sensitive duties.

(e) Each employer shall test each of its employees who performs any air traffic control function in accordance

with appendix I to part 121 of this chapter. No employer may use any contractor to perform any air traffic control function unless that contractor tests each employee performing such a function for the employer in accordance with that appendix.

[Doc. No. 25148, 53 FR 47056, Nov. 21, 1988, as amended by Amdt. 65–38, 59 FR 42927, Aug. 19, 1994]

§ 65.46a Misuse of alcohol.

(a) This section applies to employees who perform air traffic control duties directly or by contract for an employer that is an air traffic control facility not operated by the FAA or the U.S. military (*covered employees*).

(b) *Alcohol concentration.* No covered employee shall report for duty or remain on duty requiring the performance of safety-sensitive functions while having an alcohol concentration of 0.04 or greater. No employer having actual knowledge that an employee has an alcohol concentration of 0.04 or greater shall permit the employee to perform or continue to perform safety-sensitive functions.

(c) *On-duty use.* No covered employee shall use alcohol while performing safety-sensitive functions. No employer having actual knowledge that a covered employee is using alcohol while performing safety-sensitive functions shall permit the employee to perform or continue to perform safety-sensitive functions.

(d) *Pre-duty use.* No covered employee shall perform air traffic control duties within 8 hours after using alcohol. No employer having actual knowledge that such an employee has used alcohol within 8 hours shall permit the employee to perform or continue to perform air traffic control duties.

(e) *Use following an accident.* No covered employee who has actual knowledge of an accident involving an aircraft for which he or she performed a safety-sensitive function at or near the time of the accident shall use alcohol for 8 hours following the accident, unless he or she has been given a post-accident test under appendix J to part 121 of this chapter, or the employer has determined that the employee's performance could not have contributed to the accident.

(f) *Refusal to submit to a required alcohol test.* A covered employee may not refuse to submit to any alcohol test required under appendix J to part 121 of this chapter. An employer may not permit an employee who refuses to submit to such a test to perform or continue to perform safety-sensitive functions.

[Amdt. 65–37, 59 FR 7389, Feb. 15, 1994, as amended by Amdt. 65–47, 71 FR 35763, June 21, 2006]

§ 65.46b Testing for alcohol.

(a) Each air traffic control facility not operated by the FAA or the U.S. military (hereinafter *employer*) must establish an alcohol misuse prevention program in accordance with the provisions of appendix J to part 121 of this chapter.

(b) No employer shall use any person who meets the definition of *covered employee* in appendix J to part 121 to perform a safety-sensitive function listed in that appendix unless such person is subject to testing for alcohol misuse in accordance with the provisions of appendix J.

[Amdt. 65–37, 59 FR 7389, Feb. 15, 1994]

§ 65.47 Maximum hours.

Except in an emergency, a certificated air traffic control tower operator must be relieved of all duties for at least 24 consecutive hours at least once during each 7 consecutive days. Such an operator may not serve or be required to serve—

(a) For more than 10 consecutive hours; or

(b) For more than 10 hours during a period of 24 consecutive hours, unless he has had a rest period of at least 8 hours at or before the end of the 10 hours of duty.

§ 65.49 General operating rules.

(a) Except for a person employed by the FAA or employed by, or on active duty with, the Department of the Air Force, Army, or Navy, or the Coast Guard, no person may act as an air traffic control tower operator under a certificate issued to him or her under this part unless he or she has in his or her personal possession an appropriate current medical certificate issued under part 67 of this chapter.

(b) Each person holding an air traffic control tower operator certificate shall keep it readily available when performing duties in an air traffic control tower, and shall present that certificate or his medical certificate or both for inspection upon the request of the Administrator or an authorized representative of the National Transportation Safety Board, or of any Federal, State, or local law enforcement officer.

(c) A certificated air traffic control tower operator who does not hold a facility rating for a particular control tower may not act at any operating position at the control tower concerned unless there is maintained at that control tower, readily available to persons named in paragraph (b) of this section, a current record of the operating positions at which he has qualified.

(d) An air traffic control tower operator may not perform duties under his certificate during any period of known physical deficiency that would make him unable to meet the physical requirements for his current medical certificate. However, if the deficiency is temporary, he may perform duties that are not affected by it whenever another certificated and qualified operator is present and on duty.

(e) A certificated air traffic control tower operator may not control air traffic with equipment that the Administrator has found to be inadequate.

(f) The holder of an air traffic control tower operator certificate, or an applicant for one, shall, upon the reasonable request of the Administrator, cooperate fully in any test that is made of him.

[Doc. No. 1179, 27 FR 7973, Aug. 10, 1962, as amended by Amdt. 65–31, 52 FR 17519, May 8, 1987]

§ 65.50 Currency requirements.

The holder of an air traffic control tower operator certificate may not perform any duties under that certificate unless—

(a) He has served for at least three of the preceding 6 months as an air traffic control tower operator at the control tower to which his facility rating applies, or at the operating positions for which he has qualified; or

(b) He has shown that he meets the requirements for his certificate and facility rating at the control tower concerned, or for operating at positions for which he has previously qualified.

Subpart C—Aircraft Dispatchers

SOURCE: Docket No. FAA–1998–4553, 64 FR 68923, Dec. 8, 1999, unless otherwise noted.

§ 65.51 Certificate required.

(a) No person may act as an aircraft dispatcher (exercising responsibility with the pilot in command in the operational control of a flight) in connection with any civil aircraft in air commerce unless that person has in his or her personal possession an aircraft dispatcher certificate issued under this subpart.

(b) Each person who holds an aircraft dispatcher certificate must present it for inspection upon the request of the Administrator or an authorized representative of the National Transportation Safety Board, or of any Federal, State, or local law enforcement officer.

§ 65.53 Eligibility requirements: General.

(a) To be eligible to take the aircraft dispatcher knowledge test, a person must be at least 21 years of age.

(b) To be eligible for an aircraft dispatcher certificate, a person must—

(1) Be at least 23 years of age;

(2) Be able to read, speak, write, and understand the English language;

(3) Pass the required knowledge test prescribed by § 65.55 of this part;

(4) Pass the required practical test prescribed by § 65.59 of this part; and

(5) Comply with the requirements of § 65.57 of this part.

§ 65.55 Knowledge requirements.

(a) A person who applies for an aircraft dispatcher certificate must pass a knowledge test on the following aeronautical knowledge areas:

(1) Applicable Federal Aviation Regulations of this chapter that relate to airline transport pilot privileges, limitations, and flight operations;

(2) Meteorology, including knowledge of and effects of fronts, frontal characteristics, cloud formations, icing, and upper-air data;

(3) General system of weather and NOTAM collection, dissemination, interpretation, and use;

(4) Interpretation and use of weather charts, maps, forecasts, sequence reports, abbreviations, and symbols;

(5) National Weather Service functions as they pertain to operations in the National Airspace System;

(6) Windshear and microburst awareness, identification, and avoidance;

(7) Principles of air navigation under instrument meteorological conditions in the National Airspace System;

(8) Air traffic control procedures and pilot responsibilities as they relate to enroute operations, terminal area and radar operations, and instrument departure and approach procedures;

(9) Aircraft loading, weight and balance, use of charts, graphs, tables, formulas, and computations, and their effect on aircraft performance;

(10) Aerodynamics relating to an aircraft's flight characteristics and performance in normal and abnormal flight regimes;

(11) Human factors;

(12) Aeronautical decision making and judgment; and

(13) Crew resource management, including crew communication and coordination.

(b) The applicant must present documentary evidence satisfactory to the administrator of having passed an aircraft dispatcher knowledge test within the preceding 24 calendar months.

§ 65.57 Experience or training requirements.

An applicant for an aircraft dispatcher certificate must present documentary evidence satisfactory to the Administrator that he or she has the experience prescribed in paragraph (a) of this section or has accomplished the training described in paragraph (b) of this section as follows:

(a) A total of at least 2 years experience in the 3 years before the date of application, in any one or in any combination of the following areas:

(1) In military aircraft operations as a—

(i) Pilot;

(ii) Flight navigator; or

(iii) Meteorologist.

(2) In aircraft operations conducted under part 121 of this chapter as—

(i) An assistant in dispatching air carrier aircraft, under the direct supervision of a dispatcher certificated under this subpart;

(ii) A pilot;

(iii) A flight engineer; or

(iv) A meteorologist.

(3) In aircraft operations as—

(i) An Air Traffic Controller; or

(ii) A Flight Service Specialist.

(4) In aircraft operations, performing other duties that the Administrator finds provide equivalent experience.

(b) A statement of graduation issued or revalidated in accordance with § 65.70(b) of this part, showing that the person has successfully completed an approved aircraft dispatcher course.

§ 65.59 Skill requirements.

An applicant for an aircraft dispatcher certificate must pass a practical test given by the Administrator, with respect to any one type of large aircraft used in air carrier operations. The practical test must be based on the aircraft dispatcher practical test standards, as published by the FAA, on the items outlined in appendix A of this part.

§ 65.61 Aircraft dispatcher certification courses: Content and minimum hours.

(a) An approved aircraft dispatcher certification course must:

(1) Provide instruction in the areas of knowledge and topics listed in appendix A of this part;

(2) Include a minimum of 200 hours of instruction.

(b) An applicant for approval of an aircraft dispatcher course must submit an outline that describes the major topics and subtopics to be covered and the number of hours proposed for each.

(c) Additional subject headings for an aircraft dispatcher certification course may also be included, however the hours proposed for any subjects not listed in appendix A of this part must be in addition to the minimum 200 course hours required in paragraph (a) of this section.

(d) For the purpose of completing an approved course, a student may substitute previous experience or training

for a portion of the minimum 200 hours of training. The course operator determines the number of hours of credit based on an evaluation of the experience or training to determine if it is comparable to portions of the approved course curriculum. The credit allowed, including the total hours and the basis for it, must be placed in the student's record required by §65.70(a) of this part.

§ 65.63 Aircraft dispatcher certification courses: Application, duration, and other general requirements.

(a) *Application.* Application for original approval of an aircraft dispatcher certification course or the renewal of approval of an aircraft dispatcher certification course under this part must be:

(1) Made in writing to the Administrator;

(2) Accompanied by two copies of the course outline required under §65.61(b) of this part, for which approval is sought;

(3) Accompanied by a description of the equipment and facilities to be used; and

(4) Accompanied by a list of the instructors and their qualifications.

(b) *Duration.* Unless withdrawn or canceled, an approval of an aircraft dispatcher certification course of study expires:

(1) On the last day of the 24th month from the month the approval was issued; or

(2) Except as provided in paragraph (f) of this section, on the date that any change in ownership of the school occurs.

(c) *Renewal.* Application for renewal of an approved aircraft dispatcher certification course must be made within 30 days preceding the month the approval expires, provided the course operator meets the following requirements:

(1) At least 80 percent of the graduates from that aircraft dispatcher certification course, who applied for the practical test required by §65.59 of this part, passed the practical test on their first attempt; and

(2) The aircraft dispatcher certification course continues to meet the requirements of this subpart for course approval.

(d) *Course revisions.* Requests for approval of a revision of the course outline, facilities, or equipment must be in accordance with paragraph (a) of this section. Proposed revisions of the course outline or the description of facilities and equipment must be submitted in a format that will allow an entire page or pages of the approved outline or description to be removed and replaced by any approved revision. The list of instructors may be revised at any time without request for approval, provided the minimum requirements of §65.67 of this part are maintained and the Administrator is notified in writing.

(e) *Withdrawal or cancellation of approval.* Failure to continue to meet the requirements of this subpart for the approval or operation of an approved aircraft dispatcher certification course is grounds for withdrawal of approval of the course. A course operator may request cancellation of course approval by a letter to the Administrator. The operator must forward any records to the FAA as requested by the Administrator.

(f) *Change in ownership.* A change in ownership of a part 65, appendix A-approved course does not terminate that aircraft dispatcher certification course approval if, within 10 days after the date that any change in ownership of the school occurs:

(1) Application is made for an appropriate amendment to the approval; and

(2) No change in the facilities, personnel, or approved aircraft dispatcher certification course is involved.

(g) *Change in name or location.* A change in name or location of an approved aircraft dispatcher certification course does not invalidate the approval if, within 10 days after the date that any change in name or location occurs, the course operator of the part 65, appendix A-approved course notifies the Administrator, in writing, of the change.

§ 65.65 Aircraft dispatcher certification courses: Training facilities.

An applicant for approval of authority to operate an aircraft dispatcher course of study must have facilities,

equipment, and materials adequate to provide each student the theoretical and practical aspects of aircraft dispatching. Each room, training booth, or other space used for instructional purposes must be temperature controlled, lighted, and ventilated to conform to local building, sanitation, and health codes. In addition, the training facility must be so located that the students in that facility are not distracted by the instruction conducted in other rooms.

§ 65.67 Aircraft dispatcher certification courses: Personnel.

(a) Each applicant for an aircraft dispatcher certification course must meet the following personnel requirements:

(1) Each applicant must have adequate personnel, including one instructor who holds an aircraft dispatcher certificate and is available to coordinate all training course instruction.

(2) Each applicant must not exceed a ratio of 25 students for one instructor.

(b) The instructor who teaches the practical dispatch applications area of the appendix A course must hold an aircraft dispatchers certificate

§ 65.70 Aircraft dispatcher certification courses: Records.

(a) The operator of an aircraft dispatcher course must maintain a record for each student, including a chronological log of all instructors, subjects covered, and course examinations and results. The record must be retained for at least 3 years after graduation. The course operator also must prepare, for its records, and transmit to the Administrator not later than January 31 of each year, a report containing the following information for the previous year:

(1) The names of all students who graduated, together with the results of their aircraft dispatcher certification courses.

(2) The names of all the students who failed or withdrew, together with the results of their aircraft dispatcher certification courses or the reasons for their withdrawal.

(b) Each student who successfully completes the approved aircraft dispatcher certification course must be given a written statement of graduation, which is valid for 90 days. After 90 days, the course operator may revalidate the graduation certificate for an additional 90 days if the course operator determines that the student remains proficient in the subject areas listed in appendix A of this part.

Subpart D—Mechanics

§ 65.71 Eligibility requirements: General.

(a) To be eligible for a mechanic certificate and associated ratings, a person must—

(1) Be at least 18 years of age;

(2) Be able to read, write, speak, and understand the English language, or in the case of an applicant who does not meet this requirement and who is employed outside of the United States by a U.S. air carrier, have his certificate endorsed ''Valid only outside the United States'';

(3) Have passed all of the prescribed tests within a period of 24 months; and

(4) Comply with the sections of this subpart that apply to the rating he seeks.

(b) A certificated mechanic who applies for an additional rating must meet the requirements of § 65.77 and, within a period of 24 months, pass the tests prescribed by §§ 65.75 and 65.79 for the additional rating sought.

[Doc. No. 1179, 27 FR 7973, Aug. 10, 1962, as amended by Amdt. 65–6, 31 FR 5950, Apr. 19, 1966]

§ 65.73 Ratings.

(a) The following ratings are issued under this subpart:

(1) Airframe.

(2) Powerplant.

(b) A mechanic certificate with an aircraft or aircraft engine rating, or both, that was issued before, and was valid on, June 15, 1952, is equal to a mechanic certificate with an airframe or powerplant rating, or both, as the case may be, and may be exchanged for such a corresponding certificate and rating or ratings.

§ 65.75 Knowledge requirements.

(a) Each applicant for a mechanic certificate or rating must, after meeting the applicable experience requirements of § 65.77, pass a written test covering the construction and maintenance of aircraft appropriate to the rating he seeks, the regulations in this subpart, and the applicable provisions of parts 43 and 91 of this chapter. The basic principles covering the installation and maintenance of propellers are included in the powerplant test.

(b) The applicant must pass each section of the test before applying for the oral and practical tests prescribed by § 65.79. A report of the written test is sent to the applicant.

[Doc. No. 1179, 27 FR 7973, Aug. 10, 1962, as amended by Amdt. 65–1, 27 FR 10410, Oct. 25, 1962; Amdt. 65–6, 31 FR 5950, Apr. 19, 1966]

§ 65.77 Experience requirements.

Each applicant for a mechanic certificate or rating must present either an appropriate graduation certificate or certificate of completion from a certificated cated aviation maintenance technician school or documentary evidence, satisfactory to the Administrator, of—

(a) At least 18 months of practical experience with the procedures, practices, materials, tools, machine tools, and equipment generally used in constructing, maintaining, or altering airframes, or powerplants appropriate to the rating sought; or

(b) At least 30 months of practical experience concurrently performing the duties appropriate to both the airframe and powerplant ratings.

[Doc. No. 1179, 27 FR, 7973, Aug. 10, 1962, as amended by Amdt. 65–14, 35 FR, 5533, Apr. 3, 1970]

§ 65.79 Skill requirements.

Each applicant for a mechanic certificate or rating must pass an oral and a practical test on the rating he seeks. The tests cover the applicant's basic skill in performing practical projects on the subjects covered by the written test for that rating. An applicant for a powerplant rating must show his ability to make satisfactory minor repairs to, and minor alterations of, propellers.

§ 65.80 Certificated aviation maintenance technician school students.

Whenever an aviation maintenance technician school certificated under part 147 of this chapter shows to an FAA inspector that any of its students has made satisfactory progress at the school and is prepared to take the oral and practical tests prescribed by § 65.79, that student may take those tests during the final subjects of his training in the approved curriculum, before he meets the applicable experience requirements of § 65.77 and before he passes each section of the written test prescribed by § 65.75.

[Doc. No. 9444, 35 FR 5533, Apr. 3, 1970]

§ 65.81 General privileges and limitations.

(a) A certificated mechanic may perform or supervise the maintenance, preventive maintenance or alteration of an aircraft or appliance, or a part thereof, for which he is rated (but excluding major repairs to, and major alterations of, propellers, and any repair to, or alteration of, instruments), and may perform additional duties in accordance with §§ 65.85, 65.87, and 65.95. However, he may not supervise the maintenance, preventive maintenance, or alteration of, or approve and return to service, any aircraft or appliance, or part thereof, for which he is rated unless he has satisfactorily performed the work concerned at an earlier date. If he has not so performed that work at an earlier date, he may show his ability to do it by performing it to the satisfaction of the Administrator or under the direct supervision of a certificated and appropriately rated mechanic, or a certificated repairman, who has had previous experience in the specific operation concerned.

(b) A certificated mechanic may not exercise the privileges of his certificate and rating unless he understands the current instructions of the manufacturer, and the maintenance manuals, for the specific operation concerned.

[Doc. No. 1179, 27 FR 7973, Aug. 10, 1962, as amended by Amdt. 65–2, 29 FR 5451, Apr. 23, 1964; Amdt. 65–26, 45 FR 46737, July 10, 1980]

§ 65.83 Recent experience requirements.

A certificated mechanic may not exercise the privileges of his certificate and rating unless, within the preceding 24 months—

(a) The Administrator has found that he is able to do that work; or

(b) He has, for at least 6 months—

(1) Served as a mechanic under his certificate and rating;

(2) Technically supervised other mechanics;

(3) Supervised, in an executive capacity, the maintenance or alteration of aircraft; or

(4) Been engaged in any combination of paragraph (b) (1), (2), or (3) of this section.

§ 65.85 Airframe rating; additional privileges.

(a) Except as provided in paragraph (b) of this section, a certificated mechanic with an airframe rating may approve and return to service an airframe, or any related part or appliance, after he has performed, supervised, or inspected its maintenance or alteration (excluding major repairs and major alterations). In addition, he may perform the 100-hour inspection required by part 91 of this chapter on an airframe, or any related part or appliance, and approve and return it to service.

(b) A certificated mechanic with an airframe rating can approve and return to service an airframe, or any related part or appliance, of an aircraft with a special airworthiness certificate in the light-sport category after performing and inspecting a major repair or major alteration for products that are not produced under an FAA approval provided the work was performed in accordance with instructions developed by the manufacturer or a person acceptable to the FAA.

[Doc. No. 1179, 27 FR 7973, Aug. 10, 1962, as amended by Amdt. 65–10, 32 FR 5770, Apr. 11, 1967; Amdt. 65–45, 69 FR 44879, July 27, 2004]

§ 65.87 Powerplant rating; additional privileges.

(a) Except as provided in paragraph (b) of this section, a certificated mechanic with a powerplant rating may approve and return to service a powerplant or propeller or any related part or appliance, after he has performed, supervised, or inspected its maintenance or alteration (excluding major repairs and major alterations). In addition, he may perform the 100-hour inspection required by part 91 of this chapter on a powerplant or propeller, or any part thereof, and approve and return it to service.

(b) A certificated mechanic with a powerplant rating can approve and return to service a powerplant or propeller, or any related part or appliance, of an aircraft with a special airworthiness certificate in the light-sport category after performing and inspecting a major repair or major alteration for products that are not produced under an FAA approval, provided the work was performed in accordance with instructions developed by the manufacturer or a person acceptable to the FAA.

[Doc. No. 1179, 27 FR 7973, Aug. 10, 1962, as amended by Amdt. 65–10, 32 FR 5770, Apr. 11, 1967; Amdt. 65–45, 69 FR 44879, July 27, 2004]

§ 65.89 Display of certificate.

Each person who holds a mechanic certificate shall keep it within the immediate area where he normally exercises the privileges of the certificate and shall present it for inspection upon the request of the Administrator or an authorized representative of the National Transportation Safety Board, or of any Federal, State, or local law enforcement officer.

[Doc. No. 7258, 31 FR 13524, Oct. 20, 1966, as amended by Doc. No. 8084, 32 FR 5769, Apr. 11, 1967]

§ 65.91 Inspection authorization.

(a) An application for an inspection authorization is made on a form and in a manner prescribed by the Administrator.

(b) An applicant who meets the requirements of this section is entitled to an inspection authorization.

(c) To be eligible for an inspection authorization, an applicant must—

(1) Hold a currently effective mechanic certificate with both an airframe rating and a powerplant rating, each of which is currently effective and has been in effect for a total of at least 3 years;

(2) Have been actively engaged, for at least the 2-year period before the date he applies, in maintaining aircraft certificated and maintained in accordance with this chapter;

(3) Have a fixed base of operations at which he may be located in person or by telephone during a normal working week but it need not be the place where he will exercise his inspection authority;

(4) Have available to him the equipment, facilities, and inspection data necessary to properly inspect airframes, powerplants, propellers, or any related part or appliance; and

(5) Pass a written test on his ability to inspect according to safety standards for returning aircraft to service after major repairs and major alterations and annual and progressive inspections performed under part 43 of this chapter.

An applicant who fails the test prescribed in paragraph (c)(5) of this section may not apply for retesting until at least 90 days after the date he failed the test.

[Doc. No. 1179, 27 FR 7973, Aug. 10, 1962, as amended by Amdt. 65–5, 31 FR 3337, Mar. 3, 1966; Amdt. 65–22, 42 FR 46279, Sept. 15, 1977; Amdt. 65–30, 50 FR 15700, Apr. 19, 1985]

§ 65.92 Inspection authorization: Duration.

(a) Each inspection authorization expires on March 31 of each odd-numbered year. However, the holder may exercise the privileges of that authorization only while he holds a currently effective mechanic certificate with both a currently effective airframe rating and a currently effective powerplant rating.

(b) An inspection authorization ceases to be effective whenever any of the following occurs:

(1) The authorization is surrendered, suspended, or revoked.

(2) The holder no longer has a fixed base of operation.

(3) The holder no longer has the equipment, facilities, and inspection data required by § 65.91(c) (3) and (4) for issuance of his authorization.

(c) The holder of an inspection authorization that is suspended or revoked shall, upon the Administrator's request, return it to the Administrator.

[Doc. No. 12537, 42 FR 46279, Sept. 15, 1977, as amended by Amdt. 65–50, 72 FR 4404, Jan. 30, 2007]

§ 65.93 Inspection authorization: Renewal.

(a) To be eligible for renewal of an inspection authorization for a 2-year period an applicant must present evidence during the month of March of each odd-numbered year, at an FAA Flight Standards District Office or an International Field Office, that the applicant still meets the requirements of § 65.91(c) (1) through (4). In addition, during the time the applicant held the inspection authorization, the applicant must show completion of one of the activities in § 65.93(a) (1) through (5) below by March 31 of the first year of the 2-year inspection authorization period, and completion of one of the five activities during the second year of the 2-year period:

(1) Performed at least one annual inspection for each 90 days that the applicant held the current authority; or

(2) Performed at least two major repairs or major alterations for each 90 days that the applicant held the current authority; or

(3) Performed or supervised and approved at least one progressive inspection in accordance with standards prescribed by the Administrator; or

(4) Attended and successfully completed a refresher course, acceptable to the Administrator, of not less than 8 hours of instruction; or

(5) Passed an oral test by an FAA inspector to determine that the applicant's knowledge of applicable regulations and standards is current.

(b) The holder of an inspection authorization that has been in effect:

(1) for less than 90 days before the expiration date need not comply with paragraphs (a)(1) through (5) of this section.

(2) for less than 90 days before March 31 of an even-numbered year need not comply with paragraphs (a)(1) through (5) of this section for the first year of the 2-year inspection authorization period.

(c) An inspection authorization holder who does not complete one of the activities set forth in § 65.93(a) (1) through (5) of this section by March 31 of the first year of the 2-year inspection authorization period may not exercise inspection authorization privileges after March 31 of the first year. The inspection authorization holder may resume exercising inspection authorization privileges after passing an oral test from an FAA inspector to determine that the applicant's knowledge of the applicable regulations and standards is current. An inspection authorization holder who passes this oral test is deemed to have completed the requirements of § 65.93(a) (1) through (5) by March 31 of the first year.

[Docket No. FAA–2007–27108, 72 FR 4404, Jan. 30, 2007]

§ 65.95 Inspection authorization: Privileges and limitations.

(a) The holder of an inspection authorization may—

(1) Inspect and approve for return to service any aircraft or related part or appliance (except any aircraft maintained in accordance with a continuous airworthiness program under part 121 of this chapter) after a major repair or major alteration to it in accordance with part 43 [New] of this chapter, if the work was done in accordance with technical data approved by the Administrator; and

(2) Perform an annual, or perform or supervise a progressive inspection according to §§ 43.13 and 43.15 of this chapter.

(b) When he exercises the privileges of an inspection authorization the holder shall keep it available for inspection by the aircraft owner, the mechanic submitting the aircraft, repair, or alteration for approval (if any), and shall present it upon the request of the Administrator or an authorized representative of the National Transportation Safety Board, or of any Federal, State, or local law enforcement officer.

(c) If the holder of an inspection authorization changes his fixed base of operation, he may not exercise the privileges of the authorization until he has notified the FAA Flight Standards District Office or International Field Office for the area in which the new base is located, in writing, of the change.

[Doc. No. 1179, 27 FR 7973, Aug. 10, 1962, as amended by Amdt. 65–2, 29 FR 5451, Apr. 23, 1964; Amdt. 65–4, 30 FR 3638, Mar. 14, 1965; Amdt. 65–5, 31 FR 3337, Mar. 3, 1966; Amdt. 65–9, 31 FR 13524, Oct. 20, 1966; 32 FR 5769, Apr. 11, 1967; Amdt. 65–35, 54 FR 39292, Sept. 25, 1989; Amdt. 65–41, 66 FR 21066, Apr. 27, 2001]

Subpart E—Repairmen

§ 65.101 Eligibility requirements: General.

(a) To be eligible for a repairman certificate a person must—

(1) Be at least 18 years of age;

(2) Be specially qualified to perform maintenance on aircraft or components thereof, appropriate to the job for which he is employed;

(3) Be employed for a specific job requiring those special qualifications by a certificated repair station, or by a certificated commercial operator or certificated air carrier, that is required by its operating certificate or approved operations specifications to provide a continuous airworthiness maintenance program according to its maintenance manuals;

(4) Be recommended for certification by his employer, to the satisfaction of the Administrator, as able to satisfactorily maintain aircraft or components, appropriate to the job for which he is employed;

(5) Have either—

(i) At least 18 months of practical experience in the procedures, practices, inspection methods, materials, tools, machine tools, and equipment generally used in the maintenance duties of the specific job for which the person is to be employed and certificated; or

(ii) Completed formal training that is acceptable to the Administrator and is specifically designed to qualify the applicant for the job on which the applicant is to be employed; and

(6) Be able to read, write, speak, and understand the English language, or, in the case of an applicant who does not meet this requirement and who is employed outside the United States by a certificated repair station, a certificated U.S. commercial operator, or a certificated U.S. air carrier, described in paragraph (a)(3) of this section, have

this certificate endorsed ''Valid only outside the United States.''

(b) This section does not apply to the issuance of a repairman certificate (experimental aircraft builder) under § 65.104 or to a repairman certificate (light-sport aircraft) under § 65.107.

[Doc. No. 1179, 27 FR 7973, Aug. 10, 1962, as amended by Amdt. 65–11, 32 FR 13506, Sept. 27, 1967; Amdt. 65–24, 44 FR 46781, Aug. 9, 1979; Amdt. 65–27, 47 FR 13316, Mar. 29, 1982; Amdt. 65–45, 69 FR 44879, July 27, 2004; 72 FR 7739, Feb. 20, 2007]

§ 65.103 Repairman certificate: Privileges and limitations.

(a) A certificated repairman may perform or supervise the maintenance, preventive maintenance, or alteration of aircraft or aircraft components appropriate to the job for which the repairman was employed and certificated, but only in connection with duties for the certificate holder by whom the repairman was employed and recommended.

(b) A certificated repairman may not perform or supervise duties under the repairman certificate unless the repairman understands the current instructions of the certificate holder by whom the repairman is employed and the manufacturer's instructions for continued airworthiness relating to the specific operations concerned.

(c) This section does not apply to the holder of a repairman certificate (light-sport aircraft) while that repairman is performing work under that certificate.

[Doc. No. 18241, 45 FR 46738, July 10, 1980, as amended by Amdt. 65–45, 69 FR 44879, July 27, 2004]

§ 65.104 Repairman certificate—experimental aircraft builder—Eligibility, privileges and limitations.

(a) To be eligible for a repairman certificate (experimental aircraft builder), an individual must—

(1) Be at least 18 years of age;

(2) Be the primary builder of the aircraft to which the privileges of the certificate are applicable;

(3) Show to the satisfaction of the Administrator that the individual has the requisite skill to determine whether the aircraft is in a condition for safe operations; and

(4) Be a citizen of the United States or an individual citizen of a foreign country who has lawfully been admitted for permanent residence in the United States.

(b) The holder of a repairman certificate (experimental aircraft builder) may perform condition inspections on the aircraft constructed by the holder in accordace with the operating limitations of that aircraft.

(c) Section 65.103 does not apply to the holder of a repairman certificate (experimental aircraft builder) while performing under that certificate.

[Doc. No. 18739, 44 FR 46781, Aug. 9, 1979]

§ 65.105 Display of certificate.

Each person who holds a repairman certificate shall keep it within the immediate area where he normally exercises the privileges of the certificate and shall present it for inspection upon the request of the Administrator or an authorized representative of the National Transportation Safety Board, or of any Federal, State, or local law enforcement officer.

[Doc. No. 7258, 31 FR 13524, Oct. 20, 1966, as amended by Doc. No. 8084, 32 FR 5769, Apr. 11, 1967]

§ 65.107 Repairman certificate (light-sport aircraft): Eligibility, privileges, and limits.

(a) Use the following table to determine your eligibility for a repairman certificate (light-sport aircraft) and appropriate rating:

To be eligible for	You must
(1) A repairman certificate (light-sport aircraft).	(i) Be at least 18 years old, (ii) Be able to read, speak, write, and understand English. If for medical reasons you cannot meet one of these requirements, the FAA may place limits on your repairman certificate necessary to safely perform the actions authorized by the certificate and rating, (iii) Demonstrate the requisite skill to determine whether a light-sport aircraft is in a condition for safe operation, and

To be eligible for	You must
	(iv) Be a citizen of the United States, or a citizen of a foreign country who has been lawfully admitted for permanent residence in the United States.
(2) A repairman certificate (light-sport aircraft) with an inspection rating.	(i) Meet the requirements of paragraph (a)(1) of this section, and (ii) Complete a 16-hour training course acceptable to the FAA on inspecting the particular class of experimental light-sport aircraft for which you intend to exercise the privileges of this rating.
(3) A repairman certificate (light-sport aircraft) with a maintenance rating	(i) Meet the requirements of paragraph (a)(1) of this section, and (ii) Complete a training course acceptable to the FAA on maintaining the particular class of light-sport aircraft for which you intend to exercise the privileges of this rating. The training course must, at a minimum, provide the following number of hours of instruction: (A) For airplane class privileges—120-hours, (B) For weight-shift control aircraft class privileges—104 hours, (C) For powered parachute class privileges—104 hours, (D) For lighter than air class privileges—80 hours, (E) For glider class privileges—80 hours.

(b) The holder of a repairman certificate (light-sport aircraft) with an inspection rating may perform the annual condition inspection on a light-sport aircraft:

(1) That is owned by the holder;

(2) That has been issued an experimental certificate for operating a light-sport aircraft under § 21.191(i) of this chapter; and

(3) That is in the same class of light-sport-aircraft for which the holder has completed the training specified in paragraph (a)(2)(ii) of this section.

(c) The holder of a repairman certificate (light-sport aircraft) with a maintenance rating may—

(1) Approve and return to service an aircraft that has been issued a special airworthiness certificate in the light-sport category under § 21.190 of this chapter, or any part thereof, after performing or inspecting maintenance (to include the annual condition inspection and the 100-hour inspection required by § 91.327 of this chapter), preventive maintenance, or an alteration (excluding a major repair or a major alteration on a product produced under an FAA approval);

(2) Perform the annual condition inspection on a light-sport aircraft that has been issued an experimental certificate for operating a light-sport aircraft under § 21.191(i) of this chapter; and

(3) Only perform maintenance, preventive maintenance, and an alteration on a light-sport aircraft that is in the same class of light-sport aircraft for which the holder has completed the training specified in paragraph (a)(3)(ii) of this section. Before performing a major repair, the holder must complete additional training acceptable to the FAA and appropriate to the repair performed.

(d) The holder of a repairman certificate (light-sport aircraft) with a maintenance rating may not approve for return to service any aircraft or part thereof unless that person has previously performed the work concerned satisfactorily. If that person has not previously performed that work, the person may show the ability to do the work by performing it to the satisfaction of the FAA, or by performing it under the direct supervision of a certificated and appropriately rated mechanic, or a certificated repairman, who has had previous experience in the specific operation concerned. The repairman may not exercise the privileges of the certificate unless the repairman understands the current instructions of the manufacturer and the maintenance manuals for the specific operation concerned.

[Doc. No. FAA–2001–11133, 69 FR 44879, July 27, 2004]

Subpart F—Parachute Riggers

§ 65.111 Certificate required.

(a) No person may pack, maintain, or alter any personnel-carrying parachute intended for emergency use in connection with civil aircraft of the United States (including the reserve parachute of a dual parachute system to be used

for intentional parachute jumping) unless that person holds an appropriate current certificate and type rating issued under this subpart and complies with §§ 65.127 through 65.133.

(b) No person may pack, maintain, or alter any main parachute of a dual-parachute system to be used for intentional parachute jumping in connection with civil aircraft of the United States unless that person—

(1) Has an appropriate current certificate issued under this subpart;

(2) Is under the supervision of a current certificated parachute rigger;

(3) Is the person making the next parachute jump with that parachute in accordance with § 105.43(a) of this chapter; or

(4) Is the parachutist in command making the next parachute jump with that parachute in a tandem parachute operation conducted under § 105.45(b)(1) of this chapter.

(c) Each person who holds a parachute rigger certificate shall present it for inspection upon the request of the Administrator or an authorized representative of the National Transportation Safety Board, or of any Federal, State, or local law enforcement officer.

(d) The following parachute rigger certificates are issued under this part:

(1) Senior parachute rigger.

(2) Master parachute rigger.

(e) Sections 65.127 through 65.133 do not apply to parachutes packed, maintained, or altered for the use of the armed forces.

[Doc. No. 1179, 27 FR 7973, Aug. 10, 1962, as amended by Amdt. 65–9, 31 FR 13524, Oct. 20, 1966; 32 FR 5769, Apr. 11, 1967; Amdt. 65–42, 66 FR 23553, May 9, 2001]

§ 65.113 Eligibility requirements: General.

(a) To be eligible for a parachute rigger certificate, a person must—

(1) Be at least 18 years of age;

(2) Be able to read, write, speak, and understand the English language, or, in the case of a citizen of Puerto Rico, or a person who is employed outside of the United States by a U.S. air carrier, and who does not meet this requirement, be issued a certificate that is valid only in Puerto Rico or while he is employed outside of the United States by that air carrier, as the case may be; and

(3) Comply with the sections of this subpart that apply to the certificate and type rating he seeks.

(b) Except for a master parachute rigger certificate, a parachute rigger certificate that was issued before, and was valid on, October 31, 1962, is equal to a senior parachute rigger certificate, and may be exchanged for such a corresponding certificate.

§ 65.115 Senior parachute rigger certificate: Experience, knowledge, and skill requirements.

Except as provided in § 65.117, an applicant for a senior parachute rigger certificate must—

(a) Present evidence satisfactory to the Administrator that he has packed at least 20 parachutes of each type for which he seeks a rating, in accordance with the manufacturer's instructions and under the supervision of a certificated parachute rigger holding a rating for that type or a person holding an appropriate military rating;

(b) Pass a written test, with respect to parachutes in common use, on—

(1) Their construction, packing, and maintenance;

(2) The manufacturer's instructions;

(3) The regulations of this subpart; and

(c) Pass an oral and practical test showing his ability to pack and maintain at least one type of parachute in common use, appropriate to the type rating he seeks.

[Doc. No. 10468, 37 FR 13251, July 6, 1972]

§ 65.117 Military riggers or former military riggers: Special certification rule.

In place of the procedure in § 65.115, an applicant for a senior parachute rigger certificate is entitled to it if he passes a written test on the regulations of this subpart and presents satisfactory documentary evidence that he—

(a) Is a member or civilian employee of an Armed Force of the United States, is a civilian employee of a regular armed force of a foreign country, or has, within the 12 months before he applies, been honorably discharged or released from any status covered by this paragraph;

(b) Is serving, or has served within the 12 months before he applies, as a parachute rigger for such an Armed Force; and

(c) Has the experience required by § 65.115(a).

§ 65.119 Master parachute rigger certificate: Experience, knowledge, and skill requirements.

An applicant for a master parachute rigger certificate must meet the following requirements:

(a) Present evidence satisfactory to the Administrator that he has had at least 3 years of experience as a parachute rigger and has satisfactorily packed at least 100 parachutes of each of two types in common use, in accordance with the manufacturer's instructions—

(1) While a certificated and appropriately rated senior parachute rigger; or

(2) While under the supervision of a certificated and appropriately rated parachute rigger or a person holding appropriate military ratings.

An applicant may combine experience specified in paragraphs (a) (1) and (2) of this section to meet the requirements of this paragraph.

(b) If the applicant is not the holder of a senior parachute rigger certificate, pass a written test, with respect to parachutes in common use, on—

(1) Their construction, packing, and maintenance;

(2) The manufacturer's instructions; and

(3) The regulations of this subpart.

(c) Pass an oral and practical test showing his ability to pack and maintain two types of parachutes in common use, appropriate to the type ratings he seeks.

[Doc. No. 10468, 37 FR 13252, July 6, 1972]

§ 65.121 Type ratings.

(a) The following type ratings are issued under this subpart:

(1) Seat.

(2) Back.

(3) Chest.

(4) Lap.

(b) The holder of a senior parachute rigger certificate who qualifies for a master parachute rigger certificate is entitled to have placed on his master parachute rigger certificate the ratings that were on his senior parachute rigger certificate.

§ 65.123 Additional type ratings: Requirements.

A certificated parachute rigger who applies for an additional type rating must—

(a) Present evidence satisfactory to the Administrator that he has packed at least 20 parachutes of the type for which he seeks a rating, in accordance with the manufacturer's instructions and under the supervision of a certificated parachute rigger holding a rating for that type or a person holding an appropriate military rating; and

(b) Pass a practical test, to the satisfaction of the Administrator, showing his ability to pack and maintain the type of parachute for which he seeks a rating.

[Doc. No. 1179, 27 FR 7973, Aug. 10, 1962, as amended by Amdt. 65–20, 37 FR 13251, July 6, 1972]

§ 65.125 Certificates: Privileges.

(a) A certificated senior parachute rigger may—

(1) Pack or maintain (except for major repair) any type of parachute for which he is rated; and

(2) Supervise other persons in packing any type of parachute for which that person is rated in accordance with § 105.43(a) or § 105.45(b)(1) of this chapter.

(b) A certificated master parachute rigger may—

(1) Pack, maintain, or alter any type of parachute for which he is rated; and

(2) Supervise other persons in packing, maintaining, or altering any type of parachute for which the certificated parachute rigger is rated in accordance with § 105.43(a) or § 105.45(b)(1) of this chapter.

(c) A certificated parachute rigger need not comply with §§ 65.127 through 65.133 (relating to facilities, equipment, performance standards, records, recent experience, and seal) in packing, maintaining, or altering (if authorized) the main parachute of a dual parachute

pack to be used for intentional jumping.

[Doc. No. 1179, 27 FR 7973, Aug. 10, 1962, as amended by Amdt. 65–20, 37 FR 13252, July 6, 1972; Amdt. 65–42, 66 FR 23553, May 9, 2001]

§ 65.127 Facilities and equipment.

No certificated parachute rigger may exercise the privileges of his certificate unless he has at least the following facilities and equipment available to him:

(a) A smooth top table at least three feet wide by 40 feet long.

(b) Suitable housing that is adequately heated, lighted, and ventilated for drying and airing parachutes.

(c) Enough packing tools and other equipment to pack and maintain the types of parachutes that he services.

(d) Adequate housing facilities to perform his duties and to protect his tools and equipment.

[Doc. No. 1179, 27 FR 7973, Aug. 10, 1962, as amended by Amdt. 65–27, 47 FR 13316, Mar. 29, 1982]

§ 65.129 Performance standards.

No certificated parachute rigger may—

(a) Pack, maintain, or alter any parachute unless he is rated for that type;

(b) Pack a parachute that is not safe for emergency use;

(c) Pack a parachute that has not been thoroughly dried and aired;

(d) Alter a parachute in a manner that is not specifically authorized by the Administrator or the manufacturer;

(e) Pack, maintain, or alter a parachute in any manner that deviates from procedures approved by the Administrator or the manufacturer of the parachute; or

(f) Exercise the privileges of his certificate and type rating unless he understands the current manufacturer's instructions for the operation involved and has—

(1) Performed duties under his certificate for at least 90 days within the preceding 12 months; or

(2) Shown the Administrator that he is able to perform those duties.

§ 65.131 Records.

(a) Each certificated parachute rigger shall keep a record of the packing, maintenance, and alteration of parachutes performed or supervised by him. He shall keep in that record, with respect to each parachute worked on, a statement of—

(1) Its type and make;

(2) Its serial number;

(3) The name and address of its owner;

(4) The kind and extent of the work performed;

(5) The date when and place where the work was performed; and

(6) The results of any drop tests made with it.

(b) Each person who makes a record under paragraph (a) of this section shall keep it for at least 2 years after the date it is made.

(c) Each certificated parachute rigger who packs a parachute shall write, on the parachute packing record attached to the parachute, the date and place of the packing and a notation of any defects he finds on inspection. He shall sign that record with his name and the number of his certificate.

§ 65.133 Seal.

Each certificated parachute rigger must have a seal with an identifying mark prescribed by the Administrator, and a seal press. After packing a parachute he shall seal the pack with his seal in accordance with the manufacturer's recommendation for that type of parachute.

APPENDIX A TO PART 65—AIRCRAFT DISPATCHER COURSES

Overview

This appendix sets forth the areas of knowledge necessary to perform dispatcher functions. The items listed below indicate the minimum set of topics that must be covered in a training course for aircraft dispatcher certification. The order of coverage is at the discretion of the approved school. For the latest technological advancements refer to the Practical Test Standards as published by the FAA.

I. Regulations
- A. Subpart C of this part;
- B. Parts 1, 25, 61, 71, 91, 121, 139, and 175, of this chapter;
- C. 49 CFR part 830;
- D. General Operating Manual.

II. Meteorology
- A. Basic Weather Studies
  - (1) The earth's motion and its effects on weather.

(2) Analysis of the following regional weather types, characteristics, and structures, or combinations thereof:
(a) Maritime.
(b) Continental.
(c) Polar.
(d) Tropical.
(3) Analysis of the following local weather types, characteristics, and structures or combinations thereof:
(a) Coastal.
(b) Mountainous.
(c) Island.
(d) Plains.
(4) The following characteristics of the atmosphere:
(a) Layers.
(b) Composition.
(c) Global Wind Patterns.
(d) Ozone.
(5) Pressure:
(a) Units of Measure.
(b) Weather Systems Characteristics.
(c) Temperature Effects on Pressure.
(d) Altimeters.
(e) Pressure Gradient Force.
(f) Pressure Pattern Flying Weather.
(6) Wind:
(a) Major Wind Systems and Coriolis Force.
(b) Jetstreams and their Characteristics.
(c) Local Wind and Related Terms.
(7) States of Matter:
(a) Solids, Liquid, and Gases.
(b) Causes of change of state.
(8) Clouds:
(a) Composition, Formation, and Dissipation.
(b) Types and Associated Precipitation.
(c) Use of Cloud Knowledge in Forecasting.
(9) Fog:
(a) Causes, Formation, and Dissipation.
(b) Types.
(10) Ice:
(a) Causes, Formation, and Dissipation.
(b) Types.
(11) Stability/Instability:
(a) Temperature Lapse Rate, Convection.
(b) Adiabatic Processes.
(c) Lifting Processes.
(d) Divergence.
(e) Convergence.
(12) Turbulence:
(a) Jetstream Associated.
(b) Pressure Pattern Recognition.
(c) Low Level Windshear.
(d) Mountain Waves.
(e) Thunderstorms.
(f) Clear Air Turbulence.
(13) Airmasses:
(a) Classification and Characteristics.
(b) Source Regions.
(c) Use of Airmass Knowledge in Forecasting.
(14) Fronts:
(a) Structure and Characteristics, Both Vertical and Horizontal.
(b) Frontal Types.
(c) Frontal Weather Flying.
(15) Theory of Storm Systems:
(a) Thunderstorms.
(b) Tornadoes.
(c) Hurricanes and Typhoons.
(d) Microbursts.
(e) Causes, Formation, and Dissipation.
B. Weather, Analysis, and Forecasts
(1) Observations:
(a) Surface Observations.
(i) Observations made by certified weather observer.
(ii) Automated Weather Observations.
(b) Terminal Forecasts.
(c) Significant En route Reports and Forecasts.
(i) Pilot Reports.
(ii) Area Forecasts.
(iii) Sigmets, Airmets.
(iv) Center Weather Advisories.
(d) Weather Imagery.
(i) Surface Analysis.
(ii) Weather Depiction.
(iii) Significant Weather Prognosis.
(iv) Winds and Temperature Aloft.
(v) Tropopause Chart.
(vi) Composite Moisture Stability Chart.
(vii) Surface Weather Prognostic Chart.
(viii) Radar Meteorology.
(ix) Satellite Meteorology.
(x) Other charts as applicable.
(e) Meteorological Information Data Collection Systems.
(2) Data Collection, Analysis, and Forecast Facilities.
(3) Service Outlets Providing Aviation Weather Products.
C. Weather Related Aircraft Hazards
(1) Crosswinds and Gusts.
(2) Contaminated Runways.
(3) Restrictions to Surface Visibility.
(4) Turbulence and Windshear.
(5) Icing.
(6) Thunderstorms and Microburst.
(7) Volcanic Ash.

III. Navigation

A. Study of the Earth
(1) Time reference and location (0 Longitude, UTC).
(2) Definitions.
(3) Projections.
(4) Charts.
B. Chart Reading, Application, and Use.
C. National Airspace Plan.
D. Navigation Systems.
E. Airborne Navigation Instruments.
F. Instrument Approach Procedures.
(1) Transition Procedures.
(2) Precision Approach Procedures.
(3) Non-precision Approach Procedures.
(4) Minimums and the relationship to weather.
G. Special Navigation and Operations.
(1) North Atlantic.
(2) Pacific.
(3) Global Differences.

IV. AIRCRAFT
A. Aircraft Flight Manual.
B. Systems Overview.
(1) Flight controls.
(2) Hydraulics.
(3) Electrical.
(4) Air Conditioning and Pressurization.
(5) Ice and Rain protection.
(6) Avionics, Communication, and Navigation.
(7) Powerplants and Auxiliary Power Units.
(8) Emergency and Abnormal Procedures.
(9) Fuel Systems and Sources.
C. Minimum Equipment List/Configuration Deviation List (MEL/CDL) and Applications.
D. Performance.
(1) Aircraft in general.
(2) Principles of flight:
(a) Group one aircraft.
(b) Group two aircraft.
(3) Aircraft Limitations.
(4) Weight and Balance.
(5) Flight instrument errors.
(6) Aircraft performance:
(a) Take-off performance.
(b) En route performance.
(c) Landing performance.
V. Communications
A. Regulatory requirements.
B. Communication Protocol.
C. Voice and Data Communications.
D. Notice to Airmen (NOTAMS).
E. Aeronautical Publications.
F. Abnormal Procedures.
VI. Air Traffic Control
A. Responsibilities.
B. Facilities and Equipment.
C. Airspace classification and route structure.
D. Flight Plans.
(1) Domestic.
(2) International.
E. Separation Minimums.
F. Priority Handling.
G. Holding Procedures.
H. Traffic Management.
VII. Emergency and Abnormal Procedures
A. Security measures on the ground.
B. Security measures in the air.
C. FAA responsibility and services.
D. Collection and dissemination of information on overdue or missing aircraft.
E. Means of declaring an emergency.
F. Responsibility for declaring an emergency.
G. Required reporting of an emergency.
H. NTSB reporting requirements.
VIII. Practical Dispatch Applications
A. Human Factors.
(1) Decisionmaking:
(a) Situation Assessment.
(b) Generation and Evaluation of Alternatives.
(i) Tradeoffs and Prioritization.
(ii) Contingency Planning.
(c) Support Tools and Technologies.
(2) Human Error:
(a) Causes.
(i) Individual and Organizational Factors.
(ii) Technology-Induced Error.
(b) Prevention.
(c) Detection and Recovery.
(3) Teamwork:
(a) Communication and Information Exchange.
(b) Cooperative and Distributed Problem-Solving.
(c) Resource Management.
(i) Air Traffic Control (ATC) activities and workload.
(ii) Flightcrew activities and workload.
(iii) Maintenance activities and workload.
(iv) Operations Control Staff activities and workload.
B. Applied Dispatching.
(1) Briefing techniques, Dispatcher, Pilot.
(2) Preflight:
(a) Safety.
(b) Weather Analysis.
(i) Satellite imagery.
(ii) Upper and lower altitude charts.
(iii) Significant en route reports and forecasts.
(iv) Surface charts.
(v) Surface observations.
(vi) Terminal forecasts and orientation to Enhanced Weather Information System (EWINS).
(c) NOTAMS and airport conditions.
(d) Crew.
(i) Qualifications.
(ii) Limitations.
(e) Aircraft.
(i) Systems.
(ii) Navigation instruments and avionics systems.
(iii) Flight instruments.
(iv) Operations manuals and MEL/CDL.
(v) Performance and limitations.
(f) Flight Planning.
(i) Route of flight.
1. Standard Instrument Departures and Standard Terminal Arrival Routes.
2. En route charts.
3. Operational altitude.
4. Departure and arrival charts.
(ii) Minimum departure fuel.
1. Climb.
2. Cruise.
3. Descent.
(g) Weight and balance.
(h) Economics of flight overview (Performance, Fuel Tankering).
(i) Decision to operate the flight.
(j) ATC flight plan filing.
(k) Flight documentation.
(i) Flight plan.
(ii) Dispatch release.
(3) Authorize flight departure with concurrence of pilot in command.
(4) In-flight operational control:
(a) Current situational awareness.

(b) Information exchange.
(c) Amend original flight release as required.
(5) Post-Flight:
(a) Arrival verification.
(b) Weather debrief.
(c) Flight irregularity reports as required.

[Doc. No. FAA–1998–4553, 64 FR 68925, Dec. 8, 1999]

PART 67—MEDICAL STANDARDS AND CERTIFICATION

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AUTHORITY: 49 U.S.C. 106(g), 40113, 44701–44703, 44707, 44709–44711, 45102–45103, 45301–45303.

SOURCE: Docket No. 27940, 61 FR 11256, Mar. 19, 1996, unless otherwise noted.

Subpart A—General

§ 67.1 Applicability.

This part prescribes the medical standards and certification procedures for issuing medical certificates for airmen and for remaining eligible for a medical certificate.

§ 67.3 Issue.

Except as provided in § 67.5, a person who meets the medical standards prescribed in this part, based on medical examination and evaluation of the person's history and condition, is entitled to an appropriate medical certificate.

§ 67.7 Access to the National Driver Register.

At the time of application for a certificate issued under this part, each person who applies for a medical certificate shall execute an express consent form authorizing the Administrator to request the chief driver licensing official of any state designated by the Administrator to transmit information contained in the National Driver Register about the person to the Administrator. The Administrator shall make information received from the National Driver Register, if any, available on request to the person for review and written comment.

Subpart B—First-Class Airman Medical Certificate

§ 67.101 Eligibility.

To be eligible for a first-class airman medical certificate, and to remain eligible for a first-class airman medical certificate, a person must meet the requirements of this subpart.

§ 67.103 Eye.

Eye standards for a first-class airman medical certificate are:

(a) Distant visual acuity of 20/20 or better in each eye separately, with or without corrective lenses. If corrective lenses (spectacles or contact lenses) are necessary for 20/20 vision, the person may be eligible only on the condition that corrective lenses are worn while exercising the privileges of an airman certificate.

(b) Near vision of 20/40 or better, Snellen equivalent, at 16 inches in each eye separately, with or without corrective lenses. If age 50 or older, near vision of 20/40 or better, Snellen equivalent, at both 16 inches and 32 inches in each eye separately, with or without corrective lenses.

(c) Ability to perceive those colors necessary for the safe performance of airman duties.

(d) Normal fields of vision.

(e) No acute or chronic pathological condition of either eye or adnexa that interferes with the proper function of an eye, that may reasonably be expected to progress to that degree, or that may reasonably be expected to be aggravated by flying.

(f) Bifoveal fixation and vergence-phoria relationship sufficient to prevent a break in fusion under conditions that may reasonably be expected to occur in performing airman duties. Tests for the factors named in this paragraph are not required except for persons found to have more than 1 prism diopter of hyperphoria, 6 prism diopters of esophoria, or 6 prism diopters of exophoria. If any of these values are exceeded, the Federal Air Surgeon may require the person to be examined by a qualified eye specialist to determine if there is bifoveal fixation and an adequate vergence-phoria relationship. However, if otherwise eligible, the person is issued a medical certificate pending the results of the examination.

§ 67.105 Ear, nose, throat, and equilibrium.

Ear, nose, throat, and equilibrium standards for a first-class airman medical certificate are:

(a) The person shall demonstrate acceptable hearing by at least one of the following tests:

(1) Demonstrate an ability to hear an average conversational voice in a quiet room, using both ears, at a distance of 6 feet from the examiner, with the back turned to the examiner.

(2) Demonstrate an acceptable understanding of speech as determined by audiometric speech discrimination testing to a score of at least 70 percent obtained in one ear or in a sound field environment.

(3) Provide acceptable results of pure tone audiometric testing of unaided hearing acuity according to the following table of worst acceptable thresholds, using the calibration standards of the American National Standards Institute, 1969 (11 West 42d Street, New York, NY 10036):

Frequency (Hz)	500 Hz	1000 Hz	2000 Hz	3000 Hz
Better ear (Db)	35	30	30	40
Poorer ear (Db)	35	50	50	60

(b) No disease or condition of the middle or internal ear, nose, oral cavity, pharynx, or larynx that—

(1) Interferes with, or is aggravated by, flying or may reasonably be expected to do so; or

(2) Interferes with, or may reasonably be expected to interfere with, clear and effective speech communication.

(c) No disease or condition manifested by, or that may reasonably be expected to be manifested by, vertigo or a disturbance of equilibrium.

§ 67.107 Mental.

Mental standards for a first-class airman medical certificate are:

(a) No established medical history or clinical diagnosis of any of the following:

(1) A personality disorder that is severe enough to have repeatedly manifested itself by overt acts.

(2) A psychosis. As used in this section, ''psychosis'' refers to a mental disorder in which:

(i) The individual has manifested delusions, hallucinations, grossly bizarre or disorganized behavior, or other commonly accepted symptoms of this condition; or

(ii) The individual may reasonably be expected to manifest delusions, hallucinations, grossly bizarre or disorganized behavior, or other commonly accepted symptoms of this condition.

(3) A bipolar disorder.

(4) Substance dependence, except where there is established clinical evidence, satisfactory to the Federal Air Surgeon, of recovery, including sustained total abstinence from the substance(s) for not less than the preceding 2 years. As used in this section—

(i) ''Substance'' includes: Alcohol; other sedatives and hypnotics; anxiolytics; opioids; central nervous system stimulants such as cocaine, amphetamines, and similarly acting sympathomimetics; hallucinogens; phencyclidine or similarly acting arylcyclohexylamines; cannabis; inhalants; and other psychoactive drugs and chemicals; and

(ii) ''Substance dependence'' means a condition in which a person is dependent on a substance, other than tobacco or ordinary xanthine-containing (e.g., caffeine) beverages, as evidenced by—

(A) Increased tolerance;

(B) Manifestation of withdrawal symptoms;

(C) Impaired control of use; or

(D) Continued use despite damage to physical health or impairment of social, personal, or occupational functioning.

(b) No substance abuse within the preceding 2 years defined as:

(1) Use of a substance in a situation in which that use was physically hazardous, if there has been at any other time an instance of the use of a substance also in a situation in which that use was physically hazardous;

(2) A verified positive drug test result, an alcohol test result of 0.04 or greater alcohol concentration, or a refusal to submit to a drug or alcohol test required by the U.S. Department of Transportation or an agency of the U.S. Department of Transportation; or

(3) Misuse of a substance that the Federal Air Surgeon, based on case history and appropriate, qualified medical judgment relating to the substance involved, finds—

(i) Makes the person unable to safely perform the duties or exercise the privileges of the airman certificate applied for or held; or

(ii) May reasonably be expected, for the maximum duration of the airman medical certificate applied for or held, to make the person unable to perform those duties or exercise those privileges.

(c) No other personality disorder, neurosis, or other mental condition that the Federal Air Surgeon, based on the case history and appropriate, qualified medical judgment relating to the condition involved, finds—

(1) Makes the person unable to safely perform the duties or exercise the privileges of the airman certificate applied for or held; or

(2) May reasonably be expected, for the maximum duration of the airman medical certificate applied for or held, to make the person unable to perform those duties or exercise those privileges.

[Doc. No. 27940, 61 FR 11256, Mar. 19, 1996, as amended by Amdt. 67–19, 71 FR 35764, June 21, 2006]

§ 67.109 Neurologic.

Neurologic standards for a first-class airman medical certificate are:

(a) No established medical history or clinical diagnosis of any of the following:

(1) Epilepsy;

(2) A disturbance of consciousness without satisfactory medical explanation of the cause; or

(3) A transient loss of control of nervous system function(s) without satisfactory medical explanation of the cause.

(b) No other seizure disorder, disturbance of consciousness, or neurologic condition that the Federal Air Surgeon, based on the case history and appropriate, qualified medical judgment relating to the condition involved, finds—

(1) Makes the person unable to safely perform the duties or exercise the privileges of the airman certificate applied for or held; or

(2) May reasonably be expected, for the maximum duration of the airman medical certificate applied for or held, to make the person unable to perform those duties or exercise those privileges.

§ 67.111 Cardiovascular.

Cardiovascular standards for a first-class airman medical certificate are:

(a) No established medical history or clinical diagnosis of any of the following:

(1) Myocardial infarction;

(2) Angina pectoris;

(3) Coronary heart disease that has required treatment or, if untreated, that has been symptomatic or clinically significant;

(4) Cardiac valve replacement;

(5) Permanent cardiac pacemaker implantation; or

(6) Heart replacement;

(b) A person applying for first-class medical certification must demonstrate an absence of myocardial infarction and other clinically significant abnormality on electrocardiographic examination:

(1) At the first application after reaching the 35th birthday; and

(2) On an annual basis after reaching the 40th birthday.

(c) An electrocardiogram will satisfy a requirement of paragraph (b) of this section if it is dated no earlier than 60 days before the date of the application it is to accompany and was performed and transmitted according to acceptable standards and techniques.

§ 67.113 General medical condition.

The general medical standards for a first-class airman medical certificate are:

(a) No established medical history or clinical diagnosis of diabetes mellitus that requires insulin or any other hypoglycemic drug for control.

(b) No other organic, functional, or structural disease, defect, or limitation that the Federal Air Surgeon, based on the case history and appropriate, qualified medical judgment relating to the condition involved, finds—

(1) Makes the person unable to safely perform the duties or exercise the privileges of the airman certificate applied for or held; or

(2) May reasonably be expected, for the maximum duration of the airman medical certificate applied for or held, to make the person unable to perform those duties or exercise those privileges.

(c) No medication or other treatment that the Federal Air Surgeon, based on the case history and appropriate, qualified medical judgment relating to the medication or other treatment involved, finds—

(1) Makes the person unable to safely perform the duties or exercise the privileges of the airman certificate applied for or held; or

(2) May reasonably be expected, for the maximum duration of the airman medical certificate applied for or held, to make the person unable to perform those duties or exercise those privileges.

§ 67.115 Discretionary issuance.

A person who does not meet the provisions of §§ 67.103 through 67.113 may apply for the discretionary issuance of a certificate under § 67.401.

Subpart C—Second-Class Airman Medical Certificate

§ 67.201 Eligibility.

To be eligible for a second-class airman medical certificate, and to remain eligible for a second-class airman medical certificate, a person must meet the requirements of this subpart.

§ 67.203 Eye.

Eye standards for a second-class airman medical certificate are:

(a) Distant visual acuity of 20/20 or better in each eye separately, with or without corrective lenses. If corrective lenses (spectacles or contact lenses) are necessary for 20/20 vision, the person may be eligible only on the condition that corrective lenses are worn while exercising the privileges of an airman certificate.

(b) Near vision of 20/40 or better, Snellen equivalent, at 16 inches in each eye separately, with or without corrective lenses. If age 50 or older, near vision of 20/40 or better, Snellen equivalent, at both 16 inches and 32 inches in each eye separately, with or without corrective lenses.

(c) Ability to perceive those colors necessary for the safe performance of airman duties.

(d) Normal fields of vision.

(e) No acute or chronic pathological condition of either eye or adnexa that

interferes with the proper function of an eye, that may reasonably be expected to progress to that degree, or that may reasonably be expected to be aggravated by flying.

(f) Bifoveal fixation and vergence-phoria relationship sufficient to prevent a break in fusion under conditions that may reasonably be expected to occur in performing airman duties. Tests for the factors named in this paragraph are not required except for persons found to have more than 1 prism diopter of hyperphoria, 6 prism diopters of esophoria, or 6 prism diopters of exophoria. If any of these values are exceeded, the Federal Air Surgeon may require the person to be examined by a qualified eye specialist to determine if there is bifoveal fixation and an adequate vergence-phoria relationship. However, if otherwise eligible, the person is issued a medical certificate pending the results of the examination.

§ 67.205 Ear, nose, throat, and equilibrium.

Ear, nose, throat, and equilibrium standards for a second-class airman medical certificate are:

(a) The person shall demonstrate acceptable hearing by at least one of the following tests:

(1) Demonstrate an ability to hear an average conversational voice in a quiet room, using both ears, at a distance of 6 feet from the examiner, with the back turned to the examiner.

(2) Demonstrate an acceptable understanding of speech as determined by audiometric speech discrimination testing to a score of at least 70 percent obtained in one ear or in a sound field environment.

(3) Provide acceptable results of pure tone audiometric testing of unaided hearing acuity according to the following table of worst acceptable thresholds, using the calibration standards of the American National Standards Institute, 1969:

Frequency (Hz)	500 Hz	1000 Hz	2000 Hz	3000 Hz
Better ear (Db)	35	30	30	40
Poorer ear (Db)	35	50	50	60

(b) No disease or condition of the middle or internal ear, nose, oral cavity, pharynx, or larynx that—

(1) Interferes with, or is aggravated by, flying or may reasonably be expected to do so; or

(2) Interferes with, or may reasonably be expected to interfere with, clear and effective speech communication.

(c) No disease or condition manifested by, or that may reasonably be expected to be manifested by, vertigo or a disturbance of equilibrium.

§ 67.207 Mental.

Mental standards for a second-class airman medical certificate are:

(a) No established medical history or clinical diagnosis of any of the following:

(1) A personality disorder that is severe enough to have repeatedly manifested itself by overt acts.

(2) A psychosis. As used in this section, ''psychosis'' refers to a mental disorder in which:

(i) The individual has manifested delusions, hallucinations, grossly bizarre or disorganized behavior, or other commonly accepted symptoms of this condition; or

(ii) The individual may reasonably be expected to manifest delusions, hallucinations, grossly bizarre or disorganized behavior, or other commonly accepted symptoms of this condition.

(3) A bipolar disorder.

(4) Substance dependence, except where there is established clinical evidence, satisfactory to the Federal Air Surgeon, of recovery, including sustained total abstinence from the substance(s) for not less than the preceding 2 years. As used in this section—

(i) ''Substance'' includes: Alcohol; other sedatives and hypnotics; anxiolytics; opioids; central nervous system stimulants such as cocaine, amphetamines, and similarly acting sympathomimetics; hallucinogens; phencyclidine or similarly acting arylcyclohexylamines; cannabis; inhalants; and other psychoactive drugs and chemicals; and

(ii) ''Substance dependence'' means a condition in which a person is dependent on a substance, other than tobacco

or ordinary xanthine-containing (e.g., caffeine) beverages, as evidenced by—

(A) Increased tolerance;

(B) Manifestation of withdrawal symptoms;

(C) Impaired control of use; or

(D) Continued use despite damage to physical health or impairment of social, personal, or occupational functioning.

(b) No substance abuse within the preceding 2 years defined as:

(1) Use of a substance in a situation in which that use was physically hazardous, if there has been at any other time an instance of the use of a substance also in a situation in which that use was physically hazardous;

(2) A verified positive drug test result, an alcohol test result of 0.04 or greater alcohol concentration, or a refusal to submit to a drug or alcohol test required by the U.S. Department of Transportation or an agency of the U.S. Department of Transportation; or

(3) Misuse of a substance that the Federal Air Surgeon, based on case history and appropriate, qualified medical judgment relating to the substance involved, finds—

(i) Makes the person unable to safely perform the duties or exercise the privileges of the airman certificate applied for or held; or

(ii) May reasonably be expected, for the maximum duration of the airman medical certificate applied for or held, to make the person unable to perform those duties or exercise those privileges.

(c) No other personality disorder, neurosis, or other mental condition that the Federal Air Surgeon, based on the case history and appropriate, qualified medical judgment relating to the condition involved, finds—

(1) Makes the person unable to safely perform the duties or exercise the privileges of the airman certificate applied for or held; or

(2) May reasonably be expected, for the maximum duration of the airman medical certificate applied for or held, to make the person unable to perform those duties or exercise those privileges.

[Doc. No. 27940, 61 FR 11256, Mar. 19, 1996, as amended by Amdt. 67–19, 71 FR 35764, June 21, 2006]

§ 67.209 Neurologic.

Neurologic standards for a second-class airman medical certificate are:

(a) No established medical history or clinical diagnosis of any of the following:

(1) Epilepsy;

(2) A disturbance of consciousness without satisfactory medical explanation of the cause; or

(3) A transient loss of control of nervous system function(s) without satisfactory medical explanation of the cause;

(b) No other seizure disorder, disturbance of consciousness, or neurologic condition that the Federal Air Surgeon, based on the case history and appropriate, qualified medical judgment relating to the condition involved, finds—

(1) Makes the person unable to safely perform the duties or exercise the privileges of the airman certificate applied for or held; or

(2) May reasonably be expected, for the maximum duration of the airman medical certificate applied for or held, to make the person unable to perform those duties or exercise those privileges.

§ 67.211 Cardiovascular.

Cardiovascular standards for a second-class medical certificate are no established medical history or clinical diagnosis of any of the following:

(a) Myocardial infarction;

(b) Angina pectoris;

(c) Coronary heart disease that has required treatment or, if untreated, that has been symptomatic or clinically significant;

(d) Cardiac valve replacement;

(e) Permanent cardiac pacemaker implantation; or

(f) Heart replacement.

§ 67.213 General medical condition.

The general medical standards for a second-class airman medical certificate are:

(a) No established medical history or clinical diagnosis of diabetes mellitus that requires insulin or any other hypoglycemic drug for control.

(b) No other organic, functional, or structural disease, defect, or limitation that the Federal Air Surgeon, based on

the case history and appropriate, qualified medical judgment relating to the condition involved, finds—

(1) Makes the person unable to safely perform the duties or exercise the privileges of the airman certificate applied for or held; or

(2) May reasonably be expected, for the maximum duration of the airman medical certificate applied for or held, to make the person unable to perform those duties or exercise those privileges.

(c) No medication or other treatment that the Federal Air Surgeon, based on the case history and appropriate, qualified medical judgment relating to the medication or other treatment involved, finds—

(1) Makes the person unable to safely perform the duties or exercise the privileges of the airman certificate applied for or held; or

(2) May reasonably be expected, for the maximum duration of the airman medical certificate applied for or held, to make the person unable to perform those duties or exercise those privileges.

§ 67.215 Discretionary issuance.

A person who does not meet the provisions of §§ 67.203 through 67.213 may apply for the discretionary issuance of a certificate under § 67.401.

Subpart D—Third-Class Airman Medical Certificate

§ 67.301 Eligibility.

To be eligible for a third-class airman medical certificate, or to remain eligible for a third-class airman medical certificate, a person must meet the requirements of this subpart.

§ 67.303 Eye.

Eye standards for a third-class airman medical certificate are:

(a) Distant visual acuity of 20/40 or better in each eye separately, with or without corrective lenses. If corrective lenses (spectacles or contact lenses) are necessary for 20/40 vision, the person may be eligible only on the condition that corrective lenses are worn while exercising the privileges of an airman certificate.

(b) Near vision of 20/40 or better, Snellen equivalent, at 16 inches in each eye separately, with or without corrective lenses.

(c) Ability to perceive those colors necessary for the safe performance of airman duties.

(d) No acute or chronic pathological condition of either eye or adnexa that interferes with the proper function of an eye, that may reasonably be expected to progress to that degree, or that may reasonably be expected to be aggravated by flying.

§ 67.305 Ear, nose, throat, and equilibrium.

Ear, nose, throat, and equilibrium standards for a third-class airman medical certificate are:

(a) The person shall demonstrate acceptable hearing by at least one of the following tests:

(1) Demonstrate an ability to hear an average conversational voice in a quiet room, using both ears, at a distance of 6 feet from the examiner, with the back turned to the examiner.

(2) Demonstrate an acceptable understanding of speech as determined by audiometric speech discrimination testing to a score of at least 70 percent obtained in one ear or in a sound field environment.

(3) Provide acceptable results of pure tone audiometric testing of unaided hearing acuity according to the following table of worst acceptable thresholds, using the calibration standards of the American National Standards Institute, 1969:

Frequency (Hz)	500 Hz	1000 Hz	2000 Hz	3000 Hz
Better ear (Db)	35	30	30	40
Poorer ear (Db)	35	50	50	60

(b) No disease or condition of the middle or internal ear, nose, oral cavity, pharynx, or larynx that—

(1) Interferes with, or is aggravated by, flying or may reasonably be expected to do so; or

(2) Interferes with clear and effective speech communication.

(c) No disease or condition manifested by, or that may reasonably be expected to be manifested by, vertigo or a disturbance of equilibrium.

§ 67.307 Mental.

Mental standards for a third-class airman medical certificate are:

(a) No established medical history or clinical diagnosis of any of the following:

(1) A personality disorder that is severe enough to have repeatedly manifested itself by overt acts.

(2) A psychosis. As used in this section, ''psychosis'' refers to a mental disorder in which—

(i) The individual has manifested delusions, hallucinations, grossly bizarre or disorganized behavior, or other commonly accepted symptoms of this condition; or

(ii) The individual may reasonably be expected to manifest delusions, hallucinations, grossly bizarre or disorganized behavior, or other commonly accepted symptoms of this condition.

(3) A bipolar disorder.

(4) Substance dependence, except where there is established clinical evidence, satisfactory to the Federal Air Surgeon, of recovery, including sustained total abstinence from the substance(s) for not less than the preceding 2 years. As used in this section—

(i) ''Substance'' includes: alcohol; other sedatives and hypnotics; anxiolytics; opioids; central nervous system stimulants such as cocaine, amphetamines, and similarly acting sympathomimetics; hallucinogens; phencyclidine or similarly acting arylcyclohexylamines; cannabis; inhalants; and other psychoactive drugs and chemicals; and

(ii) ''Substance dependence'' means a condition in which a person is dependent on a substance, other than tobacco or ordinary xanthine-containing (e.g., caffeine) beverages, as evidenced by—

(A) Increased tolerance;

(B) Manifestation of withdrawal symptoms;

(C) Impaired control of use; or

(D) Continued use despite damage to physical health or impairment of social, personal, or occupational functioning.

(b) No substance abuse within the preceding 2 years defined as:

(1) Use of a substance in a situation in which that use was physically hazardous, if there has been at any other time an instance of the use of a substance also in a situation in which that use was physically hazardous;

(2) A verified positive drug test result, an alcohol test result of 0.04 or greater alcohol concentration, or a refusal to submit to a drug or alcohol test required by the U.S. Department of Transportation or an agency of the U.S. Department of Transportation; or

(3) Misuse of a substance that the Federal Air Surgeon, based on case history and appropriate, qualified medical judgment relating to the substance involved, finds—

(i) Makes the person unable to safely perform the duties or exercise the privileges of the airman certificate applied for or held; or

(ii) May reasonably be expected, for the maximum duration of the airman medical certificate applied for or held, to make the person unable to perform those duties or exercise those privileges.

(c) No other personality disorder, neurosis, or other mental condition that the Federal Air Surgeon, based on the case history and appropriate, qualified medical judgment relating to the condition involved, finds—

(1) Makes the person unable to safely perform the duties or exercise the privileges of the airman certificate applied for or held; or

(2) May reasonably be expected, for the maximum duration of the airman medical certificate applied for or held, to make the person unable to perform those duties or exercise those privileges.

[Doc. No. 27940, 61 FR 11256, Mar. 19, 1996, as amended by Amdt. 67–19, 71 FR 35764, June 21, 2006]

§ 67.309 Neurologic.

Neurologic standards for a third-class airman medical certificate are:

(a) No established medical history or clinical diagnosis of any of the following:

(1) Epilepsy;

(2) A disturbance of consciousness without satisfactory medical explanation of the cause; or

(3) A transient loss of control of nervous system function(s) without satisfactory medical explanation of the cause.

(b) No other seizure disorder, disturbance of consciousness, or neurologic condition that the Federal Air Surgeon, based on the case history and appropriate, qualified medical judgment relating to the condition involved, finds—

(1) Makes the person unable to safely perform the duties or exercise the privileges of the airman certificate applied for or held; or

(2) May reasonably be expected, for the maximum duration of the airman medical certificate applied for or held, to make the person unable to perform those duties or exercise those privileges.

§ 67.311 Cardiovascular.

Cardiovascular standards for a third-class airman medical certificate are no established medical history or clinical diagnosis of any of the following:

(a) Myocardial infarction;

(b) Angina pectoris;

(c) Coronary heart disease that has required treatment or, if untreated, that has been symptomatic or clinically significant;

(d) Cardiac valve replacement;

(e) Permanent cardiac pacemaker implantation; or

(f) Heart replacement.

§ 67.313 General medical condition.

The general medical standards for a third-class airman medical certificate are:

(a) No established medical history or clinical diagnosis of diabetes mellitus that requires insulin or any other hypoglycemic drug for control.

(b) No other organic, functional, or structural disease, defect, or limitation that the Federal Air Surgeon, based on the case history and appropriate, qualified medical judgment relating to the condition involved, finds—

(1) Makes the person unable to safely perform the duties or exercise the privileges of the airman certificate applied for or held; or

(2) May reasonably be expected, for the maximum duration of the airman medical certificate applied for or held, to make the person unable to perform those duties or exercise those privileges.

(c) No medication or other treatment that the Federal Air Surgeon, based on the case history and appropriate, qualified medical judgment relating to the medication or other treatment involved, finds—

(1) Makes the person unable to safely perform the duties or exercise the privileges of the airman certificate applied for or held; or

(2) May reasonably be expected, for the maximum duration of the airman medical certificate applied for or held, to make the person unable to perform those duties or exercise those privileges.

§ 67.315 Discretionary issuance.

A person who does not meet the provisions of §§ 67.303 through 67.313 may apply for the discretionary issuance of a certificate under § 67.401.

Subpart E—Certification Procedures

§ 67.401 Special issuance of medical certificates.

(a) At the discretion of the Federal Air Surgeon, an Authorization for Special Issuance of a Medical Certificate (Authorization), valid for a specified period, may be granted to a person who does not meet the provisions of subparts B, C, or D of this part if the person shows to the satisfaction of the Federal Air Surgeon that the duties authorized by the class of medical certificate applied for can be performed without endangering public safety during the period in which the Authorization would be in force. The Federal Air Surgeon may authorize a special medical flight test, practical test, or medical evaluation for this purpose. A medical certificate of the appropriate class may be issued to a person who does not meet the provisions of subparts B, C, or D of this part if that person possesses a valid Authorization and is otherwise eligible. An airman medical certificate issued in accordance with this section shall expire no later than the end of the validity period or upon the withdrawal of the Authorization upon which it is based. At the end of its specified validity period, for grant of a new Authorization, the person must again show to the satisfaction of the

Federal Air Surgeon that the duties authorized by the class of medical certificate applied for can be performed without endangering public safety during the period in which the Authorization would be in force.

(b) At the discretion of the Federal Air Surgeon, a Statement of Demonstrated Ability (SODA) may be granted, instead of an Authorization, to a person whose disqualifying condition is static or nonprogressive and who has been found capable of performing airman duties without endangering public safety. A SODA does not expire and authorizes a designated aviation medical examiner to issue a medical certificate of a specified class if the examiner finds that the condition described on its face has not adversely changed.

(c) In granting an Authorization or SODA, the Federal Air Surgeon may consider the person's operational experience and any medical facts that may affect the ability of the person to perform airman duties including—

(1) The combined effect on the person of failure to meet more than one requirement of this part; and

(2) The prognosis derived from professional consideration of all available information regarding the person.

(d) In granting an Authorization or SODA under this section, the Federal Air Surgeon specifies the class of medical certificate authorized to be issued and may do any or all of the following:

(1) Limit the duration of an Authorization;

(2) Condition the granting of a new Authorization on the results of subsequent medical tests, examinations, or evaluations;

(3) State on the Authorization or SODA, and any medical certificate based upon it, any operational limitation needed for safety; or

(4) Condition the continued effect of an Authorization or SODA, and any second- or third-class medical certificate based upon it, on compliance with a statement of functional limitations issued to the person in coordination with the Director of Flight Standards or the Director's designee.

(e) In determining whether an Authorization or SODA should be granted to an applicant for a third-class medical certificate, the Federal Air Surgeon considers the freedom of an airman, exercising the privileges of a private pilot certificate, to accept reasonable risks to his or her person and property that are not acceptable in the exercise of commercial or airline transport pilot privileges, and, at the same time, considers the need to protect the safety of persons and property in other aircraft and on the ground.

(f) An Authorization or SODA granted under the provisions of this section to a person who does not meet the applicable provisions of subparts B, C, or D of this part may be withdrawn, at the discretion of the Federal Air Surgeon, at any time if—

(1) There is adverse change in the holder's medical condition;

(2) The holder fails to comply with a statement of functional limitations or operational limitations issued as a condition of certification under this section;

(3) Public safety would be endangered by the holder's exercise of airman privileges;

(4) The holder fails to provide medical information reasonably needed by the Federal Air Surgeon for certification under this section; or

(5) The holder makes or causes to be made a statement or entry that is the basis for withdrawal of an Authorization or SODA under § 67.403.

(g) A person who has been granted an Authorization or SODA under this section based on a special medical flight or practical test need not take the test again during later physical examinations unless the Federal Air Surgeon determines or has reason to believe that the physical deficiency has or may have degraded to a degree to require another special medical flight test or practical test.

(h) The authority of the Federal Air Surgeon under this section is also exercised by the Manager, Aeromedical Certification Division, and each Regional Flight Surgeon.

(i) If an Authorization or SODA is withdrawn under paragraph (f) of this section the following procedures apply:

(1) The holder of the Authorization or SODA will be served a letter of withdrawal, stating the reason for the action;

(2) By not later than 60 days after the service of the letter of withdrawal, the holder of the Authorization or SODA may request, in writing, that the Federal Air Surgeon provide for review of the decision to withdraw. The request for review may be accompanied by supporting medical evidence;

(3) Within 60 days of receipt of a request for review, a written final decision either affirming or reversing the decision to withdraw will be issued; and

(4) A medical certificate rendered invalid pursuant to a withdrawal, in accordance with paragraph (a) of this section, shall be surrendered to the Administrator upon request.

(j) No grant of a special issuance made prior to September 16, 1996, may be used to obtain a medical certificate after the earlier of the following dates:

(1) September 16, 1997; or

(2) The date on which the holder of such special issuance is required to provide additional information to the FAA as a condition for continued medical certification.

§ 67.403 Applications, certificates, logbooks, reports, and records: Falsification, reproduction, or alteration; incorrect statements.

(a) No person may make or cause to be made—

(1) A fraudulent or intentionally false statement on any application for a medical certificate or on a request for any Authorization for Special Issuance of a Medical Certificate (Authorization) or Statement of Demonstrated Ability (SODA) under this part;

(2) A fraudulent or intentionally false entry in any logbook, record, or report that is kept, made, or used, to show compliance with any requirement for any medical certificate or for any Authorization or SODA under this part;

(3) A reproduction, for fraudulent purposes, of any medical certificate under this part; or

(4) An alteration of any medical certificate under this part.

(b) The commission by any person of an act prohibited under paragraph (a) of this section is a basis for—

(1) Suspending or revoking all airman, ground instructor, and medical certificates and ratings held by that person;

(2) Withdrawing all Authorizations or SODA's held by that person; and

(3) Denying all applications for medical certification and requests for Authorizations or SODA's.

(c) The following may serve as a basis for suspending or revoking a medical certificate; withdrawing an Authorization or SODA; or denying an application for a medical certificate or request for an authorization or SODA:

(1) An incorrect statement, upon which the FAA relied, made in support of an application for a medical certificate or request for an Authorization or SODA.

(2) An incorrect entry, upon which the FAA relied, made in any logbook, record, or report that is kept, made, or used to show compliance with any requirement for a medical certificate or an Authorization or SODA.

§ 67.405 Medical examinations: Who may give.

(a) *First-class.* Any aviation medical examiner who is specifically designated for the purpose may give the examination for the first-class medical certificate. Any interested person may obtain a list of these aviation medical examiners, in any area, from the FAA Regional Flight Surgeon of the region in which the area is located.

(b) *Second- and third-class.* Any aviation medical examiner may give the examination for the second- or third-class medical certificate. Any interested person may obtain a list of aviation medical examiners, in any area, from the FAA Regional Flight Surgeon of the region in which the area is located.

§ 67.407 Delegation of authority.

(a) The authority of the Administrator under 49 U.S.C. 44703 to issue or deny medical certificates is delegated to the Federal Air Surgeon to the extent necessary to—

(1) Examine applicants for and holders of medical certificates to determine whether they meet applicable medical standards; and

(2) Issue, renew, and deny medical certificates, and issue, renew, deny, and withdraw Authorizations for Special Issuance of a Medical Certificate

and Statements of Demonstrated Ability to a person based upon meeting or failing to meet applicable medical standards.

(b) Subject to limitations in this chapter, the delegated functions of the Federal Air Surgeon to examine applicants for and holders of medical certificates for compliance with applicable medical standards and to issue, renew, and deny medical certificates are also delegated to aviation medical examiners and to authorized representatives of the Federal Air Surgeon within the FAA.

(c) The authority of the Administrator under 49 U.S.C. 44702, to reconsider the action of an aviation medical examiner is delegated to the Federal Air Surgeon; the Manager, Aeromedical Certification Division; and each Regional Flight Surgeon. Where the person does not meet the standards of §§ 67.107(b)(3) and (c), 67.109(b), 67.113(b) and (c), 67.207(b)(3) and (c), 67.209(b), 67.213(b) and (c), 67.307(b)(3) and (c), 67.309(b), or 67.313(b) and (c), any action taken under this paragraph other than by the Federal Air Surgeon is subject to reconsideration by the Federal Air Surgeon. A certificate issued by an aviation medical examiner is considered to be affirmed as issued unless an FAA official named in this paragraph (authorized official) reverses that issuance within 60 days after the date of issuance. However, if within 60 days after the date of issuance an authorized official requests the certificate holder to submit additional medical information, an authorized official may reverse the issuance within 60 days after receipt of the requested information.

(d) The authority of the Administrator under 49 U.S.C. 44709 to re-examine any civil airman to the extent necessary to determine an airman's qualification to continue to hold an airman medical certificate, is delegated to the Federal Air Surgeon and his or her authorized representatives within the FAA.

§ 67.409 Denial of medical certificate.

(a) Any person who is denied a medical certificate by an aviation medical examiner may, within 30 days after the date of the denial, apply in writing and in duplicate to the Federal Air Surgeon, Attention: Manager, Aeromedical Certification Division, AAM–300, Federal Aviation Administration, P.O. Box 26080, Oklahoma City, Oklahoma 73126, for reconsideration of that denial. If the person does not ask for reconsideration during the 30-day period after the date of the denial, he or she is considered to have withdrawn the application for a medical certificate.

(b) The denial of a medical certificate—

(1) By an aviation medical examiner is not a denial by the Administrator under 49 U.S.C. 44703.

(2) By the Federal Air Surgeon is considered to be a denial by the Administrator under 49 U.S.C. 44703.

(3) By the Manager, Aeromedical Certification Division, or a Regional Flight Surgeon is considered to be a denial by the Administrator under 49 U.S.C. 44703 except where the person does not meet the standards of §§ 67.107(b)(3) and (c), 67.109(b), or 67.113(b) and (c); 67.207(b)(3) and (c), 67.209(b), or 67.213(b) and (c); or 67.307(b)(3) and (c), 67.309(b), or 67.313(b) and (c).

(c) Any action taken under § 67.407(c) that wholly or partly reverses the issue of a medical certificate by an aviation medical examiner is the denial of a medical certificate under paragraph (b) of this section.

(d) If the issue of a medical certificate is wholly or partly reversed by the Federal Air Surgeon; the Manager, Aeromedical Certification Division; or a Regional Flight Surgeon, the person holding that certificate shall surrender it, upon request of the FAA.

§ 67.411 Medical certificates by flight surgeons of Armed Forces.

(a) The FAA has designated flight surgeons of the Armed Forces on specified military posts, stations, and facilities, as aviation medical examiners.

(b) An aviation medical examiner described in paragraph (a) of this section may give physical examinations for the FAA medical certificates to persons who are on active duty or who are, under Department of Defense medical programs, eligible for FAA medical certification as civil airmen. In addition, such an examiner may issue or

deny an appropriate FAA medical certificate in accordance with the regulations of this chapter and the policies of the FAA.

(c) Any interested person may obtain a list of the military posts, stations, and facilities at which a flight surgeon has been designated as an aviation medical examiner from the Surgeon General of the Armed Force concerned or from the Manager, Aeromedical Education Division, AAM–400, Federal Aviation Administration, P.O. Box 26082, Oklahoma City, Oklahoma 73125.

§ 67.413 Medical records.

(a) Whenever the Administrator finds that additional medical information or history is necessary to determine whether an applicant for or the holder of a medical certificate meets the medical standards for it, the Administrator requests that person to furnish that information or to authorize any clinic, hospital, physician, or other person to release to the Administrator all available information or records concerning that history. If the applicant or holder fails to provide the requested medical information or history or to authorize the release so requested, the Administrator may suspend, modify, or revoke all medical certificates the airman holds or may, in the case of an applicant, deny the application for an airman medical certificate.

(b) If an airman medical certificate is suspended or modified under paragraph (a) of this section, that suspension or modification remains in effect until the requested information, history, or authorization is provided to the FAA and until the Federal Air Surgeon determines whether the person meets the medical standards under this part.

§ 67.415 Return of medical certificate after suspension or revocation.

The holder of any medical certificate issued under this part that is suspended or revoked shall, upon the Administrator's request, return it to the Administrator.

SUBCHAPTER E—AIRSPACE

PART 71—DESIGNATION OF CLASS A, B, C, D, AND E AIRSPACE AREAS; AIR TRAFFIC SERVICE ROUTES; AND REPORTING POINTS

Sec.

SPECIAL FEDERAL AVIATION REGULATION NO. 97 [NOTE]
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71.9 Overlapping airspace designations.
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Subpart A—Class A Airspace

71.31 Class A airspace.
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71.41 Class B airspace.

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71.51 Class C airspace.

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71.61 Class D airspace.

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71.71 Class E airspace.

Subparts F–G [Reserved]

Subpart H—Reporting Points

71.901 Applicability.

AUTHORITY: 49 U.S.C. 106(g), 40103, 40113, 40120; E.O. 10854, 24 FR 9565, 3 CFR, 1959–1963 Comp., p. 389.

SOURCE: Amdt. 71–14, 56 FR 65654, Dec. 17, 1991, unless otherwise noted.

SPECIAL FEDERAL AVIATION REGULATION NO. 97

EDITORIAL NOTE: For the text of SFAR No. 97, see part 91 of this chapter.

§ 71.1 Applicability.

A listing for Class A, B, C, D, and E airspace areas; air traffic service routes; and reporting points can be found in FAA Order 7400.9R, Airspace Designations and Reporting Points, dated August 15, 2007. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552 (a) and 1 CFR part 51. The approval to incorporate by reference FAA Order 7400.9R is effective September 15, 2007, through September 15, 2008. During the incorporation by reference period, proposed changes to the listings of Class A, B, C, D, and E airspace areas; air traffic service routes; and reporting points will be published in full text as proposed rule documents in the FEDERAL REGISTER. Amendments to the listings of Class A, B, C, D, and E airspace areas; air traffic service routes; and reporting points will be published in full text as final rules in the FEDERAL REGISTER. Periodically, the final rule amendments will be integrated into a revised edition of the Order and submitted to the Director of the Federal Register for approval for incorporation by reference in this section. Copies of FAA Order 7400.9R may be obtained from Airspace and Rules Group, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591, (202) 267–8783. An electronic version of the Order is available on the FAA Web site at *http://www.faa.gov/airports_airtraffic/air_traffic/publications/*. Copies of FAA Order 7400.9R may be inspected in Docket No. 29334 on the FEDERAL REGISTER Web site at *www.regulations.gov*.

[Doc. No. 29334, 72 FR 49190, Aug. 28, 2007]

EFFECTIVE DATE NOTE: By Doc. No. 29334, 72 FR 49191, Aug. 28, 2007, § 71.1 was revised, effective Sept. 15, 2007 through Sept. 15, 2008.

§ 71.3 [Reserved]

§ 71.5 Reporting points.

The reporting points listed in subpart H of FAA Order 7400.9R (incorporated by reference, see § 71.1) consist of geographic locations at which the position of an aircraft must be reported in accordance with part 91 of this chapter.

[Amdt. 71–14, 56 FR 65654, Dec. 17, 1991]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting § 71.5, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and on GPO Access.

EFFECTIVE DATE NOTE: By Doc. No. 29334, 72 FR 49191, Aug. 28, 2007, § 71.5 was amended by removing the words ''FAA Order 7400.9P'' and adding, in their place, the words ''FAA Order 7400.9R'', effective Sept. 15, 2007 through Sept. 15, 2008.

§ 71.7 Bearings, radials, and mileages.

All bearings and radials in this part are true and are applied from point of origin and all mileages in this part are stated as nautical miles.

§ 71.9 Overlapping airspace designations.

(a) When overlapping airspace designations apply to the same airspace, the operating rules associated with the more restrictive airspace designation apply.

(b) For the purpose of this section—

(1) Class A airspace is more restrictive than Class B, Class C, Class D, Class E, or Class G airspace;

(2) Class B airspace is more restrictive than Class C, Class D, Class E, or Class G airspace;

(3) Class C airspace is more restrictive than Class D, Class E, or Class G airspace;

(4) Class D airspace is more restrictive than Class E or Class G airspace; and

(5) Class E is more restrictive than Class G airspace.

§ 71.11 Air Traffic Service (ATS) routes.

Unless otherwise specified, the following apply:

(a) An Air Traffic Service (ATS) route is based on a centerline that extends from one navigation aid, fix, or intersection, to another navigation aid, fix, or intersection (or through several navigation aids, fixes, or intersections) specified for that route.

(b) An ATS route does not include the airspace of a prohibited area.

[Doc. No. FAA–2003–14698, 68 FR 16947, Apr. 8, 2003, as amended by Amdt. 71–33, 70 FR 23004, May 3, 2005]

§ 71.13 Classification of Air Traffic Service (ATS) routes.

Unless otherwise specified, ATS routes are classified as follows:

(a) In subpart A of this part:

(1) Jet routes.

(2) Area navigation (RNAV) routes.

(b) In subpart E of this part:

(1) VOR Federal airways.

(2) Colored Federal airways.

(i) Green Federal airways.

(ii) Amber Federal airways.

(iii) Red Federal airways.

(iv) Blue Federal airways.

(3) Area navigation (RNAV) routes.

[Doc. No. FAA–2003–14698, 68 FR 16947, Apr. 8, 2003]

§ 71.15 Designation of jet routes and VOR Federal airways.

Unless otherwise specified, the place names appearing in the descriptions of airspace areas designated as jet routes in subpart A of FAA Order 7400.9R, and as VOR Federal airways in subpart E of FAA Order 7400.9R, are the names of VOR or VORTAC navigation aids. FAA Order 7400.9R is incorporated by reference in § 71.1.

[Doc. No. FAA–2003–14698, 68 FR 16947, Apr. 8, 2003, as amended by Amdt. 71–37, 70 FR 52013, Sept. 1, 2005; Amdt. 71–38, 71 FR 51994, Sept. 1, 2006; Amdt. 71–39, 72 FR 49191, Aug. 28, 2007]

EFFECTIVE DATE NOTE: By Doc. No. 29334, 72 FR 49191, Aug. 28, 2007, § 71.15 was amended by removing the words ''FAA Order 7400.9P'' and adding, in their place, the words ''FAA Order 7400.9R'', effective Sept. 15, 2007 through Sept. 15, 2008.

Subpart A—Class A Airspace

§ 71.31 Class A airspace.

The airspace descriptions contained in § 71.33 and the routes contained in subpart A of FAA Order 7400.9R (incorporated by reference, see § 71.1) are designated as Class A airspace within which all pilots and aircraft are subject to the rating requirements, operating rules, and equipment requirements of part 91 of this chapter.

[Amdt. 71–14, 56 FR 65654, Dec. 17, 1991]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting § 71.31, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and on GPO Access.

EFFECTIVE DATE NOTE: By Doc. No. 29334, 72 FR 49191, Aug. 28, 2007, § 71.31 was amended by removing the words ''FAA Order 7400.9P'' and adding, in their place, the words ''FAA Order 7400.9R'', effective Sept. 15, 2007 through Sept. 15, 2008.

§ 71.33 Class A airspace areas.

(a) That airspace of the United States, including that airspace overlying the waters within 12 nautical miles of the coast of the 48 contiguous States, from 18,000 feet MSL to and including FL600 excluding the states of Alaska and Hawaii, Santa Barbara Island, Farallon Island, and the airspace south of latitude 25°04′00″ North.

(b) That airspace of the State of Alaska, including that airspace overlying the waters within 12 nautical miles of the coast, from 18,000 feet MSL to and including FL600 but not including the airspace less than 1,500 feet above the surface of the earth and the Alaska Peninsula west of longitude 160°00′00″ West.

(c) The airspace areas listed as offshore airspace areas in subpart A of FAA Order 7400.9R (incorporated by reference, see § 71.1) that are designated in international airspace within areas of domestic radio navigational signal or ATC radar coverage, and within which domestic ATC procedures are applied.

[Amdt. 71–14, 56 FR 65654, Dec. 17, 1991]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting § 71.33, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and on GPO Access.

EFFECTIVE DATE NOTE: By Doc. No. 29334, 72 FR 49191, Aug. 28, 2007, § 71.33 was amended by removing the words ''FAA Order 7400.9P'' and adding, in their place, the words ''FAA Order 7400.9R'', effective Sept. 15, 2007 through Sept. 15, 2008.

Subpart B—Class B Airspace

§ 71.41 Class B airspace.

The Class B airspace areas listed in subpart B of FAA Order 7400.9R (incorporated by reference, see § 71.1) consist of specified airspace within which all aircraft operators are subject to the minimum pilot qualification requirements, operating rules, and aircraft equipment requirements of part 91 of this chapter. Each Class B airspace area designated for an airport in subpart B of FAA Order 7400.9R (incorporated by reference, see § 71.1) contains at least one primary airport around which the airspace is designated.

[Amdt. 71–14, 56 FR 65654, Dec. 17, 1991]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting § 71.41, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and on GPO Access.

EFFECTIVE DATE NOTE: By Doc. No. 29334, 72 FR 49191, Aug. 28, 2007, § 71.41 was ameded by removing the words ''FAA Order 7400.9P'' and adding, in their place, the words ''FAA Order 7400.9R'', effective Sept. 15, 2007 through Sept. 15, 2008.

Subpart C—Class C Airspace

§ 71.51 Class C airspace.

The Class C airspace areas listed in subpart C of FAA Order 7400.9R (incorporated by reference, see § 71.1) consist of specified airspace within which all aircraft operators are subject to operating rules and equipment requirements specified in part 91 of this chapter. Each Class C airspace area designated for an airport in subpart C of FAA Order 7400.9R (incorporated by reference, see § 71.1) contains at least one primary airport around which the airspace is designated

[Amdt. 71–14, 56 FR 65654, Dec. 17, 1991]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting § 71.51, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and on GPO Access.

EFFECTIVE DATE NOTE: By Doc. No. 29334, 72 FR 49191, Aug. 28, 2007, § 71.51 was amended by removing the words ''FAA Order 7400.9P'' and adding, in their place, the words ''FAA Order 7400.9R'', effective Sept. 15, 2007 through Sept. 15, 2008.

Subpart D—Class D Airspace

§ 71.61 Class D airspace.

The Class D airspace areas listed in subpart D of FAA Order 7400.9R (incorporated by reference, see § 71.1) consist of specified airspace within which all

aircraft operators are subject to operating rules and equipment requirements specified in part 91 of this chapter. Each Class D airspace area designated for an airport in subpart D of FAA Order 7400.9R (incorporated by reference, see §71.1) contains at least one primary airport around which the airspace is designated.

[Amdt. 71–14, 56 FR 65654, Dec. 17, 1991]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting §71.61, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and on GPO Access.

EFFECTIVE DATE NOTE: By Doc. No. 29334, 72 FR 49191, Aug. 28, 2007, §71.61 was amended by removing the words ''FAA Order 7400.9P'' and adding, in their place, the words ''FAA Order 7400.9R'', effective Sept. 15, 2007 through Sept. 15, 2008.

Subpart E—Class E Airspace

§71.71 Class E airspace.

Class E Airspace consists of:

(a) The airspace of the United States, including that airspace overlying the waters within 12 nautical miles of the coast of the 48 contiguous states and Alaska, extending upward from 14,500 feet MSL up to, but not including 18,000 feet MSL, and the airspace above FL600, excluding—

(1) The Alaska peninsula west of longitude 160°00′00″W.; and

(2) The airspace below 1,500 feet above the surface of the earth.

(b) The airspace areas designated for an airport in subpart E of FAA Order 7400.9R (incorporated by reference, see §71.1) within which all aircraft operators are subject to the operating rules specified in part 91 of this chapter.

(c) The airspace areas listed as domestic airspace areas in subpart E of FAA Order 7400.9R (incorporated by reference, see §71.1) which extend upward from 700 feet or more above the surface of the earth when designated in conjunction with an airport for which an approved instrument approach procedure has been prescribed, or from 1,200 feet or more above the surface of the earth for the purpose of transitioning to or from the terminal or en route environment. When such areas are designated in conjunction with airways or routes, the extent of such designation has the lateral extent identical to that of a Federal airway and extends upward from 1,200 feet or higher. Unless otherwise specified, the airspace areas in the paragraph extend upward from 1,200 feet or higher above the surface to, but not including, 14,500 feet MSL.

(d) The Federal airways described in subpart E of FAA Order 7400.9R (incorporated by reference, see §71.1).

(e) The airspace areas listed as en route domestic airspace areas in subpart E of FAA Order 7400.9R (incorporated by reference, see §71.1). Unless otherwise specified, each airspace area has a lateral extent identical to that of a Federal airway and extends unward from 1,200 feet above the surface of the earth to the overlying or adjacent controlled airspace.

(f) The airspace areas listed as offshore airspace areas in subpart E of FAA Order 7400.9R (incorporated by reference, see §71.1) that are designated in international airspace within areas of domestic radio navigational signal or ATC radar coverage, and within which domestic ATC procedures are applied. Unless otherwise specified, each airspace area extends upward from a specified, altitude up to, but not including, 18,000 feet MSL.

[Amdt. 71–14, 56 FR 65654, Dec. 17, 1991]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting §71.71, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and on GPO Access.

EFFECTIVE DATE NOTE: By Doc. No. 29334, 72 FR 49191, Aug. 28, 2007, §71.71 was amended by removing the words ''FAA Order 7400.9P'' and adding, in their place, the words ''FAA Order 7400.9R'' from paragraphs (b) through (f), effective Sept. 15, 2007 through Sept. 15, 2008.

Subparts F–G [Reserved]

Subpart H—Reporting Points

§71.901 Applicability.

Unless otherwise designated:

(a) Each reporting point listed in subpart H of FAA Order 7400.9R (incorporated by reference, see §71.1) applies to all directions of flight. In any case where a geographic location is designated as a reporting point for less than all airways passing through that

point, or for a particular direction of flight along an airway only, it is so indicated by including the airways or direction of flight in the designation of geographical location.

(b) Place names appearing in the reporting point descriptions indicate VOR or VORTAC facilities identified by those names.

[Amdt. 71–14, 56 FR 65654, Dec. 17, 1991]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting §71.901, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and on GPO Access.

EFFECTIVE DATE NOTE: By Doc. No. 29334, 72 FR 49191, Aug. 28, 2007, §71.901 was amended by removing the words ''FAA Order 7400.9P'' and adding, in their place, the words ''FAA Order 7400.9R'', effective Sept. 15, 2007 through Sept. 15, 2008.

PART 73—SPECIAL USE AIRSPACE

Subpart A—General

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73.3 Special use airspace.
73.5 Bearings; radials; miles.

Subpart B—Restricted Areas

73.11 Applicability.
73.13 Restrictions.
73.15 Using agency.
73.17 Controlling agency.
73.19 Reports by using agency.

Subpart C—Prohibited Areas

73.81 Applicability.
73.83 Restrictions.
73.85 Using agency.

AUTHORITY: 49 U.S.C. 106(g), 40103, 40113, 40120; E.O. 10854, 24 FR 9565, 3 CFR, 1959–1963 Comp., p. 389.

SOURCE: 46 FR 779, Jan. 2, 1981, unless otherwise noted.

Subpart A—General

§73.1 Applicability.

The airspace that is described in subpart B and subpart C of this part is designated as special use airspace. These parts prescribe the requirements for the use of that airspace.

§73.3 Special use airspace.

(a) Special use airspace consists of airspace of defined dimensions identified by an area on the surface of the earth wherein activities must be confined because of their nature, or wherein limitations are imposed upon aircraft operations that are not a part of those activities, or both.

(b) The vertical limits of special use airspace are measured by designated altitude floors and ceilings expressed as flight levels or as feet above mean sea level. Unless otherwise specified, the word ''to'' (an altitude or flight level) means ''to and including'' (that altitude or flight level).

(c) The horizontal limits of special use airspace are measured by boundaries described by geographic coordinates or other appropriate references that clearly define their perimeter.

(d) The period of time during which a designation of special use airspace is in effect is stated in the designation.

§73.5 Bearings; radials; miles.

(a) All bearings and radials in this part are true from point of origin.

(b) Unless otherwise specified, all mileages in this part are stated as statute miles.

Subpart B—Restricted Areas

§73.11 Applicability.

This subpart designates restricted areas and prescribes limitations on the operation of aircraft within them.

§73.13 Restrictions.

No person may operate an aircraft within a restricted area between the designated altitudes and during the time of designation, unless he has the advance permission of

(a) The using agency described in §73.15; or

(b) The controlling agency described in §73.17.

§73.15 Using agency.

(a) For the purposes of this subpart, the following are using agencies;

(1) The agency, organization, or military command whose activity within a restricted area necessitated the area being so designated.

(b) Upon the request of the FAA, the using agency shall execute a letter establishing procedures for joint use of a restricted area by the using agency and the controlling agency, under which the using agency would notify the controlling agency whenever the controlling agency may grant permission for transit through the restricted area in accordance with the terms of the letter.

(c) The using agency shall—

(1) Schedule activities within the restricted area;

(2) Authorize transit through, or flight within, the restricted area as feasible; and

(3) Contain within the restricted area all activities conducted therein in accordance with the purpose for which it was designated.

§ 73.17 Controlling agency.

For the purposes of this part, the controlling agency is the FAA facility that may authorize transit through or flight within a restricted area in accordance with a joint-use letter issued under § 73.15.

§ 73.19 Reports by using agency.

(a) Each using agency shall prepare a report on the use of each restricted area assigned thereto during any part of the preceding 12-month period ended September 30, and transmit it by the following January 31 of each year to the Manager, Air Traffic Division in the regional office of the Federal Aviation Administration having jurisdiction over the area in which the restricted area is located, with a copy to the Program Director for Air Traffic Airspace Management, Federal Aviation Administration, Washington, DC 20591.

(b) In the report under this section the using agency shall:

(1) State the name and number of the restricted area as published in this part, and the period covered by the report.

(2) State the activities (including average daily number of operations if appropriate) conducted in the area, and any other pertinent information concerning current and future electronic monitoring devices.

(3) State the number of hours daily, the days of the week, and the number of weeks during the year that the area was used.

(4) For restricted areas having a joint-use designation, also state the number of hours daily, the days of the week, and the number of weeks during the year that the restricted area was released to the controlling agency for public use.

(5) State the mean sea level altitudes or flight levels (whichever is appropriate) used in aircraft operations and the maximum and average ordinate of surface firing (expressed in feet, mean sea level altitude) used on a daily, weekly, and yearly basis.

(6) Include a chart of the area (of optional scale and design) depicting, if used, aircraft operating areas, flight patterns, ordnance delivery areas, surface firing points, and target, fan, and impact areas. After once submitting an appropriate chart, subsequent annual charts are not required unless there is a change in the area, activity or altitude (or flight levels) used, which might alter the depiction of the activities originally reported. If no change is to be submitted, a statement indicating ''no change'' shall be included in the report.

(7) Include any other information not otherwise required under this part which is considered pertinent to activities carried on in the restricted area.

(c) If it is determined that the information submitted under paragraph (b) of this section is not sufficient to evaluate the nature and extent of the use of a restricted area, the FAA may request the using agency to submit supplementary reports. Within 60 days after receiving a request for additional information, the using agency shall submit such information as the Program Director for Air Traffic Airspace Management considers appropriate. Supplementary reports must be sent to the FAA officials designated in paragraph (a) of this section.

(Secs. 307 and 313(a), Federal Aviation Act of 1958 (49 U.S.C. 1348 and 1354(a)))

[Doc. No. 15379, 42 FR 54798, Oct. 11, 1977, as amended by Amdt. 73–5, 54 FR 39292, Sept. 25, 1989; Amdt. 73–6, 58 FR 42001, Aug. 6, 1993; Amdt. 73–8, 61 FR 26435, May 28, 1996; Amdt. 73–8, 63 FR 16890, Apr. 7, 1998]

EDITORIAL NOTE: The restricted areas formerly carried as §§ 608.21 to 608.72 of this title were transferred to part 73 as §§ 73.21 to 73.72 under subpart B but are not carried in the Code of Federal Regulations. For FEDERAL REGISTER citations affecting these restricted areas, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and on GPO Access.

Subpart C—Prohibited Areas

§ 73.81 Applicability.

This subpart designates prohibited areas and prescribes limitations on the operation of aircraft therein.

§ 73.83 Restrictions.

No person may operate an aircraft within a prohibited area unless authorization has been granted by the using agency.

§ 73.85 Using agency.

For the purpose of this subpart, the using agency is the agency, organization or military command that established the requirements for the prohibited area.

EDITORIAL NOTE: Sections 73.87 through 73.99 are reserved for descriptions of designated prohibited areas. For FEDERAL REGISTER citations affecting these prohibited areas, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and on GPO Access.

PART 75 [RESERVED]

PART 77—OBJECTS AFFECTING NAVIGABLE AIRSPACE

SPECIAL FEDERAL AVIATION REGULATION NO. 98

Subpart A—General

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77.13 Construction or alteration requiring notice.
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77.21 Scope.
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77.65 Recommendations by parties.
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77.71 Scope.
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77.75 Establishment of antenna farm areas.

AUTHORITY: 49 U.S.C. 106(g), 40103, 40113–40114, 44502, 44701, 44718, 46101–46102, 46104.

SOURCE: Docket No. 1882, 30 FR 1839, Feb. 10, 1965, unless otherwise noted.

SPECIAL FEDERAL AVIATION REGULATION NO. 98—CONSTRUCTION OR ALTERATION IN THE VICINITY OF THE PRIVATE RESIDENCE OF THE PRESIDENT OF THE UNITED STATES

Section 1. *Construction or alteration near the private residence of the President.* This section applies to:

(a) Any object of natural growth, terrain, or permanent or temporary construction or alteration, including appurtenances and equipment or materials used therein.

(b) Any apparatus of a permanent or temporary character.

Section 2. *Notice of Construction/Alteration.* Proponents proposing construction or alteration of any object described in Section 1 that would exceed 50 feet AGL and is within 3 NM radius of lat. 31°34′45 N, long. 97°32′00 W shall notify the Administrator in the form and manner prescribed in 14 CFR 77.17.

Section 3. *Obstruction Standard.*

(a) Any object described in Section 1 that would exceed 50 feet AGL and is within 3 NM radius of lat. 31°34′45N, long. 97°32′00W is an obstruction and is presumed to adversely affect aviation safety and therefore is a hazard to air navigation.

(b) A Determination of No Hazard will be issued only when the FAA determines, based upon submitted information and in consultation with the USMC and the SSPPD, that the construction or alteration will not adversely affect safety and would not result in a hazard to air navigation.

Section 4. *Termination.* This rule will terminate at the end of President George W. Bush's term in office.

[Doc. No. FAA–2003–14972, 68 FR 19732, Apr. 22, 2003; 68 FR 23584, May 5, 2003]

Subpart A—General

§ 77.1 Scope.

This part:

(a) Establishes standards for determining obstructions in navigable airspace;

(b) Sets forth the requirements for notice to the Administrator of certain proposed construction or alteration;

(c) Provides for aeronautical studies of obstructions to air navigation, to determine their effect on the safe and efficient use of airspace;

(d) Provides for public hearings on the hazardous effect of proposed construction or alteration on air navigation; and

(e) Provides for establishing antenna farm areas.

§ 77.2 Definition of terms.

For the purpose of this part:

Airport available for public use means an airport that is open to the general public with or without a prior request to use the airport.

A seaplane base is considered to be an airport only if its sea lanes are outlined by visual markers.

Nonprecision instrument runway means a runway having an existing instrument approach procedure utilizing air navigation facilities with only horizontal guidance, or area type navigation equipment, for which a straight-in nonprecision instrument approach procedure has been approved, or planned, and for which no precision approach facilities are planned, or indicated on an FAA planning document or military service military airport planning document.

Precision instrument runway means a runway having an existing instrument approach procedure utilizing an Instrument Landing System (ILS), or a Precision Approach Radar (PAR). It also means a runway for which a precision approach system is planned and is so indicated by an FAA approved airport layout plan; a military service approved military airport layout plan; any other FAA planning document, or military service military airport planning document.

Utility runway means a runway that is constructed for and intended to be used by propeller driven aircraft of 12,500 pounds maximum gross weight and less.

Visual runway means a runway intended solely for the operation of aircraft using visual approach procedures, with no straight-in instrument approach procedure and no instrument designation indicated on an FAA approved airport layout plan, a military service approved military airport layout plan, or by any planning document submitted to the FAA by competent authority.

[Doc. No. 8276, 33 FR 5256, Apr. 2, 1968, as amended by Amdt. 77–9, 36 FR 5969, Apr. 1, 1971]

§ 77.3 Standards.

(a) The standards established in this part for determining obstructions to air navigation are used by the Administrator in:

(1) Administering the Federal-aid Airport Program and the Surplus Airport Program;

(2) Transferring property of the United States under section 16 of the Federal Airport Act;

(3) Developing technical standards and guidance in the design and construction of airports; and

(4) Imposing requirements for public notice of the construction or alteration of any structure where notice will promote air safety.

(b) The standards used by the Administrator in the establishment of flight procedures and aircraft operational limitations are not set forth in this part but are contained in other publications of the Administrator.

[Doc. No. 1882, 30 FR 1839, Feb. 10, 1965, as amended by Amdt. 77–9, 36 FR 5970, Apr. 1, 1971]

§ 77.5 Kinds of objects affected.

This part applies to:

(a) Any object of natural growth, terrain, or permanent or temporary construction or alteration, including equipment or materials used therein, and apparatus of a permanent or temporary character; and

(b) Alteration of any permanent or temporary existing structure by a change in its height (including appurtenances), or lateral dimensions, including equipment or materials used therein.

Subpart B—Notice of Construction or Alteration

§ 77.11 Scope.

(a) This subpart requires each person proposing any kind of construction or alteration described in § 77.13(a) to give adequate notice to the Administrator. It specifies the locations and dimensions of the construction or alteration for which notice is required and prescribes the form and manner of the notice. It also requires supplemental notices 48 hours before the start and upon the completion of certain construction or alteration that was the subject of a notice under § 77.13(a).

(b) Notices received under this subpart provide a basis for:

(1) Evaluating the effect of the construction or alteration on operational procedures and proposed operational procedures;

(2) Determinations of the possible hazardous effect of the proposed construction or alteration on air navigation;

(3) Recommendations for identifying the construction or alteration in accordance with the current Federal Aviation Administration Advisory Circular AC 70/7460–1 entitled ''Obstruction Marking and Lighting,'' which is available without charge from the Department of Transportation, Distribution Unit, TAD 484.3, Washington, DC 20590.

(4) Determining other appropriate measures to be applied for continued safety of air navigation; and

(5) Charting and other notification to airmen of the construction or alteration.

(Sec. 6, 80 Stat. 937, 49 U.S.C. 1655)

[Doc. No. 1882, 30 FR 1839, Feb. 10, 1965, as amended by Amdt. 77–8, 33 FR 18614, Dec. 17, 1968; Amdt. 77–10, 37 FR 4705, Mar. 4, 1972]

§ 77.13 Construction or alteration requiring notice.

(a) Except as provided in § 77.15, each sponsor who proposes any of the following construction or alteration shall notify the Administrator in the form and manner prescribed in § 77.17:

(1) Any construction or alteration of more than 200 feet in height above the ground level at its site.

(2) Any construction or alteration of greater height than an imaginary surface extending outward and upward at one of the following slopes:

(i) 100 to 1 for a horizontal distance of 20,000 feet from the nearest point of the nearest runway of each airport specified in paragraph (a)(5) of this section with at least one runway more than 3,200 feet in actual length, excluding heliports.

(ii) 50 to 1 for a horizontal distance of 10,000 feet from the nearest point of the nearest runway of each airport specified in paragraph (a)(5) of this section with its longest runway no more than 3,200 feet in actual length, excluding heliports.

(iii) 25 to 1 for a horizontal distance of 5,000 feet from the nearest point of the nearest landing and takeoff area of each heliport specified in paragraph (a)(5) of this section.

(3) Any highway, railroad, or other traverse way for mobile objects, of a height which, if adjusted upward 17 feet for an Interstate Highway that is part of the National System of Military and Interstate Highways where overcrossings are designed for a minimum of 17 feet vertical distance, 15 feet for any other public roadway, 10 feet or the height of the highest mobile object that would normally traverse the road, whichever is greater, for a private road, 23 feet for a railroad, and for a waterway or any other traverse way not previously mentioned, an amount equal to the height of the highest mobile object that would normally traverse it, would exceed a standard of paragraph (a) (1) or (2) of this section.

(4) When requested by the FAA, any construction or alteration that would be in an instrument approach area (defined in the FAA standards governing instrument approach procedures) and available information indicates it might exceed a standard of subpart C of this part.

(5) Any construction or alteration on any of the following airports (including heliports):

(i) An airport that is available for public use and is listed in the Airport Directory of the current Airman's Information Manual or in either the Alaska or Pacific Airman's Guide and Chart Supplement.

(ii) An airport under construction, that is the subject of a notice or proposal on file with the Federal Aviation Administration, and, except for military airports, it is clearly indicated that that airport will be available for public use.

(iii) An airport that is operated by an armed force of the United States.

(b) Each sponsor who proposes construction or alteration that is the subject of a notice under paragraph (a) of this section and is advised by an FAA regional office that a supplemental notice is required shall submit that notice on a prescribed form to be received by the FAA regional office at least 48 hours before the start of the construction or alteration.

(c) Each sponsor who undertakes construction or alteration that is the subject of a notice under paragraph (a) of this section shall, within 5 days after that construction or alteration reaches its greatest height, submit a supplemental notice on a prescribed form to the FAA regional office having jurisdiction over the region involved, if—

(1) The construction or alteration is more than 200 feet above the surface level of its site; or

(2) An FAA regional office advises him that submission of the form is required.

[Doc. No. 8276, 33 FR 5256, Apr. 2, 1968, as amended by Amdt. 77–9, 36 FR 5970, Apr. 1, 1971; Amdt. 77–10, 37 FR 4705, Mar. 4, 1972]

§ 77.15 Construction or alteration not requiring notice.

No person is required to notify the Administrator for any of the following construction or alteration:

(a) Any object that would be shielded by existing structures of a permanent and substantial character or by natural terrain or topographic features of equal or greater height, and would be located in the congested area of a city, town, or settlement where it is evident beyond all reasonable doubt that the structure so shielded will not adversely affect safety in air navigation.

(b) Any antenna structure of 20 feet or less in height except one that would increase the height of another antenna structure.

(c) Any air navigation facility, airport visual approach or landing aid, aircraft arresting device, or meteorological device, of a type approved by the Administrator, or an appropriate military service on military airports, the location and height of which is fixed by its functional purpose.

(d) Any construction or alteration for which notice is required by any other FAA regulation.

[Doc. No. 1882, 30 FR 1839, Feb. 10, 1965, as amended by Amdt. 77–5, 33 FR 5257, Apr. 2, 1968; Amdt. 77–9, 36 FR 5970, Apr. 1, 1971]

§ 77.17 Form and time of notice.

(a) Each person who is required to notify the Administrator under § 77.13(a) shall send one executed form set (four copies) of FAA Form 7460–1, Notice of Proposed Construction or Alteration, to the Manager, Air Traffic Division, FAA Regional Office having jurisdiction over the area within which the construction or alteration will be

located. Copies of FAA Form 7460–1 may be obtained from the headquarters of the Federal Aviation Administration and the regional offices.

(b) The notice required under § 77.13(a) (1) through (4) must be submitted at least 30 days before the earlier of the following dates:

(1) The date the proposed construction or alteration is to begin.

(2) The date an application for a construction permit is to be filed.

However, a notice relating to proposed construction or alteration that is subject to the licensing requirements of the Federal Communications Act may be sent to FAA at the same time the application for construction is filed with the Federal Communications Commission, or at any time before that filing.

(c) A proposed structure or an alteration to an existing structure that exceeds 2,000 feet in height above the ground will be presumed to be a hazard to air navigation and to result in an inefficient utilization of airspace and the applicant has the burden of overcoming that presumption. Each notice submitted under the pertinent provisions of this part 77 proposing a structure in excess of 2,000 feet above ground, or an alteration that will make an existing structure exceed that height, must contain a detailed showing, directed to meeting this burden. Only in exceptional cases, where the FAA concludes that a clear and compelling showing has been made that it would not result in an inefficient utilization of the airspace and would not result in a hazard to air navigation, will a determination of no hazard be issued.

(d) In the case of an emergency involving essential public services, public health, or public safety that requires immediate construction or alteration, the 30-day requirement in paragraph (b) of this section does not apply and the notice may be sent by telephone, telegraph, or other expeditious means, with an executed FAA Form 7460–1 submitted within 5 days thereafter. Outside normal business hours, emergency notices by telephone or telegraph may be submitted to the nearest FAA Flight Service Station.

(e) Each person who is required to notify the Administrator by paragraph (b) or (c) of § 77.13, or both, shall send an executed copy of FAA Form 117–1, Notice of Progress of Construction or Alteration, to the Manager, Air Traffic Division, FAA Regional Office having jurisdiction over the area involved.

(Sec. 6, 80 Stat. 937, 49 U.S.C. 1655)

[Doc. No. 1882, 30 FR 1839, Feb. 10, 1965, as amended by Amdt. 77–2, 31 FR 9449, July 12, 1966; Amdt. 77–8, 33 FR 18614, Dec. 17, 1968; Amdt. 77–10, 37 FR 4705, Mar. 4, 1972; Amdt. 77–11, 54 FR 39292, Sept. 25, 1989]

§ 77.19 Acknowledgment of notice.

(a) The FAA acknowledges in writing the receipt of each notice submitted under § 77.13(a).

(b) If the construction or alteration proposed in a notice is one for which lighting or marking standards are prescribed in the FAA Advisory Circular AC 70/7460–1, entitled ''Obstruction Marking and Lighting,'' the acknowledgment contains a statement to that effect and information on how the structure should be marked and lighted in accordance with the manual.

(c) The acknowledgment states that an aeronautical study of the proposed construction or alteration has resulted in a determination that the construction or alteration:

(1) Would not exceed any standard of subpart C and would not be a hazard to air navigation;

(2) Would exceed a standard of subpart C but would not be a hazard to air navigation; or

(3) Would exceed a standard of subpart C and further aeronautical study is necessary to determine whether it would be a hazard to air navigation, that the sponsor may request within 30 days that further study, and that, pending completion of any further study, it is presumed the construction or alteration would be a hazard to air navigation.

[Doc. No. 1882, 30 FR 1839, Feb. 10, 1965, as amended by Amdt. 77–4, 32 FR 12997, Sept. 13, 1967; Amdt. 77–5, 33 FR 5257, Apr. 2, 1968]

Subpart C—Obstruction Standards

§ 77.21 Scope.

(a) This subpart establishes standards for determining obstructions to air navigation. It applies to existing

and proposed manmade objects, objects of natural growth, and terrain. The standards apply to the use of navigable airspace by aircraft and to existing air navigation facilities, such as an air navigation aid, airport, Federal airway, instrument approach or departure procedure, or approved off-airway route. Additionally, they apply to a planned facility or use, or a change in an existing facility or use, if a proposal therefor is on file with the Federal Aviation Administration or an appropriate military service on the date the notice required by § 77.13(a) is filed.

(b) At those airports having defined runways with specially prepared hard surfaces, the primary surface for each such runway extends 200 feet beyond each end of the runway. At those airports having defined strips or pathways that are used regularly for the taking off and landing of aircraft and have been designated by appropriate authority as runways, but do not have specially prepared hard surfaces, each end of the primary surface for each such runway shall coincide with the corresponding end of the runway. At those airports, excluding seaplane bases, having a defined landing and takeoff area with no defined pathways for the landing and taking off of aircraft, a determination shall be made as to which portions of the landing and takeoff area are regularly used as landing and takeoff pathways. Those pathways so determined shall be considered runways and an appropriate primary surface as defined in § 77.25(c) will be considered as being longitudinally centered on each runway so determined, and each end of that primary surface shall coincide with the corresponding end of that runway.

(c) The standards in this subpart apply to the effect of construction or alteration proposals upon an airport if, at the time of filing of the notice required by § 77.13(a), that airport is—

(1) Available for public use and is listed in the Airport Directory of the current Airman's Information Manual or in either the Alaska or Pacific Airman's Guide and Chart Supplement; or

(2) A planned or proposed airport or an airport under construction, that is the subject of a notice or proposal on file with the Federal Aviation Administration, and, except for military airports, it is clearly indicated that that airport will be available for public use; or,

(3) An airport that is operated by an armed force of the United States.

[Doc. No. 1882, 30 FR 1839, Feb. 10, 1965, as amended by Amdt. 77–5, 33 FR 5257, Apr. 2, 1968; Amdt. 77–9, 36 FR 5970, Apr. 1, 1971]

§ 77.23 Standards for determining obstructions.

(a) An existing object, including a mobile object, is, and a future object would be, an obstruction to air navigation if it is of greater height than any of the following heights or surfaces:

(1) A height of 500 feet above ground level at the site of the object.

(2) A height that is 200 feet above ground level or above the established airport elevation, whichever is higher, within 3 nautical miles of the established reference point of an airport, excluding heliports, with its longest runway more than 3,200 feet in actual length, and that height increases in the proportion of 100 feet for each additional nautical mile of distance from the airport up to a maximum of 500 feet.

(3) A height within a terminal obstacle clearance area, including an initial approach segment, a departure area, and a circling approach area, which would result in the vertical distance between any point on the object and an established minimum instrument flight altitude within that area or segment to be less than the required obstacle clearance.

(4) A height within an en route obstacle clearance area, including turn and termination areas, of a Federal airway or approved off-airway route, that would increase the minimum obstacle clearance altitude.

(5) The surface of a takeoff and landing area of an airport or any imaginary surface established under § 77.25, § 77.28, or § 77.29. However, no part of the takeoff or landing area itself will be considered an obstruction.

(b) Except for traverse ways on or near an airport with an operative ground traffic control service, furnished by an air traffic control tower or by the airport management and coordinated with the air traffic control

service, the standards of paragraph (a) of this section apply to traverse ways used or to be used for the passage of mobile objects only after the heights of these traverse ways are increased by:

(1) Seventeen feet for an Interstate Highway that is part of the National System of Military and Interstate Highways where overcrossings are designed for a minimum of 17 feet vertical distance.

(2) Fifteen feet for any other public roadway.

(3) Ten feet or the height of the highest mobile object that would normally traverse the road, whichever is greater, for a private road.

(4) Twenty-three feet for a railroad, and,

(5) For a waterway or any other traverse way not previously mentioned, an amount equal to the height of the highest mobile object that would normally traverse it.

[Doc. No. 10183, 36 FR 5970, Apr. 1, 1971]

§ 77.25 Civil airport imaginary surfaces.

The following civil airport imaginary surfaces are established with relation to the airport and to each runway. The size of each such imaginary surface is based on the category of each runway according to the type of approach available or planned for that runway. The slope and dimensions of the approach surface applied to each end of a runway are determined by the most precise approach existing or planned for that runway end.

(a) *Horizontal surface.* A horizontal plane 150 feet above the established airport elevation, the perimeter of which is constructed by swinging arcs of specified radii from the center of each end of the primary surface of each runway of each airport and connecting the adjacent arcs by lines tangent to those arcs. The radius of each arc is:

(1) 5,000 feet for all runways designated as utility or visual;

(2) 10,000 feet for all other runways. The radius of the arc specified for each end of a runway will have the same arithmetical value. That value will be the highest determined for either end of the runway. When a 5,000-foot arc is encompassed by tangents connecting two adjacent 10,000-foot arcs, the 5,000-foot arc shall be disregarded on the construction of the perimeter of the horizontal surface.

(b) *Conical surface.* A surface extending outward and upward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

(c) *Primary surface.* A surface longitudinally centered on a runway. When the runway has a specially prepared hard surface, the primary surface extends 200 feet beyond each end of that runway; but when the runway has no specially prepared hard surface, or planned hard surface, the primary surface ends at each end of that runway. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline. The width of a primary surface is:

(1) 250 feet for utility runways having only visual approaches.

(2) 500 feet for utility runways having nonprecision instrument approaches.

(3) For other than utility runways the width is:

(i) 500 feet for visual runways having only visual approaches.

(ii) 500 feet for nonprecision instrument runways having visibility minimums greater than three-fourths statute mile.

(iii) 1,000 feet for a nonprecision instrument runway having a nonprecision instrument approach with visibility minimums as low as three-fourths of a statute mile, and for precision instrument runways.

The width of the primary surface of a runway will be that width prescribed in this section for the most precise approach existing or planned for either end of that runway.

(d) *Approach surface.* A surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the primary surface. An approach surface is applied to each end of each runway based upon the type of approach available or planned for that runway end.

(1) The inner edge of the approach surface is the same width as the primary surface and it expands uniformly to a width of:

(i) 1,250 feet for that end of a utility runway with only visual approaches;

(ii) 1,500 feet for that end of a runway other than a utility runway with only visual approaches;

(iii) 2,000 feet for that end of a utility runway with a nonprecision instrument approach;

(iv) 3,500 feet for that end of a nonprecision instrument runway other than utility, having visibility minimums greater than three-fourths of a statute mile;

(v) 4,000 feet for that end of a nonprecision instrument runway, other than utility, having a nonprecision instrument approach with visibility minimums as low as three-fourths statute mile; and

(vi) 16,000 feet for precision instrument runways.

(2) The approach surface extends for a horizontal distance of:

(i) 5,000 feet at a slope of 20 to 1 for all utility and visual runways;

(ii) 10,000 feet at a slope of 34 to 1 for all nonprecision instrument runways other than utility; and,

(iii) 10,000 feet at a slope of 50 to 1 with an additional 40,000 feet at a slope of 40 to 1 for all precision instrument runways.

(3) The outer width of an approach surface to an end of a runway will be that width prescribed in this subsection for the most precise approach existing or planned for that runway end.

(e) *Transitional surface.* These surfaces extend outward and upward at right angles to the runway centerline and the runway centerline extended at a slope of 7 to 1 from the sides of the primary surface and from the sides of the approach surfaces. Transitional surfaces for those portions of the precision approach surface which project through and beyond the limits of the conical surface, extend a distance of 5,000 feet measured horizontally from the edge of the approach surface and at right angles to the runway centerline.

[Doc. No. 10183, 36 FR 5970, Apr. 1, 1971; 36 FR 6741, Apr. 8, 1971]

§ 77.27 [Reserved]

§ 77.28 Military airport imaginary surfaces.

(a) *Related to airport reference points.* These surfaces apply to all military airports. For the purposes of this section a military airport is any airport operated by an armed force of the United States.

(1) *Inner horizontal surface.* A plane is oval in shape at a height of 150 feet above the established airfield elevation. The plane is constructed by scribing an arc with a radius of 7,500 feet about the centerline at the end of each runway and interconnecting these arcs with tangents.

(2) *Conical surface.* A surface extending from the periphery of the inner horizontal surface outward and upward at a slope of 20 to 1 for a horizontal distance of 7,000 feet to a height of 500 feet above the established airfield elevation.

(3) *Outer horizontal surface.* A plane, located 500 feet above the established airfield elevation, extending outward from the outer periphery of the conical surface for a horizontal distance of 30,000 feet.

(b) *Related to runways.* These surfaces apply to all military airports.

(1) *Primary surface.* A surface located on the ground or water longitudinally centered on each runway with the same length as the runway. The width of the primary surface for runways is 2,000 feet. However, at established bases where substantial construction has taken place in accordance with a previous lateral clearance criteria, the 2,000-foot width may be reduced to the former criteria.

(2) *Clear zone surface.* A surface located on the ground or water at each end of the primary surface, with a length of 1,000 feet and the same width as the primary surface.

(3) *Approach clearance surface.* An inclined plane, symmetrical about the runway centerline extended, beginning 200 feet beyond each end of the primary surface at the centerline elevation of the runway end and extending for 50,000 feet. The slope of the approach clearance surface is 50 to 1 along the runway centerline extended until it reaches an elevation of 500 feet above the established airport elevation. It then continues horizontally at this elevation to a point 50,000 feet from the point of beginning. The width of this surface at

the runway end is the same as the primary surface, it flares uniformly, and the width at 50,000 is 16,000 feet.

(4) *Transitional surfaces.* These surfaces connect the primary surfaces, the first 200 feet of the clear zone surfaces, and the approach clearance surfaces to the inner horizontal surface, conical surface, outer horizontal surface or other transitional surfaces. The slope of the transitional surface is 7 to 1 outward and upward at right angles to the runway centerline.

[Doc. No. 1882, 30 FR 1839, Feb. 10, 1965, as amended by Amdt. 77–1, 30 FR 6713, May 18, 1965; Amdt. 77–9, 36 FR 5971, Apr. 1, 1971]

§ 77.29 Airport imaginary surfaces for heliports.

(a) *Heliport primary surface.* The area of the primary surface coincides in size and shape with the designated take-off and landing area of a heliport. This surface is a horizontal plane at the elevation of the established heliport elevation.

(b) *Heliport approach surface.* The approach surface begins at each end of the heliport primary surface with the same width as the primary surface, and extends outward and upward for a horizontal distance of 4,000 feet where its width is 500 feet. The slope of the approach surface is 8 to 1 for civil heliports and 10 to 1 for military heliports.

(c) *Heliport transitional surfaces* These surfaces extend outward and upward from the lateral boundaries of the heliport primary surface and from the approach surfaces at a slope of 2 to 1 for a distance of 250 feet measured horizontally from the centerline of the primary and approach surfaces.

[Doc. No. 1882, 30 FR 1839, Feb. 10, 1965, as amended by Amdt. 77–9, 36 FR 5971, Apr. 1, 1971; 36 FR 6741, Apr. 8, 1971]

Subpart D—Aeronautical Studies of Effect of Proposed Construction on Navigable Airspace

§ 77.31 Scope.

(a) This subpart applies to the conduct of aeronautical studies of the effect of proposed construction or alteration on the use of air navigation facilities or navigable airspace by aircraft. In the aeronautical studies, present and future IFR and VFR aeronautical operations and procedures are reviewed and any possible changes in those operations and procedures and in the construction proposal that would eliminate or alleviate the conflicting demands are ascertained.

(b) The conclusion of a study made under this subpart is normally a determination as to whether the specific proposal studied would be a hazard to air navigation.

[Doc. No. 1882, 30 FR 1839, Feb. 10, 1965, as amended by Amdt. 77–6, 33 FR 10843, July 31, 1968]

§ 77.33 Initiation of studies.

(a) An aeronautical study is conducted by the FAA:

(1) Upon the request of the sponsor or any construction or alteration for which a notice is submitted under subpart B of this part, unless that construction or alteration would be located within an antenna farm area established under subpart F of this part; or

(2) Whenever the FAA determines it appropriate.

[Doc. No. 1882, 30 FR 1839, Feb. 10, 1965, as amended by Amdt. 77–4, 32 FR 12997, Sept. 13, 1967]

§ 77.35 Aeronautical studies.

(a) The Regional Manager, Air Traffic Division of the region in which the proposed construction or alteration would be located, or his designee, conducts the aeronautical study of the effect of the proposal upon the operation of air navigation facilities and the safe and efficient utilization of the navigable airspace. This study may include the physical and electromagnetic radiation effect the proposal may have on the operation of an air navigation facility.

(b) To the extent considered necessary, the Regional Manager, Air Traffic Division or his designee:

(1) Solicits comments from all interested persons;

(2) Explores objections to the proposal and attempts to develop recommendations for adjustment of aviation requirements that would accommodate the proposed construction or alteration;

(3) Examines possible revisions of the proposal that would eliminate the exceeding of the standards in subpart C of this part; and

(4) Convenes a meeting with all interested persons for the purpose of gathering all facts relevant to the effect of the proposed construction or alteration on the safe and efficient utilization of the navigable airspace.

(c) The Regional Manager, Air Traffic Division or his designee issues a determination as to whether the proposed construction or alteration would be a hazard to air navigation and sends copies to all known interested persons. This determination is final unless a petition for review is granted under § 77.37.

(d) If the sponsor revises his proposal to eliminate exceeding of the standards of subpart C of this part, or withdraws it, the Regional Manager, Air Traffic Division, or his designee, terminates the study and notifies all known interested persons.

[Doc. No. 1882, 30 FR 1839, Feb. 10, 1965, as amended by Amdt. 77–6, 33 FR 10843, July 31, 1968; Amdt. 77–11, 54 FR 39292, Sept. 25, 1989]

§ 77.37 Discretionary review.

(a) The sponsor of any proposed construction or alteration or any person who stated a substantial aeronautical objection to it in an aeronautical study, or any person who has a substantial aeronautical objection to it but was not given an opportunity to state it, may petition the Administrator, within 30 days after issuance of the determination under § 77.19 or § 77.35 or revision or extension of the determination under § 77.39(c), for a review of the determination, revision, or extension. This paragraph does not apply to any acknowledgment issued under § 77.19(c)(1).

(b) The petition must be in triplicate and contain a full statement of the basis upon which it is made.

(c) The Administrator examines each petition and decides whether a review will be made and, if so, whether it will be:

(1) A review on the basis of written materials, including study of a report by the Regional Manager, Air Traffic Division of the aeronautical study, briefs, and related submissions by any interested party, and other relevant facts, with the Administrator affirming, revising, or reversing the determination issued under § 77.19, § 77.35 or § 77.39(c); or

(2) A review on the basis of a public hearing, conducted in accordance with the procedures prescribed in subpart E of this part.

[Doc. No. 1882, 30 FR 1839, Feb. 10, 1965, as amended by Amdt. 77–3, 32 FR 6970, May 6, 1967; Amdt. 77–11, 54 FR 39292, Sept. 25, 1989]

§ 77.39 Effective period of determination of no hazard.

(a) Unless it is otherwise extended, revised, or terminated, each final determination of no hazard made under this subpart or subpart B or E of this part expires 18 months after its effective date, regardless of whether the proposed construction or alteration has been started, or on the date the proposed construction or alteration is abandoned, whichever is earlier.

(b) In any case, including a determination to which paragraph (d) of this section applies, where the proposed construction or alteration has not been started during the applicable period by actual structural work, such as the laying of a foundation, but not including excavation, any interested person may, at least 15 days before the date the final determination expires, petition the FAA official who issued the determination to:

(1) Revise the determination based on new facts that change the basis on which it was made; or

(2) Extend its effective period.

(c) The FAA official who issued the determination reviews each petition presented under paragraph (b) of this section, and revises, extends, or affirms the determination as indicated by his findings.

(d) In any case in which a final determination made under this subpart or subpart B or E of this part relates to proposed construction or alteration that may not be started unless the Federal Communications Commission issues an appropriate construction permit, the effective period of each final determination includes—

(1) The time required to apply to the Commission for a construction permit, but not more than 6 months after the

effective date of the determination; and

(2) The time necessary for the Commission to process the application except in a case where the Administrator determines a shorter effective period is required by the circumstances.

(e) If the Commission issues a construction permit, the final determination is effective until the date prescribed for completion of the construction. If the Commission refuses to issue a construction permit, the final determination expires on the date of its refusal.

[Doc. No. 1882, 30 FR 1839, Feb. 10, 1965, as amended by Amdt. 77–5, 33 FR 5257, Apr. 2, 1968]

Subpart E—Rules of Practice for Hearings Under Subpart D

§ 77.41 Scope.

This subpart applies to hearings held by the FAA under titles I, III, and X of the Federal Aviation Act of 1958 (49 U.S.C. subchapters I, III, and X), on proposed construction or alteration that affects the use of navigable airspace.

§ 77.43 Nature of hearing.

Sections 4, 5, 7, and 8 of the Administrative Procedure Act (5 U.S.C. 1003, 1004, 1006, and 1007) do not apply to hearings held on proposed construction or alteration to determine its effect on the safety of aircraft and the efficient use of navigable airspace because those hearings are factfinding in nature. As a factfinding procedure, each hearing is nonadversary and there are no formal pleadings or adverse parties.

§ 77.45 Presiding officer.

(a) If, under § 79.37, the Administrator grants a public hearing on any proposed construction or alteration covered by this part, the Director, Air Traffic Operations Service designates an FAA employee to be the presiding officer at the hearing.

(b) The presiding officer may:

(1) Give notice of the date and location of the hearing and any prehearing conference that may be held;

(2) Administer oaths and affirmations;

(3) Examine witnesses;

(4) Issue subpoenas and take depositions or have them taken;

(5) Obtain, in the form of a public record, all pertinent and relevant facts relating to the subject matter of the hearing;

(6) Rule, with the assistance of the legal officer, upon the admissibility of evidence;

(7) Regulate the course and conduct of the hearing; and

(8) Designate parties to the hearing and revoke those designations.

[Doc. No. 1882, 30 FR 1839, Feb. 10, 1965, as amended by Amdt. 77–11, 54 FR 39292, Sept. 25, 1989]

§ 77.47 Legal officer.

The Chief Counsel designates a member of his staff to serve as legal officer at each hearing under this subpart. The legal officer may examine witnesses and assist and advise the presiding officer on questions of evidence or other legal questions arising during the hearing.

[Doc. No. 1882, 30 FR 1839, Feb. 10, 1965, as amended at 38 FR 26444, Sept. 17, 1973]

§ 77.49 Notice of hearing.

In designating a time and place for a hearing under this subpart the presiding officer considers the needs of the FAA and the convenience of the parties and witnesses. The time and place of each hearing is published in the ''Notices'' section of the FEDERAL REGISTER before the date of the hearing, unless the notice is impractical or unnecessary.

§ 77.51 Parties to the hearing.

The presiding officer designates the following as parties to the hearing—

(a) The proponent of the proposed construction or alteration.

(b) Those persons whose activities would be substantially affected by the proposed construction or alteration.

§ 77.53 Prehearing conference.

(a) The presiding officer may, in his discretion, hold a prehearing conference with the parties to the hearing and the legal officer before the hearing.

(b) At the direction of the presiding officer, each party to a prehearing conference shall submit a brief written statement of the evidence he intends to provide through his witnesses and by questioning other witnesses at the hearing, and shall provide enough copies of the statement so that the presiding officer may keep three for the FAA and give one to each other party.

(c) At the prehearing conference, the presiding officer reduces and simplifies the subject matter of the hearing so far as possible and advises the parties of the probable order of presenting the evidence.

§ 77.55 Examination of witnesses.

(a) Each witness at a hearing under this subpart shall, after being sworn by the presiding officer, give his testimony under oath.

(b) The party for whom a witness, other than an employee of the FAA, is testifying shall examine that witness. After that examination, other parties to the hearing may examine the witness, in the order fixed by the presiding officer. The presiding officer and the legal officer may then examine the witness. The presiding officer may grant any party an additional opportunity to examine any witness, if that party adequately justifies the additional examination.

(c) The legal officer examines each FAA employee who is a witness, before the other parties examine him. After that examination, the order prescribed in paragraph (b) of this section applies. An FAA employee may testify only as to facts within his personal knowledge and the application of FAA regulations, standards, and policies.

§ 77.57 Evidence.

(a) The presiding officer receives all testimony and exhibits that are relevant to the issues of the hearing. So far as possible, each party shall submit enough copies of his exhibits that the presiding officer may keep three copies for the FAA and give one to each other party.

(b) The presiding officer excludes any testimony that is irrelevant, unduly repetitious, or consists of statements made during an aeronautical study in an effort to reconcile or compromise aviation or construction or alteration requirements. A party to the hearing may object to the admission of evidence only on the ground that it is irrelevant.

§ 77.59 Subpoenas of witnesses and exhibits.

(a) The presiding officer of a hearing may issue subpoenas for any witness or exhibit that he determines may be material and relevant to the issues of the hearing. So far as possible, each party to the hearing shall provide the witnesses and exhibits that he intends to present at the hearing.

(b) If any party to the hearing is unable to provide his necessary witnesses and exhibits, he shall advise the presiding officer far enough in advance that the presiding officer can determine whether he should issue subpoenas for the desired witnesses or exhibits.

§ 77.61 Revision of construction or alteration proposal.

(a) The sponsor of any proposed construction or alteration covered by this part may revise his proposal at any time before or during the hearing. If he revises it, the presiding officer decides whether the revision affects the proposal to the extent that he should send it to the Administrator for a redetermination of the need for a hearing.

(b) If the presiding officer decides that it does not need to be resubmitted to the Administrator, he advises the parties of the revised proposal and takes the action necessary to allow all parties to effectively participate in the hearing on the revised proposal. Without limiting his discretion, the presiding officer may recess and reconvene the hearing, or hold another prehearing conference.

§ 77.63 Record of hearing.

(a) Each hearing is recorded verbatim by an official reporter under an FAA contract. The transcript, and all exhibits, become a part of the record of the hearing.

(b) Any person may buy a copy of the transcript of the hearing from the reporter at the price fixed for it.

(c) The presiding officer may allow any party to withdraw an original document if he submits authenticated copies of it.

(d) Any person may buy, from the FAA, photostatic copies of any exhibit by paying the copying costs.

(e) A change in the official transcript of a hearing may be made only if it involves an error of substance. Any recommendation to correct the transcript must be filed with the presiding officer within 5 days after the hearing closes. The presiding officer reviews each request for a correction to the extent he considers appropriate and shall make any revisions that he finds appropriate as a result of that review.

§ 77.65 Recommendations by parties.

Within 20 days after the mailing of the record of hearing by the official reporter, or as otherwise directed by the presiding officer, each party may submit to the presiding officer five copies of his recommendations for a final decision to be made by the Administrator.

§ 77.67 Final decision of the Administrator.

After reviewing the evidence relevant to the questions of fact in a hearing, including the official transcript and the exhibits, The Administrator resolves all these questions, based on the weight of evidence, and makes his determination, stating the basis and reasons for it. He then issues an appropriate order to be served on each of the parties.

§ 77.69 Limitations on appearance and representation.

(a) A former officer or employee of the FAA may not appear on behalf of, or represent, any party before the FAA in connection with any matter to which this part applies, if he considered or passed on that matter while he was an officer or employee of the FAA.

(b) A person appearing before the FAA on any matter to which this part applies may not, in connection with that appearance, knowingly accept assistance from, or share fees with, any person who is prohibited by paragraph (a) of this section, from appearing himself on that matter.

(c) A former official or employee of the FAA may not, within 6 months after he ceases to be such an officer or employee, appear before the FAA on behalf of, or represent, any party in connection with any proceeding that was pending under this part while he was an officer or employee of the FAA, unless he obtains written consent from an appropriate officer of the FAA, based on a verified showing that he did not personally consider the matter concerned or gain particular knowledge of it while he was an officer or employee of the FAA.

Subpart F—Establishment of Antenna Farm Areas

§ 77.71 Scope.

(a) This subpart establishes antenna farm areas in which antenna structures may be grouped to localize their effect on the use of navigable airspace.

(b) It is the policy of the FAA to encourage the use of antenna farms and the single structure-multiple antenna concept for radio and television towers whenever possible. In considering proposals for establishing antenna farm areas, it considers as far as possible the revision of aeronautical procedures and operations to accommodate antenna structures that will fulfill broadcasting requirements.

§ 77.73 General provisions.

(a) An antenna farm area consists of a specified geographical location with established dimensions of area and height, where antenna towers with a common impact on aviation may be grouped. Each such area is established by appropriate rule making action.

(b) Each proposal for an antenna farm area is evaluated on the basis of its effect on the use of navigable airspace. The views of the Federal Communications Commission are requested on the effect that each establishment of an antenna farm area would have on its statutory responsibilities. Any views submitted by it are fully considered before the antenna farm concerned is established. If the Commission advises that the establishment of any proposed antenna farm area would

interfere with its statutory responsibility, the proposed area is not established.

(c) The establishment of an antenna farm area is considered whenever it is proposed by:

(1) The FAA;

(2) The Federal Communications Commission;

(3) The sponsor of a proposed antenna tower; or

(4) Any other person having a substantial interest in a proposed antenna tower.

[Doc. No. 1882, 30 FR 1839, Feb. 10, 1965, as amended by Amdt. 77–10, 37 FR 4705, Mar. 4, 1972]

§ 77.75 Establishment of antenna farm areas.

The airspace areas described in the following sections of this subpart are established as antenna farm areas.

NOTE: Sections 77.77 through 77.1100 reserved for descriptions of antenna farm areas.

SUBCHAPTER F—AIR TRAFFIC AND GENERAL OPERATING RULES

PART 91—GENERAL OPERATING AND FLIGHT RULES

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SPECIAL FEDERAL AVIATION REGULATION NO. 77
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AUTHORITY: 49 U.S.C. 106(g), 1155, 40103, 40113, 40120, 44101, 44111, 44701, 44704, 44709, 44711, 44712, 44715, 44716, 44717, 44722, 46306, 46315, 46316, 46504, 46506–46507, 47122, 47508, 47528–47531, articles 12 and 29 of the Convention on International Civil Aviation (61 Stat. 1180).

SPECIAL FEDERAL AVIATION REGULATION NO. SFAR NO. 50–2—SPECIAL FLIGHT RULES IN THE VICINITY OF THE GRAND CANYON NATIONAL PARK, AZ

Section 1. Applicability. This rule prescribes special operating rules for all persons operating aircraft in the following airspace, designated as the Grand Canyon National Park Special Flight Rules Area:

That airspace extending upward from the surface up to but not including 14,500 feet MSL within an area bounded by a line beginning at lat. 36°09′30″ N., long. 114°03′00″ W.; northeast to lat. 36°14′00″ N., long. 113°09′50″ W.; thence northeast along the boundary of the Grand Canyon National Park to lat. 36°24′47″ N., long. 112°52′00″ W.; to lat. 36°30′30″ N., long. 112°36′15″ W. to lat. 36°21′30″ N., long. 112°00′00″ W. to lat. 36°35′30″ N., long. 111°53′10″ W., to lat. 36°53′00″ N., long. 111°36′45″ W. to lat. 36°53′00″ N., long. 111°33′00″ W.; to lat. 36°19′00″ N., long. 111°50′50″ W.; to lat. 36°17′00″ N., long. 111°42′00″ W.; to lat. 35°59′30″ N., long. 111°42′00″ W.; to lat. 35°57′30″ N., long. 112°03′55″ W.; thence counterclockwise via the 5 statute mile radius of the Grand Canyon Airport airport reference point (lat. 35°57′09″ N., long. 112°08′47″ W.) to lat. 35°57′30″ N., long. 112°14′00″ W.; to lat. 35°57′30″ N., long. 113°11′00″ W.; to lat. 35°42′30″ N., long. 113°11′00″ W.; to 35°38′30″ N.; long. 113°27′30″ W.; thence counterclockwise via the 5 statute mile radius of the Peach Springs VORTAC to lat. 35°41′20″ N., long. 113°36′00″ W.; to lat. 35°55′25″ N., long. 113°49′10″ W.; to lat. 35°57′45″ N., 113°45′20″ W.; thence northwest along the park boundary to lat. 36°02′20″ N., long. 113°50′15″ W.; to 36°00′10″ N., long. 113°53′45″ W.; thence to the point of beginning.

Section 3. Aircraft operations: general. Except in an emergency, no person may operate an aircraft in the Special Flight Rules, Area under VFR on or after September 22, 1988, or under IFR on or after April 6, 1989, unless the operation—(a) Is conducted in accordance with the following procedures:

NOTE: The following procedures do not relieve the pilot from see-and-avoid responsibility or compliance with FAR 91.119.

(1) Unless necessary to maintain a safe distance from other aircraft or terrain—

(i) Remain clear of the areas described in Section 4; and

(ii) Remain at or above the following altitudes in each sector of the canyon:

Eastern section from Lees Ferry to North Canyon and North Canyon to Boundary Ridge: as prescribed in Section 5.

Boundary Ridge to Supai Point (Yumtheska Point): 10,000 feet MSL.

Western section from Diamond Creek to the Grant Wash Cliffs: 8,000 feet MSL.

(2) Proceed through the four flight corridors describe in Section 4 at the following altitudes unless otherwise authorized in writing by the Flight Standards District Office:

Northbound

11,500 or
13,500 feet MSL

Southbound

>10,500 or
>12,500 feet MSL

(b) Is authorized in writing by the Flight Standards District Office and is conducted in compliance with the conditions contained in that authorization. Normally authorization will be granted for operation in the areas described in Section 4 or below the altitudes listed in Section 5 only for operations of aircraft necessary for law enforcement, firefighting, emergency medical treatment/evacuation of persons in the vicinity of the Park; for support of Park maintenance or activities; or for aerial access to and maintenance of other property located within the Special Flight Rules Area. Authorization may be issued on a continuing basis.

(c)(1) Prior to November 1, 1988, is conducted in accordance with a specific authorization to operate in that airspace incorporated in the operator's part 135 operations specifications in accordance with the provisions of SFAR 50–1, notwithstanding the provisions of Sections 4 and 5; and

(2) On or after November 1, 1988, is conducted in accordance with a specific authorization to operate in that airspace incorporated in the operated in the operator's operations specifications and approved by the Flight Standards District Office in accordance with the provisions of SFAR 50–2.

(d) Is a search and rescue mission directed by the U.S. Air Force Rescue Coordination Center.

(e) Is conducted within 3 nautical miles of Whitmore Airstrip, Pearce Ferry Airstrip, North Rim Airstrip, Cliff Dwellers Airstrip, or Marble Canyon Airstrip at an altitudes less than 3,000 feet above airport elevation, for the purpose of landing at or taking off from that facility. Or

(f) Is conducted under an IFR clearance and the pilot is acting in accordance with ATC instructions. An IFR flight plan may not be filed on a route or at an altitude that would require operation in an area described in Section 4.

Section 4. Flight-free zones. Except in an emergency or if otherwise necessary for safety of flight, or unless otherwise authorized by the Flight Standards District Office for a purpose listed in Section 3(b), no person may operate an aircraft in the Special Flight Rules Area within the following areas:

(a) Desert View Flight-Free Zone. Within an area bounded by a line beginning at Lat. 35°59′30″ N., Long. 111°46′20″ W. to 35°59′30″ N., Long. 111°52′45″ W.; to Lat. 36°04′50″ N., Long. 111°52′00″ W.; to Lat. 36°06′00″ N., Long. 111°46′20″ W.; to the point of origin; but not including the airspace at and above 10,500 feet MSL within 1 mile of the western boundary of the zone. The area between the Desert View and Bright Angel Flight-Free Zones is designated the ''Zuni Point Corridor.''

(b) Bright Angel Flight-Free Zone. Within an area bounded by a line beginning at Lat. 35°59′30″ N., Long. 111°55′30″ W.; to Lat.

35°59′30″ N., Long. 112°04′00″ W.; thence counterclockwise via the 5 statute mile radius of the Grand Canyon Airport point (Lat. 35°57′09″ N., Long. 112°08′47″ W.) to Lat. 36°01′30″ N., Long. 112°11′00″ W.; to Lat. 36°06′15″ N., Long. 112°12′50″ W.; to Lat. 36°14′40″ N., Long. 112°08′50″ W.; to Lat. 36°14′40″ N., Long. 111°57′30″ W.; to Lat. 36°12′30″ N., Long. 111°53′50″ W.; to the point of origin; but not including the airspace at and above 10,500 feet MSL within 1 mile of the eastern boundary between the southern boundary and Lat. 36°04′50″ N. or the airspace at and above 10,500 feet MSL within 2 miles of the northwest boundary. The area bounded by the Bright Angel and Shinumo Flight-Free Zones is designated the ''Dragon Corridor.''

(c) Shinumo Flight-Free Zone. Within an area bounded by a line beginning at Lat. 36°04′00″ N., Long. 112°16′40″ W.; northwest along the park boundary to a point at Lat. 36°12′47″ N., Long. 112°30′53″ W.; to Lat. 36°21′15″ N., Long. 112°20′20″ W.; east along the park boundary to Lat. 36°21′15″ N., Long. 112°13′55″ W.; to Lat. 36°14′40″ N., Long. 112°11′25″ W.; to the point of origin. The area between the Thunder River/Toroweap and Shinumo Flight Free Zones is designated the ''Fossil Canyon Corridor.''

(d) Toroweap/Thunder River Flight-Free Zone. Within an area bounded by a line beginning at Lat. 36°22′45″ N., Long. 112°20′35″ W.; thence northwest along the boundary of the Grand Canyon National Park to Lat. 36°17′48″ N., Long. 113°03′15″ W.; to Lat. 36°15′00″ N., Long. 113°07′10″ W.; to Lat. 36°10′30″ N., Long. 113°07′10″ W.; thence east along the Colorado River to the confluence of Havasu Canyon (Lat. 36°18′40″ N., Long. 112°45′45″ W.;) including that area within a 1.5 nautical mile radius of Toroweap Overlook (Lat. 36°12′45″ N., Long. 113°03′30″ W.); to the point of origin; but not including the following airspace designated as the ''Tuckup Corridor'': at or above 10,500 feet MSL within 2 nautical miles either side of a line extending between Lat. 36°24′47″ N., Long. 112°48′50″ W. and Lat. 36°17′10″ N., Long. 112°48′50″ W.; to the point of origin.

Section 5. Minimum flight altitudes. Except in an emergency or if otherwise necessary for safety of flight, or unless otherwise authorized by the Flight Standards District Office for a purpose listed in Section 3(b), no person may operate an aircraft in the Special Flight Rules Area at an altitude lower than the following:

(a) Eastern section from Lees Ferry to North Canyon: 5,000 feet MSL.

(b) Eastern section from North Canyon to Boundary Ridge: 6,000 feet MSL.

(c) Boundary Ridge to Supai (Yumtheska) Point: 7,500 feet MSL.

(d) Supai Point to Diamond Creek: 6,500 feet MSL.

(e) Western section from Diamond Creek to the Grand Wash Cliffs: 5,000 feet MSL.

Section 9. Termination date. Section 1. Applicability, Section 4, Flight-free zones, and Section 5. Minimum flight altitudes, expire on April 19, 2001.

NOTE: [Removed]

[66 FR 1003, Jan. 4, 2001, as amended at 66 FR 16584, Mar. 26, 2001; 72 FR 9846, Mar. 6, 2007]

SPECIAL FEDERAL AVIATION REGULATION NO. 60—AIR TRAFFIC CONTROL SYSTEM EMERGENCY OPERATION

1. Each person shall, before conducting any operation under the Federal Aviation Regulations (14 CFR chapter I), be familiar with all available information concerning that operation, including Notices to Airmen issued under §91.139 and, when activated, the provisions of the National Air Traffic Reduced Complement Operations Plan available for inspection at operating air traffic facilities and Regional air traffic division offices, and the General Aviation Reservation Program. No operator may change the designated airport of intended operation for any flight contained in the October 1, 1990, OAG.

2. Notwithstanding any provision of the Federal Aviation Regulations to the contrary, no person may operate an aircraft in the Air Traffic Control System:

a. Contrary to any restriction, prohibition, procedure or other action taken by the Director of the Office of Air Traffic Systems Management (Director) pursuant to paragraph 3 of this regulation and announced in a Notice to Airmen pursuant to §91.139 of the Federal Aviation Regulations.

b. When the National Air Traffic Reduced Complement Operations Plan is activated pursuant to paragraph 4 of this regulation, except in accordance with the pertinent provisions of the National Air Traffic Reduced Complement Operations Plan.

3. Prior to or in connection with the implementation of the RCOP, and as conditions warrant, the Director is authorized to:

a. Restrict, prohibit, or permit VFR and/or IFR operations at any airport, Class B airspace area, Class C airspace area, or other class of controlled airspace.

b. Give priority at any airport to flights that are of military necessity, or are medical emergency flights, Presidential flights, and flights transporting critical Government employees.

c. Implement, at any airport, traffic management procedures, that may include reduction of flight operations. Reduction of flight operations will be accomplished, to the extent practical, on a pro rata basis among and between air carrier, commercial operator, and general aviation operations. Flights cancelled under this SFAR at a high density traffic airport will be considered to have

been operated for purposes of part 93 of the Federal Aviation Regulations.

4. The Director may activate the National Air Traffic Reduced Complement Operations Plan at any time he finds that it is necessary for the safety and efficiency of the National Airspace System. Upon activation of the RCOP and notwithstanding any provision of the FAR to the contrary, the Director is authorized to suspend or modify any airspace designation.

5. Notice of restrictions, prohibitions, procedures and other actions taken by the Director under this regulation with respect to the operation of the Air Traffic Control system will be announced in Notices to Airmen issued pursuant to §91.139 of the Federal Aviation Regulations.

6. The Director may delegate his authority under this regulation to the extent he considers necessary for the safe and efficient operation of the National Air Traffic Control System.

Authority: 49 U.S.C. app. 1301(7), 1303, 1344, 1348, 1352 through 1355, 1401, 1421 through 1431, 1471, 1472, 1502, 1510, 1522, and 2121 through 2125; articles 12, 29, 31, and 32(a) of the Convention on International Civil Aviation (61 stat. 1180); 42 U.S.C. 4321 *et seq.;* E.O. 11514, 35 FR 4247, 3 CFR, 1966–1970 Comp., p. 902; 49 U.S.C. 106(g).

[Doc. No. 26351, 55 FR 40760, Oct. 4, 1990, as amended by Amdt. 91–227, 56 FR 65652, Dec. 17, 1991]

SPECIAL FEDERAL AVIATION REGULATION NO. 77—PROHIBITION AGAINST CERTAIN FLIGHTS WITHIN THE TERRITORY AND AIRSPACE OF IRAQ

1. *Applicability*. This rule applies to the following persons:

(a) All U.S. air carriers or commercial operators;

(b) All persons exercising the privileges of an airman certificate issued by the FAA except such persons operating U.S.-registered aircraft for a foreign air carrier; or

(c) All operators of aircraft registered in the United States except where the operator of such aircraft is a foreign air carrier.

2. Flight prohibition. No person may conduct flight operations over or within the territory of Iraq except as provided in paragraphs 3 and 4 of this SFAR or except as follows:

(a) Overflights of Iraq may be conducted above flight level (FL) 200 subject to the approval of, and in accordance with the conditions established by, the appropriate authorities of Iraq.

(b) Flights departing from countries adjacent to Iraq whose climb performance will not permit operation above FL 200 prior to entering Iraqi airspace may operate at altitudes below FL 200 within Iraq to the extent necessary to permit a climb above FL 200, subject to the approval of, and in accordance with the conditions established by, the appropriate authorities of Iraq.

(c) [Reserved]

3. *Permitted operations*. This SFAR does not prohibit persons described in paragraph 1 from conducting flight operations within the territory and airspace of Iraq when such operations are authorized either by another agency of the United States Government with the approval of the FAA or by an exemption issued by the Administrator.

4. *Emergency situations*. In an emergency that requires immediate decision and action for the safety of the flight, the pilot in command of an aircraft may deviate from this SFAR to the extent required by that emergency. Except for U.S. air carriers or commercial operators that are subject to the requirements of 14 CFR parts 119, 121, or 135, each person who deviates from this rule shall, within ten (10) days of the deviation, excluding Saturdays, Sundays, and Federal holidays, submit to the nearest FAA Flight Standards District Office a complete report of the operations of the aircraft involved in the deviation including a description of the deviation and the reasons therefore.

5. *Expiration*. This Special Federal Aviation Regulation will remain in effect until further notice.

[Doc. No. 28691, 61 FR 54021, Oct. 16, 1996, as amended by Doc. No. FAA–2003–14766, 68 FR 17870, Apr. 11, 2003; 68 FR 65382, Nov. 19, 2003]

SPECIAL FEDERAL AVIATION REGULATION NO. 79—PROHIBITION AGAINST CERTAIN FLIGHTS WITHIN THE FLIGHT INFORMATION REGION (FIR) OF THE DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA (DPRK)

1. *Applicability*. This rule applies to the following persons:

(a) All U.S. air carriers or commercial operators.

(b) All persons exercising the privileges of an airman certificate issued by the FAA, except such persons operating U.S.-registered aircraft for a foreign air carrier.

(c) All operators of aircraft registered in the United States except where the operator of such aircraft is a foreign air carrier.

2. *Flight Prohibition*. Except as provided in paragraphs 3 and 4 of this SFAR, no person described in paragraph 1 may conduct flight operations through the Pyongyang FIR west of 132 degrees east longitude.

3. *Permitted Operations*. This SFAR does not prohibit persons described in paragraph 1 from conducting flight operations within the Pyongyang FIR west of 132 degrees east longitude where such operations are authorized

either by exemption issued by the Administrator or by another agency of the United States Government with FAA approval.

4. *Emergency situations.* In an emergency that requires immediate decision and action for the safety of the flight, the pilot in command on an aircraft may deviate from this SFAR to the extent required by that emergency. Except for U.S. air carriers and commercial operators that are subject to the requirements of 14 CFR parts 121, 125, or 135, each person who deviates from this rule shall, within ten (10) days of the deviation, excluding Saturdays, Sundays, and Federal holidays, submit to the nearest FAA Flight Standards District Office a complete report of the operations of the aircraft involved in the deviation, including a description of the deviation and the reasons therefore.

5. *Expiration.* This Special Federal Aviation Regulation No. 79 will remain in effect until further notice.

[Doc. No. 28831, 62 FR 20078, Apr. 24, 1997, as amended at 63 FR 8017, Feb. 17, 1998; 63 FR 19286, Apr. 17, 1998]

SPECIAL FEDERAL AVIATION REGULATION NO. 87—PROHIBITION AGAINST CERTAIN FLIGHTS WITHIN THE TERRITORY AND AIRSPACE OF ETHIOPIA

1. *Applicability.* This Special Federal Aviation Regulation (SFAR) No. 87 applies to all U.S. air carriers or commercial operators, all persons exercising the privileges of an airman certificate issued by the FAA unless that person is engaged in the operation of a U.S.-registered aircraft for a foreign air carrier, and all operators using aircraft registered in the United States except where the operator of such aircraft is a foreign air carrier.

2. *Flight prohibition.* Except as provided in paragraphs 3 and 4 of this SFAR, no person described in paragraph 1 may conduct flight operations within the territory and airspace of Ethiopia north of 12 degrees north latitude.

3. *Permitted operations.* This SFAR does not prohibit persons described in paragraph 1 from conducting flight operations within the territory and airspace of Ethiopia where such operations are authorized either by exemption issued by the Administrator or by an authorization issued by another agency of the United States Government with the approval of the FAA.

4. *Emergency situations.* In an emergency that requires immediate decision and action for the safety of the flight, the pilot in command of an aircraft may deviate from this SFAR to the extent required by that emergency. Except for U.S. air carriers and commercial operators that are subject to the requirements of 14 CFR 121.557, 121.559, or 135.19, each person who deviates from this rule shall, within ten (10) days of the deviation, excluding Saturdays, Sundays, and Federal holidays, submit to the nearest FAA Flight Standards District Office a complete report of the operations of the aircraft involved in the deviation, including a description of the deviation and the reasons therefor.

5. *Expiration.* This Special Federal Aviation Regulation shall remain in effect until further notice.

[Doc. No. FAA–2000–7360; 65 FR 31215, May 16, 2000]

SFAR NO. 97—SPECIAL OPERATING RULES FOR THE CONDUCT OF INSTRUMENT FLIGHT RULES (IFR) AREA NAVIGATION (RNAV) OPERATIONS USING GLOBAL POSITIONING SYSTEMS (GPS) IN ALASKA

Those persons identified in Section 1 may conduct IFR en route RNAV operations in the State of Alaska and its airspace on published air traffic routes using TSO C145a/C146a navigation systems as the only means of IFR navigation. Despite contrary provisions of parts 71, 91, 95, 121, 125, and 135 of this chapter, a person may operate aircraft in accordance with this SFAR if the following requirements are met.

Section 1. *Purpose, use, and limitations*

a. This SFAR permits TSO C145a/C146a GPS (RNAV) systems to be used for IFR en route operations in the United States airspace over and near Alaska (as set forth in paragraph c of this section) at Special Minimum En Route Altitudes (MEA) that are outside the operational service volume of ground-based navigation aids, if the aircraft operation also meets the requirements of sections 3 and 4 of this SFAR.

b. Certificate holders and part 91 operators may operate aircraft under this SFAR provided that they comply with the requirements of this SFAR.

c. Operations conducted under this SFAR are limited to United States Airspace within and near the State of Alaska as defined in the following area description:

From 62°00′00.000″N, Long. 141°00′00.00″W.; to Lat. 59°47′54.11″N., Long. 135°28′38.34″W.; to Lat. 56°00′04.11″N., Long. 130°00′07.80″W.; to Lat. 54°43′00.00″N., Long. 130°37′00.00″W.; to Lat. 51°24′00.00″N., Long. 167°49′00.00″W.; to Lat. 50°08′00.00″N., Long. 176°34′00.00″W.; to Lat. 45°42′00.00″N., Long. −162°55′00.00″E.; to Lat. 50°05′00.00″N., Long. −159°00′00.00″E.; to Lat. 54°00′00.00″N., Long. −169°00′00.00″E.; to Lat. 60°00 00.00″N., Long. −180°00′ 00.00″E; to Lat. 65°00′00.00″N., Long. 168°58′23.00″W.; to Lat. 90°00′00.00″N., Long. 00°00′0.00″W.; to Lat. 62°00′00.000″N, Long. 141°00′00.00″W.

(d) No person may operate an aircraft under IFR during the en route portion of

flight below the standard MEA or at the special MEA unless the operation is conducted in accordance with sections 3 and 4 of this SFAR.

Section 2. *Definitions and abbreviations*

For the purposes of this SFAR, the following definitions and abbreviations apply.

Area navigation (RNAV). RNAV is a method of navigation that permits aircraft operations on any desired flight path.

Area navigation (RNAV) route. RNAV route is a published route based on RNAV that can be used by suitably equipped aircraft.

Certificate holder. A certificate holder means a person holding a certificate issued under part 119 or part 125 of this chapter or holding operations specifications issued under part 129 of this chapter.

Global Navigation Satellite System (GNSS). GNSS is a world-wide position and time determination system that uses satellite ranging signals to determine user location. It encompasses all satellite ranging technologies, including GPS and additional satellites. Components of the GNSS include GPS, the Global Orbiting Navigation Satellite System, and WAAS satellites.

Global Positioning System (GPS). GPS is a satellite-based radio navigational, positioning, and time transfer system. The system provides highly accurate position and velocity information and precise time on a continuous global basis to properly equipped users.

Minimum crossing altitude (MCA). The minimum crossing altitude (MCA) applies to the operation of an aircraft proceeding to a higher minimum en route altitude when crossing specified fixes.

Required navigation system. Required navigation system means navigation equipment that meets the performance requirements of TSO C145a/C146a navigation systems certified for IFR en route operations.

Route segment. Route segment is a portion of a route bounded on each end by a fix or NAVAID.

Special MEA. Special MEA refers to the minimum en route altitudes, using required navigation systems, on published routes outside the operational service volume of ground-based navigation aids and are depicted on the published Low Altitude and High Altitude En Route Charts using the color blue and with the suffix ''G.'' For example, a GPS MEA of 4000 feet MSL would be depicted using the color blue, as 4000G.

Standard MEA. Standard MEA refers to the minimum en route IFR altitude on published routes that uses ground-based navigation aids and are depicted on the published Low Altitude and High Altitude En Route Charts using the color black.

Station referenced. Station referenced refers to radio navigational aids or fixes that are referenced by ground based navigation facilities such as VOR facilities.

Wide Area Augmentation System (WAAS). WAAS is an augmentation to GPS that calculates GPS integrity and correction data on the ground and uses geo-stationary satellites to broadcast GPS integrity and correction data to GPS/WAAS users and to provide ranging signals. It is a safety critical system consisting of a ground network of reference and integrity monitor data processing sites to assess current GPS performance, as well as a space segment that broadcasts that assessment to GNSS users to support en route through precision approach navigation. Users of the system include all aircraft applying the WAAS data and ranging signal.

Section 3. *Operational Requirements*

To operate an aircraft under this SFAR, the following requirements must be met:

a. Training and qualification for operations and maintenance personnel on required navigation equipment used under this SFAR.

b. Use authorized procedures for normal, abnormal, and emergency situations unique to these operations, including degraded navigation capabilities, and satellite system outages.

c. For certificate holders, training of flight crewmembers and other personnel authorized to exercise operational control on the use of those procedures specified in paragraph b of this section.

d. Part 129 operators must have approval from the State of the operator to conduct operations in accordance with this SFAR.

e. In order to operate under this SFAR, a certificate holder must be authorized in operations specifications.

Section 4. *Equipment Requirements*

a. The certificate holder must have properly installed, certificated, and functional dual required navigation systems as defined in section 2 of this SFAR for the en route operations covered under this SFAR.

b. When the aircraft is being operated under part 91, the aircraft must be equipped with at least one properly installed, certificated, and functional required navigation system as defined in section 2 of this SFAR for the en route operations covered under this SFAR.

Section 5. *Expiration date*

This Special Federal Aviation Regulation will remain in effect until rescinded.

[Doc. No. FAA–2003–14305, 68 FR 14077, Mar. 21, 2003]

SFAR NO. 104—PROHIBITION AGAINST CERTAIN FLIGHTS BY SYRIAN AIR CARRIERS TO THE UNITED STATES

1. *Applicability*. This Special Federal Aviation Regulation (SFAR) No. 104 applies to any air carrier owned or controlled by Syria that is engaged in scheduled international air services.

2. *Special flight restrictions*. Except as provided in paragraphs 3 and 4 of this SFAR No. 104, no air carrier described in paragraph 1 may take off from or land in the territory of the United States.

3. *Permitted operations*. This SFAR does not prohibit overflights of the territory of the United States by any air carrier described in paragraph 1.

4. *Emergency situations*. In an emergency that requires immediate decision and action for the safety of the flight, the pilot in command of an aircraft of any air carrier described in paragraph 1 may deviate from this SFAR to the extent required by that emergency. Each person who deviates from this rule must, within 10 days of the deviation, excluding Saturdays, Sundays, and Federal holidays, submit to the nearest FAA Flight Standards District Office a complete report of the operations or the aircraft involved in the deviation, including a description of the deviation and the reasons therefor.

5. *Duration*. This SFAR No. 104 will remain in effect until further notice.

[Doc. No. FAA–2004–17763, 69 FR 31719, June 4, 2004]

SFAR NO. 107—PROHIBITION AGAINST CERTAIN FLIGHTS WITHIN THE TERRITORY AND AIRSPACE OF SOMALIA

1. *Applicability*. This rule applies to the following persons:

(a) All U.S. air carriers or commercial operators;

(b) All persons exercising the privileges of an airman certificate issued by the FAA except such persons operating U.S.-registered aircraft for a foreign air carrier; and

(c) All operators of aircraft registered in the United States except where the operator of such aircraft is a foreign air carrier.

2. *Flight prohibition*. Except as provided below, or in paragraphs 3 and 4 of this SFAR, no person described in paragraph 1 may conduct flight operations within the territory and airspace of Somalia below flight level (FL) 200.

(a) Overflights of Somalia may be conducted above FL 200 subject to the approval of, and in accordance with the conditions established by, the appropriate authorities of Somalia.

(b) Flights departing from countries adjacent to Somalia whose climb performance will not permit operation above FL 200 prior to entering Somali airspace may operate at altitudes below FL 200 within Somalia to the extent necessary to permit a climb above FL 200, subject to the approval of, and in accordance with the conditions established by, the appropriate authorities of Somalia.

3. *Permitted operations*. This SFAR does not prohibit persons described in section 1 from conducting flight operations within the territory and airspace below FL 200 of Somalia when such operations are authorized either by another agency of the United States Government with the approval of the FAA or by an exemption issued by the Administrator.

4. *Emergency situations*. In an emergency that requires immediate decision and action for the safety of the flight, the pilot in command of an aircraft may deviate from this SFAR to the extent required by that emergency. Except for U.S. air carriers and commercial operators that are subject to the requirements of Title 14 CFR parts 119, 121, or 135, each person who deviates from this rule must, within 10 days of the deviation, excluding Saturdays, Sundays, and Federal holidays, submit to the nearest FAA Flight Standards District Office a complete report of the operations of the aircraft involved in the deviation, including a description of the deviation and the reasons for it.

5. *Expiration*. This Special Federal Aviation Regulation will remain in effect until further notice.

[Doc. No. FAA–2007–27602, 72 FR 16712, Apr. 5, 2007]

Subpart A—General

SOURCE: Docket No. 18334, 54 FR 34292, Aug. 18, 1989, unless otherwise noted.

§91.1 Applicability.

(a) Except as provided in paragraphs (b) and (c) of this section and §§91.701 and 91.703, this part prescribes rules governing the operation of aircraft (other than moored balloons, kites, unmanned rockets, and unmanned free balloons, which are governed by part 101 of this chapter, and ultralight vehicles operated in accordance with part 103 of this chapter) within the United States, including the waters within 3 nautical miles of the U.S. coast.

(b) Each person operating an aircraft in the airspace overlying the waters between 3 and 12 nautical miles from the coast of the United States must comply with §§91.1 through 91.21; §§91.101 through 91.143; §§91.151 through 91.159; §§91.167 through 91.193; §91.203; §91.205; §§91.209 through 91.217; §91.221; §§91.303

through 91.319; §§ 91.323 through 91.327; § 91.605; § 91.609; §§ 91.703 through 91.715; and § 91.903.

(c) This part applies to each person on board an aircraft being operated under this part, unless otherwise specified.

(d) This part also establishes requirements for operators to take actions to support the continued airworthiness of each airplane.

[Doc. No. 18334, 54 FR 34292, Aug. 18, 1989, as amended by Amdt. 91–257, 64 FR 1079, Jan. 7, 1999; Amdt. 91–282, 69 FR 44880, July 27, 2004; Amdt 91–297, 72 FR 63410, Nov. 8, 2007]

§ 91.3 Responsibility and authority of the pilot in command.

(a) The pilot in command of an aircraft is directly responsible for, and is the final authority as to, the operation of that aircraft.

(b) In an in-flight emergency requiring immediate action, the pilot in command may deviate from any rule of this part to the extent required to meet that emergency.

(c) Each pilot in command who deviates from a rule under paragraph (b) of this section shall, upon the request of the Administrator, send a written report of that deviation to the Administrator.

(Approved by the Office of Management and Budget under control number 2120–0005)

§ 91.5 Pilot in command of aircraft requiring more than one required pilot.

No person may operate an aircraft that is type certificated for more than one required pilot flight crewmember unless the pilot in command meets the requirements of § 61.58 of this chapter.

§ 91.7 Civil aircraft airworthiness.

(a) No person may operate a civil aircraft unless it is in an airworthy condition.

(b) The pilot in command of a civil aircraft is responsible for determining whether that aircraft is in condition for safe flight. The pilot in command shall discontinue the flight when unairworthy mechanical, electrical, or structural conditions occur.

§ 91.9 Civil aircraft flight manual, marking, and placard requirements.

(a) Except as provided in paragraph (d) of this section, no person may operate a civil aircraft without complying with the operating limitations specified in the approved Airplane or Rotorcraft Flight Manual, markings, and placards, or as otherwise prescribed by the certificating authority of the country of registry.

(b) No person may operate a U.S.-registered civil aircraft—

(1) For which an Airplane or Rotorcraft Flight Manual is required by § 21.5 of this chapter unless there is available in the aircraft a current, approved Airplane or Rotorcraft Flight Manual or the manual provided for in § 121.141(b); and

(2) For which an Airplane or Rotorcraft Flight Manual is not required by § 21.5 of this chapter, unless there is available in the aircraft a current approved Airplane or Rotorcraft Flight Manual, approved manual material, markings, and placards, or any combination thereof.

(c) No person may operate a U.S.-registered civil aircraft unless that aircraft is identified in accordance with part 45 of this chapter.

(d) Any person taking off or landing a helicopter certificated under part 29 of this chapter at a heliport constructed over water may make such momentary flight as is necessary for takeoff or landing through the prohibited range of the limiting height-speed envelope established for the helicopter if that flight through the prohibited range takes place over water on which a safe ditching can be accomplished and if the helicopter is amphibious or is equipped with floats or other emergency flotation gear adequate to accomplish a safe emergency ditching on open water.

§ 91.11 Prohibition on interference with crewmembers.

No person may assault, threaten, intimidate, or interfere with a crewmember in the performance of the crewmember's duties aboard an aircraft being operated.

§ 91.13 Careless or reckless operation.

(a) *Aircraft operations for the purpose of air navigation.* No person may operate an aircraft in a careless or reckless manner so as to endanger the life or property of another.

(b) *Aircraft operations other than for the purpose of air navigation.* No person may operate an aircraft, other than for the purpose of air navigation, on any part of the surface of an airport used by aircraft for air commerce (including areas used by those aircraft for receiving or discharging persons or cargo), in a careless or reckless manner so as to endanger the life or property of another.

§ 91.15 Dropping objects.

No pilot in command of a civil aircraft may allow any object to be dropped from that aircraft in flight that creates a hazard to persons or property. However, this section does not prohibit the dropping of any object if reasonable precautions are taken to avoid injury or damage to persons or property.

§ 91.17 Alcohol or drugs.

(a) No person may act or attempt to act as a crewmember of a civil aircraft—

(1) Within 8 hours after the consumption of any alcoholic beverage;

(2) While under the influence of alcohol;

(3) While using any drug that affects the person's faculties in any way contrary to safety; or

(4) While having an alcohol concentration of 0.04 or greater in a blood or breath specimen. Alcohol concentration means grams of alcohol per deciliter of blood or grams of alcohol per 210 liters of breath.

(b) Except in an emergency, no pilot of a civil aircraft may allow a person who appears to be intoxicated or who demonstrates by manner or physical indications that the individual is under the influence of drugs (except a medical patient under proper care) to be carried in that aircraft.

(c) A crewmember shall do the following:

(1) On request of a law enforcement officer, submit to a test to indicate the alcohol concentration in the blood or breath, when—

(i) The law enforcement officer is authorized under State or local law to conduct the test or to have the test conducted; and

(ii) The law enforcement officer is requesting submission to the test to investigate a suspected violation of State or local law governing the same or substantially similar conduct prohibited by paragraph (a)(1), (a)(2), or (a)(4) of this section.

(2) Whenever the FAA has a reasonable basis to believe that a person may have violated paragraph (a)(1), (a)(2), or (a)(4) of this section, on request of the FAA, that person must furnish to the FAA the results, or authorize any clinic, hospital, or doctor, or other person to release to the FAA, the results of each test taken within 4 hours after acting or attempting to act as a crewmember that indicates an alcohol concentration in the blood or breath specimen.

(d) Whenever the Administrator has a reasonable basis to believe that a person may have violated paragraph (a)(3) of this section, that person shall, upon request by the Administrator, furnish the Administrator, or authorize any clinic, hospital, doctor, or other person to release to the Administrator, the results of each test taken within 4 hours after acting or attempting to act as a crewmember that indicates the presence of any drugs in the body.

(e) Any test information obtained by the Administrator under paragraph (c) or (d) of this section may be evaluated in determining a person's qualifications for any airman certificate or possible violations of this chapter and may be used as evidence in any legal proceeding under section 602, 609, or 901 of the Federal Aviation Act of 1958.

[Doc. No. 18334, 54 FR 34292, Aug. 18, 1989, as amended by Amdt. 91–291, June 21, 2006]

§ 91.19 Carriage of narcotic drugs, marihuana, and depressant or stimulant drugs or substances.

(a) Except as provided in paragraph (b) of this section, no person may operate a civil aircraft within the United States with knowledge that narcotic drugs, marihuana, and depressant or

stimulant drugs or substances as defined in Federal or State statutes are carried in the aircraft.

(b) Paragraph (a) of this section does not apply to any carriage of narcotic drugs, marihuana, and depressant or stimulant drugs or substances authorized by or under any Federal or State statute or by any Federal or State agency.

§ 91.21 Portable electronic devices.

(a) Except as provided in paragraph (b) of this section, no person may operate, nor may any operator or pilot in command of an aircraft allow the operation of, any portable electronic device on any of the following U.S.-registered civil aircraft:

(1) Aircraft operated by a holder of an air carrier operating certificate or an operating certificate; or

(2) Any other aircraft while it is operated under IFR.

(b) Paragraph (a) of this section does not apply to—

(1) Portable voice recorders;

(2) Hearing aids;

(3) Heart pacemakers;

(4) Electric shavers; or

(5) Any other portable electronic device that the operator of the aircraft has determined will not cause interference with the navigation or communication system of the aircraft on which it is to be used.

(c) In the case of an aircraft operated by a holder of an air carrier operating certificate or an operating certificate, the determination required by paragraph (b)(5) of this section shall be made by that operator of the aircraft on which the particular device is to be used. In the case of other aircraft, the determination may be made by the pilot in command or other operator of the aircraft.

§ 91.23 Truth-in-leasing clause requirement in leases and conditional sales contracts.

(a) Except as provided in paragraph (b) of this section, the parties to a lease or contract of conditional sale involving a U.S.-registered large civil aircraft and entered into after January 2, 1973, shall execute a written lease or contract and include therein a written truth-in-leasing clause as a concluding paragraph in large print, immediately preceding the space for the signature of the parties, which contains the following with respect to each such aircraft:

(1) Identification of the Federal Aviation Regulations under which the aircraft has been maintained and inspected during the 12 months preceding the execution of the lease or contract of conditional sale, and certification by the parties thereto regarding the aircraft's status of compliance with applicable maintenance and inspection requirements in this part for the operation to be conducted under the lease or contract of conditional sale.

(2) The name and address (printed or typed) and the signature of the person responsible for operational control of the aircraft under the lease or contract of conditional sale, and certification that each person understands that person's responsibilities for compliance with applicable Federal Aviation Regulations.

(3) A statement that an explanation of factors bearing on operational control and pertinent Federal Aviation Regulations can be obtained from the nearest FAA Flight Standards district office.

(b) The requirements of paragraph (a) of this section do not apply—

(1) To a lease or contract of conditional sale when—

(i) The party to whom the aircraft is furnished is a foreign air carrier or certificate holder under part 121, 125, 135, or 141 of this chapter, or

(ii) The party furnishing the aircraft is a foreign air carrier or a person operating under part 121, 125, and 141 of this chapter, or a person operating under part 135 of this chapter having authority to engage in on-demand operations with large aircraft.

(2) To a contract of conditional sale, when the aircraft involved has not been registered anywhere prior to the execution of the contract, except as a new aircraft under a dealer's aircraft registration certificate issued in accordance with § 47.61 of this chapter.

(c) No person may operate a large civil aircraft of U.S. registry that is subject to a lease or contract of conditional sale to which paragraph (a) of this section applies, unless—

(1) The lessee or conditional buyer, or the registered owner if the lessee is not a citizen of the United States, has mailed a copy of the lease or contract that complies with the requirements of paragraph (a) of this section, within 24 hours of its execution, to the Aircraft Registration Branch, Attn: Technical Section, P.O. Box 25724, Oklahoma City, OK 73125;

(2) A copy of the lease or contract that complies with the requirements of paragraph (a) of this section is carried in the aircraft. The copy of the lease or contract shall be made available for review upon request by the Administrator, and

(3) The lessee or conditional buyer, or the registered owner if the lessee is not a citizen of the United States, has notified by telephone or in person the FAA Flight Standards district office nearest the airport where the flight will originate. Unless otherwise authorized by that office, the notification shall be given at least 48 hours before takeoff in the case of the first flight of that aircraft under that lease or contract and inform the FAA of—

(i) The location of the airport of departure;

(ii) The departure time; and

(iii) The registration number of the aircraft involved.

(d) The copy of the lease or contract furnished to the FAA under paragraph (c) of this section is commercial or financial information obtained from a person. It is, therefore, privileged and confidential and will not be made available by the FAA for public inspection or copying under 5 U.S.C. 552(b)(4) unless recorded with the FAA under part 49 of this chapter.

(e) For the purpose of this section, a lease means any agreement by a person to furnish an aircraft to another person for compensation or hire, whether with or without flight crewmembers, other than an agreement for the sale of an aircraft and a contract of conditional sale under section 101 of the Federal Aviation Act of 1958. The person furnishing the aircraft is referred to as the lessor, and the person to whom it is furnished the lessee.

(Approved by the Office of Management and Budget under control number 2120–0005)

[Doc. No. 18334, 54 FR 34292, Aug. 18, 1989, as amended by Amdt. 91–212, 54 FR 39293, Sept. 25, 1989; Amdt. 91–253, 62 FR 13253, Mar. 19, 1997; Amdt. 91–267, 66 FR 21066, Apr. 27, 2001]

§ 91.25 Aviation Safety Reporting Program: Prohibition against use of reports for enforcement purposes.

The Administrator of the FAA will not use reports submitted to the National Aeronautics and Space Administration under the Aviation Safety Reporting Program (or information derived therefrom) in any enforcement action except information concerning accidents or criminal offenses which are wholly excluded from the Program.

§§ 91.27–91.99 [Reserved]

Subpart B—Flight Rules

SOURCE: Docket No. 18334, 54 FR 34294, Aug. 18, 1989, unless otherwise noted.

GENERAL

§ 91.101 Applicability.

This subpart prescribes flight rules governing the operation of aircraft within the United States and within 12 nautical miles from the coast of the United States.

§ 91.103 Preflight action.

Each pilot in command shall, before beginning a flight, become familiar with all available information concerning that flight. This information must include—

(a) For a flight under IFR or a flight not in the vicinity of an airport, weather reports and forecasts, fuel requirements, alternatives available if the planned flight cannot be completed, and any known traffic delays of which the pilot in command has been advised by ATC;

(b) For any flight, runway lengths at airports of intended use, and the following takeoff and landing distance information:

(1) For civil aircraft for which an approved Airplane or Rotorcraft Flight Manual containing takeoff and landing

distance data is required, the takeoff and landing distance data contained therein; and

(2) For civil aircraft other than those specified in paragraph (b)(1) of this section, other reliable information appropriate to the aircraft, relating to aircraft performance under expected values of airport elevation and runway slope, aircraft gross weight, and wind and temperature.

§ 91.105 Flight crewmembers at stations.

(a) During takeoff and landing, and while en route, each required flight crewmember shall—

(1) Be at the crewmember station unless the absence is necessary to perform duties in connection with the operation of the aircraft or in connection with physiological needs; and

(2) Keep the safety belt fastened while at the crewmember station.

(b) Each required flight crewmember of a U.S.-registered civil aircraft shall, during takeoff and landing, keep his or her shoulder harness fastened while at his or her assigned duty station. This paragraph does not apply if—

(1) The seat at the crewmember's station is not equipped with a shoulder harness; or

(2) The crewmember would be unable to perform required duties with the shoulder harness fastened.

[Doc. No. 18334, 54 FR 34294, Aug. 18, 1989, as amended by Amdt. 91–231, 57 FR 42671, Sept. 15, 1992]

§ 91.107 Use of safety belts, shoulder harnesses, and child restraint systems.

(a) Unless otherwise authorized by the Administrator—

(1) No pilot may take off a U.S.-registered civil aircraft (except a free balloon that incorporates a basket or gondola, or an airship type certificated before November 2, 1987) unless the pilot in command of that aircraft ensures that each person on board is briefed on how to fasten and unfasten that person's safety belt and, if installed, shoulder harness.

(2) No pilot may cause to be moved on the surface, take off, or land a U.S.-registered civil aircraft (except a free balloon that incorporates a basket or gondola, or an airship type certificated before November 2, 1987) unless the pilot in command of that aircraft ensures that each person on board has been notified to fasten his or her safety belt and, if installed, his or her shoulder harness.

(3) Except as provided in this paragraph, each person on board a U.S.-registered civil aircraft (except a free balloon that incorporates a basket or gondola or an airship type certificated before November 2, 1987) must occupy an approved seat or berth with a safety belt and, if installed, shoulder harness, properly secured about him or her during movement on the surface, takeoff, and landing. For seaplane and float equipped rotorcraft operations during movement on the surface, the person pushing off the seaplane or rotorcraft from the dock and the person mooring the seaplane or rotorcraft at the dock are excepted from the preceding seating and safety belt requirements. Notwithstanding the preceding requirements of this paragraph, a person may:

(i) Be held by an adult who is occupying an approved seat or berth, provided that the person being held has not reached his or her second birthday and does not occupy or use any restraining device;

(ii) Use the floor of the aircraft as a seat, provided that the person is on board for the purpose of engaging in sport parachuting; or

(iii) Notwithstanding any other requirement of this chapter, occupy an approved child restraint system furnished by the operator or one of the persons described in paragraph (a)(3)(iii)(A) of this section provided that:

(A) The child is accompanied by a parent, guardian, or attendant designated by the child's parent or guardian to attend to the safety of the child during the flight;

(B) Except as provided in paragraph (a)(3)(iii)(B)(*4*) of this action, the approved child restraint system bears one or more labels as follows:

(*1*) Seats manufactured to U.S. standards between January 1, 1981, and February 25, 1985, must bear the label: ''This child restraint system conforms to all applicable Federal motor vehicle safety standards'';

(*2*) Seats manufactured to U.S. standards on or after February 26, 1985, must bear two labels:

(*i*) ''This child restraint system conforms to all applicable Federal motor vehicle safety standards''; and

(*ii*) ''THIS RESTRAINT IS CERTIFIED FOR USE IN MOTOR VEHICLES AND AIRCRAFT'' in red lettering;

(*3*) Seats that do not qualify under paragraphs (a)(3)(iii)(B)(*1*) and (a)(3)(iii)(B)(*2*) of this section must bear a label or markings showing:

(*i*) That the seat was approved by a foreign government;

(*ii*) That the seat was manufactured under the standards of the United Nations; or

(*iii*) That the seat or child restraint device furnished by the operator was approved by the FAA through Type Certificate or Supplemental Type Certificate.

(*iv*) That the seat or child restraint device furnished by the operator, or one of the persons described in paragraph (a) (3) (iii) (A) of this section, was approved by the FAA in accordance with §21.305(d) or Technical Standard Order C–100b, or a later version.

(*4*) Except as provided in §91.107(a)(3)(iii)(B)(*3*)(*iii*) and §91.107(a)(3)(iii)(B)(*3*)(*iv*), booster-type child restraint systems (as defined in Federal Motor Vehicle Safety Standard No. 213 (49 CFR 571.213)), vest- and harness-type child restraint systems, and lap held child restraints are not approved for use in aircraft; and

(C) The operator complies with the following requirements:

(*1*) The restraint system must be properly secured to an approved forward-facing seat or berth;

(*2*) The child must be properly secured in the restraint system and must not exceed the specified weight limit for the restraint system; and

(*3*) The restraint system must bear the appropriate label(s).

(b) Unless otherwise stated, this section does not apply to operations conducted under part 121, 125, or 135 of this chapter. Paragraph (a)(3) of this section does not apply to persons subject to §91.105.

[Doc. No. 26142, 57 FR 42671, Sept. 15, 1992, as amended by Amdt. 91–250, 61 FR 28421, June 4, 1996; Amdt. 91–289, 70 FR 50906, Aug. 26, 2005; Amdt. 91–292, 71 FR 40009, July 14, 2006]

§91.109 Flight instruction; Simulated instrument flight and certain flight tests.

(a) No person may operate a civil aircraft (except a manned free balloon) that is being used for flight instruction unless that aircraft has fully functioning dual controls. However, instrument flight instruction may be given in a single-engine airplane equipped with a single, functioning throwover control wheel in place of fixed, dual controls of the elevator and ailerons when—

(1) The instructor has determined that the flight can be conducted safely; and

(2) The person manipulating the controls has at least a private pilot certificate with appropriate category and class ratings.

(b) No person may operate a civil aircraft in simulated instrument flight unless—

(1) The other control seat is occupied by a safety pilot who possesses at least a private pilot certificate with category and class ratings appropriate to the aircraft being flown.

(2) The safety pilot has adequate vision forward and to each side of the aircraft, or a competent observer in the aircraft adequately supplements the vision of the safety pilot; and

(3) Except in the case of lighter-than-air aircraft, that aircraft is equipped with fully functioning dual controls. However, simulated instrument flight may be conducted in a single-engine airplane, equipped with a single, functioning, throwover control wheel, in place of fixed, dual controls of the elevator and ailerons, when—

(i) The safety pilot has determined that the flight can be conducted safely; and

(ii) The person manipulating the controls has at least a private pilot certificate with appropriate category and class ratings.

(c) No person may operate a civil aircraft that is being used for a flight test

for an airline transport pilot certificate or a class or type rating on that certificate, or for a part 121 proficiency flight test, unless the pilot seated at the controls, other than the pilot being checked, is fully qualified to act as pilot in command of the aircraft.

§ 91.111 Operating near other aircraft.

(a) No person may operate an aircraft so close to another aircraft as to create a collision hazard.

(b) No person may operate an aircraft in formation flight except by arrangement with the pilot in command of each aircraft in the formation.

(c) No person may operate an aircraft, carrying passengers for hire, in formation flight.

§ 91.113 Right-of-way rules: Except water operations.

(a) *Inapplicability.* This section does not apply to the operation of an aircraft on water.

(b) *General.* When weather conditions permit, regardless of whether an operation is conducted under instrument flight rules or visual flight rules, vigilance shall be maintained by each person operating an aircraft so as to see and avoid other aircraft. When a rule of this section gives another aircraft the right-of-way, the pilot shall give way to that aircraft and may not pass over, under, or ahead of it unless well clear.

(c) *In distress.* An aircraft in distress has the right-of-way over all other air traffic.

(d) *Converging.* When aircraft of the same category are converging at approximately the same altitude (except head-on, or nearly so), the aircraft to the other's right has the right-of-way. If the aircraft are of different categories—

(1) A balloon has the right-of-way over any other category of aircraft;

(2) A glider has the right-of-way over an airship, powered parachute, weight-shift-control aircraft, airplane, or rotorcraft.

(3) An airship has the right-of-way over a powered parachute, weight-shift-control aircraft, airplane, or rotorcraft.

However, an aircraft towing or refueling other aircraft has the right-of-way over all other engine-driven aircraft.

(e) *Approaching head-on.* When aircraft are approaching each other head-on, or nearly so, each pilot of each aircraft shall alter course to the right.

(f) *Overtaking.* Each aircraft that is being overtaken has the right-of-way and each pilot of an overtaking aircraft shall alter course to the right to pass well clear.

(g) *Landing.* Aircraft, while on final approach to land or while landing, have the right-of-way over other aircraft in flight or operating on the surface, except that they shall not take advantage of this rule to force an aircraft off the runway surface which has already landed and is attempting to make way for an aircraft on final approach. When two or more aircraft are approaching an airport for the purpose of landing, the aircraft at the lower altitude has the right-of-way, but it shall not take advantage of this rule to cut in front of another which is on final approach to land or to overtake that aircraft.

[Doc. No. 18334, 54 FR 34294, Aug. 18, 1989, as amended by Amdt. 91-282, 69 FR 44880, July 27, 2004]

§ 91.115 Right-of-way rules: Water operations.

(a) *General.* Each person operating an aircraft on the water shall, insofar as possible, keep clear of all vessels and avoid impeding their navigation, and shall give way to any vessel or other aircraft that is given the right-of-way by any rule of this section.

(b) *Crossing.* When aircraft, or an aircraft and a vessel, are on crossing courses, the aircraft or vessel to the other's right has the right-of-way.

(c) *Approaching head-on.* When aircraft, or an aircraft and a vessel, are approaching head-on, or nearly so, each shall alter its course to the right to keep well clear.

(d) *Overtaking.* Each aircraft or vessel that is being overtaken has the right-of-way, and the one overtaking shall alter course to keep well clear.

(e) *Special circumstances.* When aircraft, or an aircraft and a vessel, approach so as to involve risk of collision, each aircraft or vessel shall proceed with careful regard to existing

circumstances, including the limitations of the respective craft.

§ 91.117 Aircraft speed.

(a) Unless otherwise authorized by the Administrator, no person may operate an aircraft below 10,000 feet MSL at an indicated airspeed of more than 250 knots (288 m.p.h.).

(b) Unless otherwise authorized or required by ATC, no person may operate an aircraft at or below 2,500 feet above the surface within 4 nautical miles of the primary airport of a Class C or Class D airspace area at an indicated airspeed of more than 200 knots (230 mph.). This paragraph (b) does not apply to any operations within a Class B airspace area. Such operations shall comply with paragraph (a) of this section.

(c) No person may operate an aircraft in the airspace underlying a Class B airspace area designated for an airport or in a VFR corridor designated through such a Class B airspace area, at an indicated airspeed of more than 200 knots (230 mph).

(d) If the minimum safe airspeed for any particular operation is greater than the maximum speed prescribed in this section, the aircraft may be operated at that minimum speed.

[Doc. No. 18334, 54 FR 34292, Aug. 18, 1989, as amended by Amdt. 91–219, 55 FR 34708, Aug. 24, 1990; Amdt. 91–227, 56 FR 65657, Dec. 17, 1991; Amdt. 91–233, 58 FR 43554, Aug. 17, 1993]

§ 91.119 Minimum safe altitudes: General.

Except when necessary for takeoff or landing, no person may operate an aircraft below the following altitudes:

(a) *Anywhere.* An altitude allowing, if a power unit fails, an emergency landing without undue hazard to persons or property on the surface.

(b) *Over congested areas.* Over any congested area of a city, town, or settlement, or over any open air assembly of persons, an altitude of 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft.

(c) *Over other than congested areas.* An altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure.

(d) *Helicopters.* Helicopters may be operated at less than the minimums prescribed in paragraph (b) or (c) of this section if the operation is conducted without hazard to persons or property on the surface. In addition, each person operating a helicopter shall comply with any routes or altitudes specifically prescribed for helicopters by the Administrator.

§ 91.121 Altimeter settings.

(a) Each person operating an aircraft shall maintain the cruising altitude or flight level of that aircraft, as the case may be, by reference to an altimeter that is set, when operating—

(1) Below 18,000 feet MSL, to—

(i) The current reported altimeter setting of a station along the route and within 100 nautical miles of the aircraft;

(ii) If there is no station within the area prescribed in paragraph (a)(1)(i) of this section, the current reported altimeter setting of an appropriate available station; or

(iii) In the case of an aircraft not equipped with a radio, the elevation of the departure airport or an appropriate altimeter setting available before departure; or

(2) At or above 18,000 feet MSL, to 29.92″ Hg.

(b) The lowest usable flight level is determined by the atmospheric pressure in the area of operation as shown in the following table:

Current altimeter setting	Lowest usable flight level
29.92 (or higher)	180
29.91 through 29.42	185
29.41 through 28.92	190
28.91 through 28.42	195
28.41 through 27.92	200
27.91 through 27.42	205
27.41 through 26.92	210

(c) To convert minimum altitude prescribed under §§ 91.119 and 91.177 to the minimum flight level, the pilot shall take the flight level equivalent of the minimum altitude in feet and add the appropriate number of feet specified below, according to the current reported altimeter setting:

Current altimeter setting	Adjustment factor
29.92 (or higher)	None
29.91 through 29.42	500
29.41 through 28.92	1,000
28.91 through 28.42	1,500
28.41 through 27.92	2,000
27.91 through 27.42	2,500
27.41 through 26.92	3,000

§ 91.123 Compliance with ATC clearances and instructions.

(a) When an ATC clearance has been obtained, no pilot in command may deviate from that clearance unless an amended clearance is obtained, an emergency exists, or the deviation is in response to a traffic alert and collision avoidance system resolution advisory. However, except in Class A airspace, a pilot may cancel an IFR flight plan if the operation is being conducted in VFR weather conditions. When a pilot is uncertain of an ATC clearance, that pilot shall immediately request clarification from ATC.

(b) Except in an emergency, no person may operate an aircraft contrary to an ATC instruction in an area in which air traffic control is exercised.

(c) Each pilot in command who, in an emergency, or in response to a traffic alert and collision avoidance system resolution advisory, deviates from an ATC clearance or instruction shall notify ATC of that deviation as soon as possible.

(d) Each pilot in command who (though not deviating from a rule of this subpart) is given priority by ATC in an emergency, shall submit a detailed report of that emergency within 48 hours to the manager of that ATC facility, if requested by ATC.

(e) Unless otherwise authorized by ATC, no person operating an aircraft may operate that aircraft according to any clearance or instruction that has been issued to the pilot of another aircraft for radar air traffic control purposes.

(Approved by the Office of Management and Budget under control number 2120–0005)

[Doc. No. 18834, 54 FR 34294, Aug. 18, 1989, as amended by Amdt. 91–227, 56 FR 65658, Dec. 17, 1991; Amdt. 91–244, 60 FR 50679, Sept. 29, 1995]

§ 91.125 ATC light signals.

ATC light signals have the meaning shown in the following table:

Color and type of signal	Meaning with respect to aircraft on the surface	Meaning with respect to aircraft in flight
Steady green	Cleared for takeoff	Cleared to land.
Flashing green	Cleared to taxi	Return for landing (to be followed by steady green at proper time).
Steady red	Stop	Give way to other aircraft and continue circling.
Flashing red	Taxi clear of runway in use.	Airport unsafe—do not land.
Flashing white	Return to starting point on airport.	Not applicable.
Alternating red and green.	Exercise extreme caution.	Exercise extreme caution.

§ 91.126 Operating on or in the vicinity of an airport in Class G airspace.

(a) *General.* Unless otherwise authorized or required, each person operating an aircraft on or in the vicinity of an airport in a Class G airspace area must comply with the requirements of this section.

(b) *Direction of turns.* When approaching to land at an airport without an operating control tower in Class G airspace—

(1) Each pilot of an airplane must make all turns of that airplane to the left unless the airport displays approved light signals or visual markings indicating that turns should be made to the right, in which case the pilot must make all turns to the right; and

(2) Each pilot of a helicopter or a powered parachute must avoid the flow of fixed-wing aircraft.

(c) *Flap settings.* Except when necessary for training or certification, the pilot in command of a civil turbojet-powered aircraft must use, as a final flap setting, the minimum certificated landing flap setting set forth in the approved performance information in the Airplane Flight Manual for the applicable conditions. However, each pilot in command has the final authority and responsibility for the safe operation of the pilot's airplane, and may use a different flap setting for that airplane if the pilot determines that it is necessary in the interest of safety.

(d) *Communications with control towers.* Unless otherwise authorized or required by ATC, no person may operate

an aircraft to, from, through, or on an airport having an operational control tower unless two-way radio communications are maintained between that aircraft and the control tower. Communications must be established prior to 4 nautical miles from the airport, up to and including 2,500 feet AGL. However, if the aircraft radio fails in flight, the pilot in command may operate that aircraft and land if weather conditions are at or above basic VFR weather minimums, visual contact with the tower is maintained, and a clearance to land is received. If the aircraft radio fails while in flight under IFR, the pilot must comply with § 91.185.

[Doc. No. 24458, 56 FR 65658, Dec. 17, 1991, as amended by Amdt. 91–239, 59 FR 11693, Mar. 11, 1994; Amdt. 91–282, 69 FR 44880, July 27, 2004]

§ 91.127 Operating on or in the vicinity of an airport in Class E airspace.

(a) Unless otherwise required by part 93 of this chapter or unless otherwise authorized or required by the ATC facility having jurisdiction over the Class E airspace area, each person operating an aircraft on or in the vicinity of an airport in a Class E airspace area must comply with the requirements of § 91.126.

(b) *Departures.* Each pilot of an aircraft must comply with any traffic patterns established for that airport in part 93 of this chapter.

(c) *Communications with control towers.* Unless otherwise authorized or required by ATC, no person may operate an aircraft to, from, through, or on an airport having an operational control tower unless two-way radio communications are maintained between that aircraft and the control tower. Communications must be established prior to 4 nautical miles from the airport, up to and including 2,500 feet AGL. However, if the aircraft radio fails in flight, the pilot in command may operate that aircraft and land if weather conditions are at or above basic VFR weather minimums, visual contact with the tower is maintained, and a clearance to land is received. If the aircraft radio fails while in flight under IFR, the pilot must comply with § 91.185.

[Doc. No. 24458, 56 FR 65658, Dec. 17, 1991, as amended by Amdt. 91–239, 59 FR 11693, Mar. 11, 1994]

§ 91.129 Operations in Class D airspace.

(a) *General.* Unless otherwise authorized or required by the ATC facility having jurisdiction over the Class D airspace area, each person operating an aircraft in Class D airspace must comply with the applicable provisions of this section. In addition, each person must comply with §§ 91.126 and 91.127. For the purpose of this section, the primary airport is the airport for which the Class D airspace area is designated. A satellite airport is any other airport within the Class D airspace area.

(b) *Deviations.* An operator may deviate from any provision of this section under the provisions of an ATC authorization issued by the ATC facility having jurisdiction over the airspace concerned. ATC may authorize a deviation on a continuing basis or for an individual flight, as appropriate.

(c) *Communications.* Each person operating an aircraft in Class D airspace must meet the following two-way radio communications requirements:

(1) *Arrival or through flight.* Each person must establish two-way radio communications with the ATC facility (including foreign ATC in the case of foreign airspace designated in the United States) providing air traffic services prior to entering that airspace and thereafter maintain those communications while within that airspace.

(2) *Departing flight.* Each person—

(i) From the primary airport or satellite airport with an operating control tower must establish and maintain two-way radio communications with the control tower, and thereafter as instructed by ATC while operating in the Class D airspace area; or

(ii) From a satellite airport without an operating control tower, must establish and maintain two-way radio communications with the ATC facility having jurisdiction over the Class D airspace area as soon as practicable after departing.

(d) *Communications failure.* Each person who operates an aircraft in a Class

D airspace area must maintain two-way radio communications with the ATC facility having jurisdiction over that area.

(1) If the aircraft radio fails in flight under IFR, the pilot must comply with § 91.185 of the part.

(2) If the aircraft radio fails in flight under VFR, the pilot in command may operate that aircraft and land if—

(i) Weather conditions are at or above basic VFR weather minimums;

(ii) Visual contact with the tower is maintained; and

(iii) A clearance to land is received.

(e) *Minimum altitudes when operating to an airport in Class D airspace.* (1) Unless required by the applicable distance-from-cloud criteria, each pilot operating a large or turbine-powered airplane must enter the traffic pattern at an altitude of at least 1,500 feet above the elevation of the airport and maintain at least 1,500 feet until further descent is required for a safe landing.

(2) Each pilot operating a large or turbine-powered airplane approaching to land on a runway served by an instrument approach procedure with vertical guidance, if the airplane is so equipped, must:

(i) Operate that airplane at an altitude at or above the glide path between the published final approach fix and the decision altitude (DA), or decision height (DH), as applicable; or

(ii) If compliance with the applicable distance-from-cloud criteria requires glide path interception closer in, operate that airplane at or above the glide path, between the point of interception of glide path and the DA or the DH.

(3) Each pilot operating an airplane approaching to land on a runway served by a visual approach slope indicator must maintain an altitude at or above the glide path until a lower altitude is necessary for a safe landing.

(4) Paragraphs (e)(2) and (e)(3) of this section do not prohibit normal bracketing maneuvers above or below the glide path that are conducted for the purpose of remaining on the glide path.

(f) *Approaches.* Except when conducting a circling approach under part 97 of this chapter or unless otherwise required by ATC, each pilot must—

(1) Circle the airport to the left, if operating an airplane; or

(2) Avoid the flow of fixed-wing aircraft, if operating a helicopter.

(g) *Departures.* No person may operate an aircraft departing from an airport except in compliance with the following:

(1) Each pilot must comply with any departure procedures established for that airport by the FAA.

(2) Unless otherwise required by the prescribed departure procedure for that airport or the applicable distance from clouds criteria, each pilot of a turbine-powered airplane and each pilot of a large airplane must climb to an altitude of 1,500 feet above the surface as rapidly as practicable.

(h) *Noise abatement.* Where a formal runway use program has been established by the FAA, each pilot of a large or turbine-powered airplane assigned a noise abatement runway by ATC must use that runway. However, consistent with the final authority of the pilot in command concerning the safe operation of the aircraft as prescribed in § 91.3(a), ATC may assign a different runway if requested by the pilot in the interest of safety.

(i) *Takeoff, landing, taxi clearance.* No person may, at any airport with an operating control tower, operate an aircraft on a runway or taxiway, or take off or land an aircraft, unless an appropriate clearance is received from ATC. A clearance to ''taxi to'' the takeoff runway assigned to the aircraft is not a clearance to cross that assigned takeoff runway, or to taxi on that runway at any point, but is a clearance to cross other runways that intersect the taxi route to that assigned takeoff runway. A clearance to ''taxi to'' any point other than an assigned takeoff runway is clearance to cross all runways that intersect the taxi route to that point.

[Doc. No. 24458, 56 FR 65658, Dec. 17, 1991, as amended by Amdt. 91–234, 58 FR 48793, Sept. 20, 1993; Amdt. 91–296, 72 FR 31678, June 7, 2007]

§ 91.130 Operations in Class C airspace.

(a) *General.* Unless otherwise authorized by ATC, each aircraft operation in Class C airspace must be conducted in compliance with this section and

§ 91.129. For the purpose of this section, the primary airport is the airport for which the Class C airspace area is designated. A satellite airport is any other airport within the Class C airspace area.

(b) *Traffic patterns.* No person may take off or land an aircraft at a satellite airport within a Class C airspace area except in compliance with FAA arrival and departure traffic patterns.

(c) *Communications.* Each person operating an aircraft in Class C airspace must meet the following two-way radio communications requirements:

(1) *Arrival or through flight.* Each person must establish two-way radio communications with the ATC facility (including foreign ATC in the case of foreign airspace designated in the United States) providing air traffic services prior to entering that airspace and thereafter maintain those communications while within that airspace.

(2) *Departing flight.* Each person—

(i) From the primary airport or satellite airport with an operating control tower must establish and maintain two-way radio communications with the control tower, and thereafter as instructed by ATC while operating in the Class C airspace area; or

(ii) From a satellite airport without an operating control tower, must establish and maintain two-way radio communications with the ATC facility having jurisdiction over the Class C airspace area as soon as practicable after departing.

(d) *Equipment requirements.* Unless otherwise authorized by the ATC having jurisdiction over the Class C airspace area, no person may operate an aircraft within a Class C airspace area designated for an airport unless that aircraft is equipped with the applicable equipment specified in § 91.215.

(e) *Deviations.* An operator may deviate from any provision of this section under the provisions of an ATC authorization issued by the ATC facility having jurisdiction over the airspace concerned. ATC may authorize a deviation on a continuing basis or for an individual flight, as appropriate.

[Doc. No. 24458, 56 FR 65659, Dec. 17, 1991, as amended by Amdt. 91–232, 58 FR 40736, July 30, 1993; Amdt. 91–239, 59 FR 11693, Mar. 11, 1994]

§ 91.131 Operations in Class B airspace.

(a) *Operating rules.* No person may operate an aircraft within a Class B airspace area except in compliance with § 91.129 and the following rules:

(1) The operator must receive an ATC clearance from the ATC facility having jurisdiction for that area before operating an aircraft in that area.

(2) Unless otherwise authorized by ATC, each person operating a large turbine engine-powered airplane to or from a primary airport for which a Class B airspace area is designated must operate at or above the designated floors of the Class B airspace area while within the lateral limits of that area.

(3) Any person conducting pilot training operations at an airport within a Class B airspace area must comply with any procedures established by ATC for such operations in that area.

(b) *Pilot requirements.* (1) No person may take off or land a civil aircraft at an airport within a Class B airspace area or operate a civil aircraft within a Class B airspace area unless—

(i) The pilot in command holds at least a private pilot certificate;

(ii) The pilot in command holds a recreational pilot certificate and has met—

(A) The requirements of § 61.101(d) of this chapter; or

(B) The requirements for a student pilot seeking a recreational pilot certificate in § 61.94 of this chapter;

(iii) The pilot in command holds a sport pilot certificate and has met—

(A) The requirements of § 61.325 of this chapter; or

(B) The requirements for a student pilot seeking a recreational pilot certificate in § 61.94 of this chapter; or

(iv) The aircraft is operated by a student pilot who has met the requirements of § 61.94 or § 61.95 of this chapter, as applicable.

(2) Notwithstanding the provisions of paragraphs (b)(1)(ii), (b)(1)(iii) and (b)(1)(iv) of this section, no person may take off or land a civil aircraft at those airports listed in section 4 of appendix D to this part unless the pilot in command holds at least a private pilot certificate.

(c) *Communications and navigation equipment requirements.* Unless otherwise authorized by ATC, no person may operate an aircraft within a Class B airspace area unless that aircraft is equipped with—

(1) *For IFR operation.* An operable VOR or TACAN receiver or an operable and suitable RNAV system; and

(2) *For all operations.* An operable two-way radio capable of communications with ATC on appropriate frequencies for that Class B airspace area.

(d) *Transponder requirements.* No person may operate an aircraft in a Class B airspace area unless the aircraft is equipped with the applicable operating transponder and automatic altitude reporting equipment specified in paragraph (a) of §91.215, except as provided in paragraph (d) of that section.

[Doc. No. 24458, 56 FR 65658, Dec. 17, 1991, as amended by Amdt. 91–282, 69 FR 44880, July 27, 2004; Amdt. 91–296, 72 FR 31678, June 7, 2007]

§91.133 Restricted and prohibited areas.

(a) No person may operate an aircraft within a restricted area (designated in part 73) contrary to the restrictions imposed, or within a prohibited area, unless that person has the permission of the using or controlling agency, as appropriate.

(b) Each person conducting, within a restricted area, an aircraft operation (approved by the using agency) that creates the same hazards as the operations for which the restricted area was designated may deviate from the rules of this subpart that are not compatible with the operation of the aircraft.

§91.135 Operations in Class A airspace.

Except as provided in paragraph (d) of this section, each person operating an aircraft in Class A airspace must conduct that operation under instrument flight rules (IFR) and in compliance with the following:

(a) *Clearance.* Operations may be conducted only under an ATC clearance received prior to entering the airspace.

(b) *Communications.* Unless otherwise authorized by ATC, each aircraft operating in Class A airspace must be equipped with a two-way radio capable of communicating with ATC on a frequency assigned by ATC. Each pilot must maintain two-way radio communications with ATC while operating in Class A airspace.

(c) *Transponder requirement.* Unless otherwise authorized by ATC, no person may operate an aircraft within Class A airspace unless that aircraft is equipped with the applicable equipment specified in §91.215.

(d) *ATC authorizations.* An operator may deviate from any provision of this section under the provisions of an ATC authorization issued by the ATC facility having jurisdiction of the airspace concerned. In the case of an inoperative transponder, ATC may immediately approve an operation within a Class A airspace area allowing flight to continue, if desired, to the airport of ultimate destination, including any intermediate stops, or to proceed to a place where suitable repairs can be made, or both. Requests for deviation from any provision of this section must be submitted in writing, at least 4 days before the proposed operation. ATC may authorize a deviation on a continuing basis or for an individual flight.

[Doc. No. 24458, 56 FR 65659, Dec. 17, 1991]

§91.137 Temporary flight restrictions in the vicinity of disaster/hazard areas.

(a) The Administrator will issue a Notice to Airmen (NOTAM) designating an area within which temporary flight restrictions apply and specifying the hazard or condition requiring their imposition, whenever he determines it is necessary in order to—

(1) Protect persons and property on the surface or in the air from a hazard associated with an incident on the surface;

(2) Provide a safe environment for the operation of disaster relief aircraft; or

(3) Prevent an unsafe congestion of sightseeing and other aircraft above an incident or event which may generate a high degree of public interest.

The Notice to Airmen will specify the hazard or condition that requires the imposition of temporary flight restrictions.

(b) When a NOTAM has been issued under paragraph (a)(1) of this section, no person may operate an aircraft within the designated area unless that aircraft is participating in the hazard relief activities and is being operated under the direction of the official in charge of on scene emergency response activities.

(c) When a NOTAM has been issued under paragraph (a)(2) of this section, no person may operate an aircraft within the designated area unless at least one of the following conditions are met:

(1) The aircraft is participating in hazard relief activities and is being operated under the direction of the official in charge of on scene emergency response activities.

(2) The aircraft is carrying law enforcement officials.

(3) The aircraft is operating under the ATC approved IFR flight plan.

(4) The operation is conducted directly to or from an airport within the area, or is necessitated by the impracticability of VFR flight above or around the area due to weather, or terrain; notification is given to the Flight Service Station (FSS) or ATC facility specified in the NOTAM to receive advisories concerning disaster relief aircraft operations; and the operation does not hamper or endanger relief activities and is not conducted for the purpose of observing the disaster.

(5) The aircraft is carrying properly accredited news representatives, and, prior to entering the area, a flight plan is filed with the appropriate FAA or ATC facility specified in the Notice to Airmen and the operation is conducted above the altitude used by the disaster relief aircraft, unless otherwise authorized by the official in charge of on scene emergency response activities.

(d) When a NOTAM has been issued under paragraph (a)(3) of this section, no person may operate an aircraft within the designated area unless at least one of the following conditions is met:

(1) The operation is conducted directly to or from an airport within the area, or is necessitated by the impracticability of VFR flight above or around the area due to weather or terrain, and the operation is not conducted for the purpose of observing the incident or event.

(2) The aircraft is operating under an ATC approved IFR flight plan.

(3) The aircraft is carrying incident or event personnel, or law enforcement officials.

(4) The aircraft is carrying properly accredited news representatives and, prior to entering that area, a flight plan is filed with the appropriate FSS or ATC facility specified in the NOTAM.

(e) Flight plans filed and notifications made with an FSS or ATC facility under this section shall include the following information:

(1) Aircraft identification, type and color.

(2) Radio communications frequencies to be used.

(3) Proposed times of entry of, and exit from, the designated area.

(4) Name of news media or organization and purpose of flight.

(5) Any other information requested by ATC.

§ 91.138 Temporary flight restrictions in national disaster areas in the State of Hawaii.

(a) When the Administrator has determined, pursuant to a request and justification provided by the Governor of the State of Hawaii, or the Governor's designee, that an inhabited area within a declared national disaster area in the State of Hawaii is in need of protection for humanitarian reasons, the Administrator will issue a Notice to Airmen (NOTAM) designating an area within which temporary flight restrictions apply. The Administrator will designate the extent and duration of the temporary flight restrictions necessary to provide for the protection of persons and property on the surface.

(b) When a NOTAM has been issued in accordance with this section, no person may operate an aircraft within the designated area unless at least one of the following conditions is met:

(1) That person has obtained authorization from the official in charge of associated emergency or disaster relief response activities, and is operating the aircraft under the conditions of that authorization.

(2) The aircraft is carrying law enforcement officials.

(3) The aircraft is carrying persons involved in an emergency or a legitimate scientific purpose.

(4) The aircraft is carrying properly accredited newspersons, and that prior to entering the area, a flight plan is filed with the appropriate FAA or ATC facility specified in the NOTAM and the operation is conducted in compliance with the conditions and restrictions established by the official in charge of on-scene emergency response activities.

(5) The aircraft is operating in accordance with an ATC clearance or instruction.

(c) A NOTAM issued under this section is effective for 90 days or until the national disaster area designation is terminated, whichever comes first, unless terminated by notice or extended by the Administrator at the request of the Governor of the State of Hawaii or the Governor's designee.

[Doc. No. 26476, 56 FR 23178, May 20, 1991, as amended by Amdt. 91–270, 66 FR 47377, Sept. 11, 2001]

§ 91.139 Emergency air traffic rules.

(a) This section prescribes a process for utilizing Notices to Airmen (NOTAMs) to advise of the issuance and operations under emergency air traffic rules and regulations and designates the official who is authorized to issue NOTAMs on behalf of the Administrator in certain matters under this section.

(b) Whenever the Administrator determines that an emergency condition exists, or will exist, relating to the FAA's ability to operate the air traffic control system and during which normal flight operations under this chapter cannot be conducted consistent with the required levels of safety and efficiency—

(1) The Administrator issues an immediately effective air traffic rule or regulation in response to that emergency condition; and

(2) The Administrator or the Associate Administrator for Air Traffic may utilize the NOTAM system to provide notification of the issuance of the rule or regulation. Those NOTAMs communicate information concerning the rules and regulations that govern flight operations, the use of navigation facilities, and designation of that airspace in which the rules and regulations apply.

(c) When a NOTAM has been issued under this section, no person may operate an aircraft, or other device governed by the regulation concerned, within the designated airspace except in accordance with the authorizations, terms, and conditions prescribed in the regulation covered by the NOTAM.

§ 91.141 Flight restrictions in the proximity of the Presidential and other parties.

No person may operate an aircraft over or in the vicinity of any area to be visited or traveled by the President, the Vice President, or other public figures contrary to the restrictions established by the Administrator and published in a Notice to Airmen (NOTAM).

§ 91.143 Flight limitation in the proximity of space flight operations.

When a Notice to Airmen (NOTAM) is issued in accordance with this section, no person may operate any aircraft of U.S. registry, or pilot any aircraft under the authority of an airman certificate issued by the Federal Aviation Administration, within areas designated in a NOTAM for space flight operation except when authorized by ATC.

[Doc. No. FAA–2004–19246, 69 FR 59753, Oct. 5, 2004]

§ 91.144 Temporary restriction on flight operations during abnormally high barometric pressure conditions.

(a) *Special flight restrictions.* When any information indicates that barometric pressure on the route of flight currently exceeds or will exceed 31 inches of mercury, no person may operate an aircraft or initiate a flight contrary to the requirements established by the Administrator and published in a Notice to Airmen issued under this section.

(b) *Waivers.* The Administrator is authorized to waive any restriction issued under paragraph (a) of this section to permit emergency supply,

transport, or medical services to be delivered to isolated communities, where the operation can be conducted with an acceptable level of safety.

[Amdt. 91–240, 59 FR 17452, Apr. 12, 1994; 59 FR 37669, July 25, 1994]

§ 91.145 Management of aircraft operations in the vicinity of aerial demonstrations and major sporting events.

(a) The FAA will issue a Notice to Airmen (NOTAM) designating an area of airspace in which a temporary flight restriction applies when it determines that a temporary flight restriction is necessary to protect persons or property on the surface or in the air, to maintain air safety and efficiency, or to prevent the unsafe congestion of aircraft in the vicinity of an aerial demonstration or major sporting event. These demonstrations and events may include:

(1) United States Naval Flight Demonstration Team (Blue Angels);

(2) United States Air Force Air Demonstration Squadron (Thunderbirds);

(3) United States Army Parachute Team (Golden Knights);

(4) Summer/Winter Olympic Games;

(5) Annual Tournament of Roses Football Game;

(6) World Cup Soccer;

(7) Major League Baseball All-Star Game;

(8) World Series;

(9) Kodak Albuquerque International Balloon Fiesta;

(10) Sandia Classic Hang Gliding Competition;

(11) Indianapolis 500 Mile Race;

(12) Any other aerial demonstration or sporting event the FAA determines to need a temporary flight restriction in accordance with paragraph (b) of this section.

(b) In deciding whether a temporary flight restriction is necessary for an aerial demonstration or major sporting event not listed in paragraph (a) of this section, the FAA considers the following factors:

(1) Area where the event will be held.

(2) Effect flight restrictions will have on known aircraft operations.

(3) Any existing ATC airspace traffic management restrictions.

(4) Estimated duration of the event.

(5) Degree of public interest.

(6) Number of spectators.

(7) Provisions for spectator safety.

(8) Number and types of participating aircraft.

(9) Use of mixed high and low performance aircraft.

(10) Impact on non-participating aircraft.

(11) Weather minimums.

(12) Emergency procedures that will be in effect.

(c) A NOTAM issued under this section will state the name of the aerial demonstration or sporting event and specify the effective dates and times, the geographic features or coordinates, and any other restrictions or procedures governing flight operations in the designated airspace.

(d) When a NOTAM has been issued in accordance with this section, no person may operate an aircraft or device, or engage in any activity within the designated airspace area, except in accordance with the authorizations, terms, and conditions of the temporary flight restriction published in the NOTAM, unless otherwise authorized by:

(1) Air traffic control; or

(2) A Flight Standards Certificate of Waiver or Authorization issued for the demonstration or event.

(e) For the purpose of this section:

(1) *Flight restricted airspace area for an aerial demonstration*—The amount of airspace needed to protect persons and property on the surface or in the air, to maintain air safety and efficiency, or to prevent the unsafe congestion of aircraft will vary depending on the aerial demonstration and the factors listed in paragraph (b) of this section. The restricted airspace area will normally be limited to a 5 nautical mile radius from the center of the demonstration and an altitude 17000 mean sea level (for high performance aircraft) or 13000 feet above the surface (for certain parachute operations), but will be no greater than the minimum airspace necessary for the management of aircraft operations in the vicinity of the specified area.

(2) *Flight restricted area for a major sporting event*—The amount of airspace needed to protect persons and property

on the surface or in the air, to maintain air safety and efficiency, or to prevent the unsafe congestion of aircraft will vary depending on the size of the event and the factors listed in paragraph (b) of this section. The restricted airspace will normally be limited to a 3 nautical mile radius from the center of the event and 2500 feet above the surface but will not be greater than the minimum airspace necessary for the management of aircraft operations in the vicinity of the specified area.

(f) A NOTAM issued under this section will be issued at least 30 days in advance of an aerial demonstration or a major sporting event, unless the FAA finds good cause for a shorter period and explains this in the NOTAM.

(g) When warranted, the FAA Administrator may exclude the following flights from the provisions of this section:

(1) Essential military.

(2) Medical and rescue.

(3) Presidential and Vice Presidential.

(4) Visiting heads of state.

(5) Law enforcement and security.

(6) Public health and welfare.

[Doc. No. FAA–2000–8274, 66 FR 47378, Sept. 11, 2001]

§ 91.146 Passenger-carrying flights for the benefit of a charitable, nonprofit, or community event.

(a) *Definitions.* For purposes of this section, the following definitions apply:

Charitable event means an event that raises funds for the benefit of a charitable organization recognized by the Department of the Treasury whose donors may deduct contributions under section 170 of the Internal Revenue Code (26 U.S.C. Section 170).

Community event means an event that raises funds for the benefit of any local or community cause that is not a charitable event or non-profit event.

Non-profit event means an event that raises funds for the benefit of a nonprofit organization recognized under State or Federal law, as long as one of the organization's purposes is the promotion of aviation safety.

(b) Passenger carrying flights for the benefit of a charitable, nonprofit, or community event identified in paragraph (c) of this section are not subject to the certification requirements of part 119 or the drug and alcohol testing requirements in part 121, appendices I and J, of this chapter, provided the following conditions are satisfied and the limitations in paragraphs (c) and (d) are not exceeded:

(1) The flight is nonstop and begins and ends at the same airport and is conducted within a 25-statute mile radius of that airport;

(2) The flight is conducted from a public airport that is adequate for the airplane or helicopter used, or from another location the FAA approves for the operation;

(3) The airplane or helicopter has a maximum of 30 seats, excluding each crewmember seat, and a maximum payload capacity of 7,500 pounds;

(4) The flight is not an aerobatic or a formation flight;

(5) Each airplane or helicopter holds a standard airworthiness certificate, is airworthy, and is operated in compliance with the applicable requirements of subpart E of this part;

(6) Each flight is made during day VFR conditions;

(7) Reimbursement of the operator of the airplane or helicopter is limited to that portion of the passenger payment for the flight that does not exceed the pro rata cost of owning, operating, and maintaining the aircraft for that flight, which may include fuel, oil, airport expenditures, and rental fees;

(8) The beneficiary of the funds raised is not in the business of transportation by air;

(9) A private pilot acting as pilot in command has at least 500 hours of flight time;

(10) Each flight is conducted in accordance with the safety provisions of part 136, subpart A of this chapter; and

(11) Flights are not conducted over a national park, unit of a national park, or abutting tribal lands, unless the operator has secured a letter of agreement from the FAA, as specified under subpart B of part 136 of this chapter, and is operating in accordance with that agreement during the flights.

(c) (1) Passenger-carrying flights or series of flights are limited to a total of four charitable events or non-profit

events per year, with no event lasting more than three consecutive days.

(2) Passenger-carrying flights or series of flights are limited to one community event per year, with no event lasting more than three consecutive days.

(d) Pilots and sponsors of events described in this section are limited to no more than 4 events per calendar year.

(e) At least seven days before the event, each sponsor of an event described in this section must furnish to the FAA Flight Standards District Office with jurisdiction over the geographical area where the event is scheduled:

(1) A signed letter detailing the name of the sponsor, the purpose of the event, the date and time of the event, the location of the event, all prior events under this section participated in by the sponsor in the current calendar year;

(2) A photocopy of each pilot in command's pilot certificate, medical certificate, and logbook entries that show the pilot is current in accordance with §§ 61.56 and 61.57 of this chapter and that any private pilot has at least 500 hours of flight time; and

(3) A signed statement from each pilot that lists all prior events under this section in which the pilot has participated during the current calendar year.

[Doc. No. FAA–1998–4521, 72 FR 6910, Feb. 13, 2007]

§ 91.147 Passenger carrying flights for compensation or hire.

Each Operator conducting passenger-carrying flights for compensation or hire must meet the following requirements unless all flights are conducted under § 91.146.

(a) For the purposes of this section and for drug and alcohol testing, *Operator* means any person conducting nonstop passenger-carrying flights in an airplane or helicopter for compensation or hire in accordance with §§ 119.1(e)(2), 135.1(a)(5), or 121.1(d), of this chapter that begin and end at the same airport and are conducted within a 25-statute mile radius of that airport.

(b) An Operator must comply with the safety provisions of part 136, subpart A of this chapter, and apply for and receive a Letter of Authorization from the Flight Standards District Office nearest to its principal place of business by September 11, 2007.

(c) Each application for a Letter of Authorization must include the following information:

(1) Name of Operator, agent, and any d/b/a (doing-business-as) under which that Operator does business;

(2) Principal business address and mailing address;

(3) Principal place of business (if different from business address);

(4) Name of person responsible for management of the business;

(5) Name of person responsible for aircraft maintenance;

(6) Type of aircraft, registration number(s), and make/model/series; and

(7) An Antidrug and Alcohol Misuse Prevention Program registration.

(d) The Operator must register and implement its drug and alcohol testing programs in accordance with part 121, appendices I and J, of this chapter.

(e) The Operator must comply with the provisions of the Letter of Authorization received.

[Doc. No. FAA–1998–4521, 72 FR 6911, Feb. 13, 2007]

§§ 91.148–91.149 [Reserved]

VISUAL FLIGHT RULES

§ 91.151 Fuel requirements for flight in VFR conditions.

(a) No person may begin a flight in an airplane under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing and, assuming normal cruising speed—

(1) During the day, to fly after that for at least 30 minutes; or

(2) At night, to fly after that for at least 45 minutes.

(b) No person may begin a flight in a rotorcraft under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing and, assuming normal cruising speed, to fly after that for at least 20 minutes.

§ 91.153 VFR flight plan: Information required.

(a) *Information required.* Unless otherwise authorized by ATC, each person filing a VFR flight plan shall include in it the following information:

(1) The aircraft identification number and, if necessary, its radio call sign.

(2) The type of the aircraft or, in the case of a formation flight, the type of each aircraft and the number of aircraft in the formation.

(3) The full name and address of the pilot in command or, in the case of a formation flight, the formation commander.

(4) The point and proposed time of departure.

(5) The proposed route, cruising altitude (or flight level), and true airspeed at that altitude.

(6) The point of first intended landing and the estimated elapsed time until over that point.

(7) The amount of fuel on board (in hours).

(8) The number of persons in the aircraft, except where that information is otherwise readily available to the FAA.

(9) Any other information the pilot in command or ATC believes is necessary for ATC purposes.

(b) *Cancellation.* When a flight plan has been activated, the pilot in command, upon canceling or completing the flight under the flight plan, shall notify an FAA Flight Service Station or ATC facility.

§ 91.155 Basic VFR weather minimums.

(a) Except as provided in paragraph (b) of this section and § 91.157, no person may operate an aircraft under VFR when the flight visibility is less, or at a distance from clouds that is less, than that prescribed for the corresponding altitude and class of airspace in the following table:

Airspace	Flight visibility	Distance from clouds
Class A	Not Applicable	Not Applicable.
Class B	3 statute miles	Clear of Clouds.
Class C	3 statute miles	500 feet below. 1,000 feet above. 2,000 feet horizontal.
Class D	3 statute miles	500 feet below. 1,000 feet above. 2,000 feet horizontal.
Class E:		
Less than 10,000 feet MSL.	3 statute miles	500 feet below. 1,000 feet above. 2,000 feet horizontal
At or above 10,000 feet MSL.	5 statute miles	1,000 feet below. 1,000 feet above. 1 statute mile horizontal.
Class G:		
1,200 feet or less above the surface (regardless of MSL altitude).		
Day, except as provided in § 91.155(b).	1 statute mile	Clear of clouds.
Night, except as provided in § 91.155(b).	3 statute miles	500 feet below. 1,000 feet above. 2,000 feet horizontal.
More than 1,200 feet above the surface but less than 10,000 feet MSL		
Day	1 statute mile	500 feet below. 1,000 feet above. 2,000 feet horizontal.
Night	3 statute miles	500 feet below. 1,000 feet above. 2,000 feet horizontal.
More than 1,200 feet above the surface and at or above 10,000 feet MSL.	5 statute miles	1,000 feet below. 1,000 feet above. 1 statute mile horizontal.

(b) *Class G Airspace.* Notwithstanding the provisions of paragraph (a) of this section, the following operations may be conducted in Class G airspace below 1,200 feet above the surface:

(1) *Helicopter.* A helicopter may be operated clear of clouds if operated at a speed that allows the pilot adequate opportunity to see any air traffic or obstruction in time to avoid a collision.

(2) *Airplane, powered parachute, or weight-shift-control aircraft.* If the visibility is less than 3 statute miles but not less than 1 statute mile during night hours and you are operating in an airport traffic pattern within ½ mile of the runway, you may operate an airplane, powered parachute, or

weight-shift-control aircraft clear of clouds.

(c) Except as provided in § 91.157, no person may operate an aircraft beneath the ceiling under VFR within the lateral boundaries of controlled airspace designated to the surface for an airport when the ceiling is less than 1,000 feet.

(d) Except as provided in § 91.157 of this part, no person may take off or land an aircraft, or enter the traffic pattern of an airport, under VFR, within the lateral boundaries of the surface areas of Class B, Class C, Class D, or Class E airspace designated for an airport—

(1) Unless ground visibility at that airport is at least 3 statute miles; or

(2) If ground visibility is not reported at that airport, unless flight visibility during landing or takeoff, or while operating in the traffic pattern is at least 3 statute miles.

(e) For the purpose of this section, an aircraft operating at the base altitude of a Class E airspace area is considered to be within the airspace directly below that area.

[Doc. No. 24458, 56 FR 65660, Dec. 17, 1991, as amended by Amdt. 91–235, 58 FR 51968, Oct. 5, 1993; Amdt. 91–282, 69 FR 44880, July 27, 2004]

§ 91.157 Special VFR weather minimums.

(a) Except as provided in appendix D, section 3, of this part, special VFR operations may be conducted under the weather minimums and requirements of this section, instead of those contained in § 91.155, below 10,000 feet MSL within the airspace contained by the upward extension of the lateral boundaries of the controlled airspace designated to the surface for an airport.

(b) Special VFR operations may only be conducted—

(1) With an ATC clearance;

(2) Clear of clouds;

(3) Except for helicopters, when flight visibility is at least 1 statute mile; and

(4) Except for helicopters, between sunrise and sunset (or in Alaska, when the sun is 6 degrees or more below the horizon) unless—

(i) The person being granted the ATC clearance meets the applicable requirements for instrument flight under part 61 of this chapter; and

(ii) The aircraft is equipped as required in § 91.205(d).

(c) No person may take off or land an aircraft (other than a helicopter) under special VFR—

(1) Unless ground visibility is at least 1 statute mile; or

(2) If ground visibility is not reported, unless flight visibility is at least 1 statute mile. For the purposes of this paragraph, the term flight visibility includes the visibility from the cockpit of an aircraft in takeoff position if:

(i) The flight is conducted under this part 91; and

(ii) The airport at which the aircraft is located is a satellite airport that does not have weather reporting capabilities.

(d) The determination of visibility by a pilot in accordance with paragraph (c)(2) of this section is not an official weather report or an official ground visibility report.

[Amdt. 91–235, 58 FR 51968, Oct. 5, 1993, as amended by Amdt. 91–247, 60 FR 66874, Dec. 27, 1995; Amdt. 91–262, 65 FR 16116, Mar. 24, 2000]

§ 91.159 VFR cruising altitude or flight level.

Except while holding in a holding pattern of 2 minutes or less, or while turning, each person operating an aircraft under VFR in level cruising flight more than 3,000 feet above the surface shall maintain the appropriate altitude or flight level prescribed below, unless otherwise authorized by ATC:

(a) When operating below 18,000 feet MSL and—

(1) On a magnetic course of zero degrees through 179 degrees, any odd thousand foot MSL altitude +500 feet (such as 3,500, 5,500, or 7,500); or

(2) On a magnetic course of 180 degrees through 359 degrees, any even thousand foot MSL altitude +500 feet (such as 4,500, 6,500, or 8,500).

(b) When operating above 18,000 feet MSL, maintain the altitude or flight level assigned by ATC.

[Doc. No. 18334, 54 FR 34294, Aug. 18, 1989, as amended by Amdt. 91–276, 68 FR 61321, Oct. 27, 2003; 68 FR 70133, Dec. 17, 2003]

§§ 91.161–91.165 [Reserved]

INSTRUMENT FLIGHT RULES

§ 91.167 Fuel requirements for flight in IFR conditions.

(a) No person may operate a civil aircraft in IFR conditions unless it carries enough fuel (considering weather reports and forecasts and weather conditions) to—

(1) Complete the flight to the first airport of intended landing;

(2) Except as provided in paragraph (b) of this section, fly from that airport to the alternate airport; and

(3) Fly after that for 45 minutes at normal cruising speed or, for helicopters, fly after that for 30 minutes at normal cruising speed.

(b) Paragraph (a)(2) of this section does not apply if:

(1) Part 97 of this chapter prescribes a standard instrument approach procedure to, or a special instrument approach procedure has been issued by the Administrator to the operator for, the first airport of intended landing; and

(2) Appropriate weather reports or weather forecasts, or a combination of them, indicate the following:

(i) *For aircraft other than helicopters.* For at least 1 hour before and for 1 hour after the estimated time of arrival, the ceiling will be at least 2,000 feet above the airport elevation and the visibility will be at least 3 statute miles.

(ii) *For helicopters.* At the estimated time of arrival and for 1 hour after the estimated time of arrival, the ceiling will be at least 1,000 feet above the airport elevation, or at least 400 feet above the lowest applicable approach minima, whichever is higher, and the visibility will be at least 2 statute miles.

[Doc. No. 98-4390, 65 FR 3546, Jan. 21, 2000]

§ 91.169 IFR flight plan: Information required.

(a) *Information required.* Unless otherwise authorized by ATC, each person filing an IFR flight plan must include in it the following information:

(1) Information required under § 91.153 (a) of this part;

(2) Except as provided in paragraph (b) of this section, an alternate airport.

(b) Paragraph (a)(2) of this section does not apply if :

(1) Part 97 of this chapter prescribes a standard instrument approach procedure to, or a special instrument approach procedure has been issued by the Administrator to the operator for, the first airport of intended landing; and

(2) Appropriate weather reports or weather forecasts, or a combination of them, indicate the following:

(i) *For aircraft other than helicopters.* For at least 1 hour before and for 1 hour after the estimated time of arrival, the ceiling will be at least 2,000 feet above the airport elevation and the visibility will be at least 3 statute miles.

(ii) *For helicopters.* At the estimated time of arrival and for 1 hour after the estimated time of arrival, the ceiling will be at least 1,000 feet above the airport elevation, or at least 400 feet above the lowest applicable approach minima, whichever is higher, and the visibility will be at least 2 statute miles.

(c) *IFR alternate airport weather minima.* Unless otherwise authorized by the Administrator, no person may include an alternate airport in an IFR flight plan unless appropriate weather reports or weather forecasts, or a combination of them, indicate that, at the estimated time of arrival at the alternate airport, the ceiling and visibility at that airport will be at or above the following weather minima:

(1) If an instrument approach procedure has been published in part 97 of this chapter, or a special instrument approach procedure has been issued by the Administrator to the operator, for that airport, the following minima:

(i) *For aircraft other than helicopters:* The alternate airport minima specified in that procedure, or if none are specified the following standard approach minima:

(A) *For a precision approach procedure.* Ceiling 600 feet and visibility 2 statute miles.

(B) *For a nonprecision approach procedure.* Ceiling 800 feet and visibility 2 statute miles.

(ii) *For helicopters:* Ceiling 200 feet above the minimum for the approach to be flown, and visibility at least 1 statute mile but never less than the minimum visibility for the approach to be flown, and

(2) If no instrument approach procedure has been published in part 97 of this chapter and no special instrument approach procedure has been issued by the Administrator to the operator, for the alternate airport, the ceiling and visibility minima are those allowing descent from the MEA, approach, and landing under basic VFR.

(d) *Cancellation.* When a flight plan has been activated, the pilot in command, upon canceling or completing the flight under the flight plan, shall notify an FAA Flight Service Station or ATC facility.

[Doc. No. 18334, 54 FR 34294, Aug. 18, 1989, as amended by Amdt. 91–259, 65 FR 3546, Jan. 21, 2000]

§ 91.171 VOR equipment check for IFR operations.

(a) No person may operate a civil aircraft under IFR using the VOR system of radio navigation unless the VOR equipment of that aircraft—

(1) Is maintained, checked, and inspected under an approved procedure; or

(2) Has been operationally checked within the preceding 30 days, and was found to be within the limits of the permissible indicated bearing error set forth in paragraph (b) or (c) of this section.

(b) Except as provided in paragraph (c) of this section, each person conducting a VOR check under paragraph (a)(2) of this section shall—

(1) Use, at the airport of intended departure, an FAA-operated or approved test signal or a test signal radiated by a certificated and appropriately rated radio repair station or, outside the United States, a test signal operated or approved by an appropriate authority to check the VOR equipment (the maximum permissible indicated bearing error is plus or minus 4 degrees); or

(2) Use, at the airport of intended departure, a point on the airport surface designated as a VOR system checkpoint by the Administrator, or, outside the United States, by an appropriate authority (the maximum permissible bearing error is plus or minus 4 degrees);

(3) If neither a test signal nor a designated checkpoint on the surface is available, use an airborne checkpoint designated by the Administrator or, outside the United States, by an appropriate authority (the maximum permissible bearing error is plus or minus 6 degrees); or

(4) If no check signal or point is available, while in flight—

(i) Select a VOR radial that lies along the centerline of an established VOR airway;

(ii) Select a prominent ground point along the selected radial preferably more than 20 nautical miles from the VOR ground facility and maneuver the aircraft directly over the point at a reasonably low altitude; and

(iii) Note the VOR bearing indicated by the receiver when over the ground point (the maximum permissible variation between the published radial and the indicated bearing is 6 degrees).

(c) If dual system VOR (units independent of each other except for the antenna) is installed in the aircraft, the person checking the equipment may check one system against the other in place of the check procedures specified in paragraph (b) of this section. Both systems shall be tuned to the same VOR ground facility and note the indicated bearings to that station. The maximum permissible variation between the two indicated bearings is 4 degrees.

(d) Each person making the VOR operational check, as specified in paragraph (b) or (c) of this section, shall enter the date, place, bearing error, and sign the aircraft log or other record. In addition, if a test signal radiated by a repair station, as specified in paragraph (b)(1) of this section, is used, an entry must be made in the aircraft log or other record by the repair station certificate holder or the certificate holder's representative certifying to the bearing transmitted by the repair station for the check and the date of transmission.

(Approved by the Office of Management and Budget under control number 2120–0005)

§ 91.173 ATC clearance and flight plan required.

No person may operate an aircraft in controlled airspace under IFR unless that person has—

(a) Filed an IFR flight plan; and

(b) Received an appropriate ATC clearance.

§ 91.175 Takeoff and landing under IFR.

(a) *Instrument approaches to civil airports.* Unless otherwise authorized by the FAA, when it is necessary to use an instrument approach to a civil airport, each person operating an aircraft must use a standard instrument approach procedure prescribed in part 97 of this chapter for that airport. This paragraph does not apply to United States military aircraft.

(b) *Authorized DA/DH or MDA.* For the purpose of this section, when the approach procedure being used provides for and requires the use of a DA/DH or MDA, the authorized DA/DH or MDA is the highest of the following:

(1) The DA/DH or MDA prescribed by the approach procedure.

(2) The DA/DH or MDA prescribed for the pilot in command.

(3) The DA/DH or MDA appropriate for the aircraft equipment available and used during the approach.

(c) *Operation below DA/ DH or MDA.* Except as provided in paragraph (l) of this section, where a DA/DH or MDA is applicable, no pilot may operate an aircraft, except a military aircraft of the United States, below the authorized MDA or continue an approach below the authorized DA/DH unless—

(1) The aircraft is continuously in a position from which a descent to a landing on the intended runway can be made at a normal rate of descent using normal maneuvers, and for operations conducted under part 121 or part 135 unless that descent rate will allow touchdown to occur within the touchdown zone of the runway of intended landing;

(2) The flight visibility is not less than the visibility prescribed in the standard instrument approach being used; and

(3) Except for a Category II or Category III approach where any necessary visual reference requirements are specified by the Administrator, at least one of the following visual references for the intended runway is distinctly visible and identifiable to the pilot:

(i) The approach light system, except that the pilot may not descend below 100 feet above the touchdown zone elevation using the approach lights as a reference unless the red terminating bars or the red side row bars are also distinctly visible and identifiable.

(ii) The threshold.

(iii) The threshold markings.

(iv) The threshold lights.

(v) The runway end identifier lights.

(vi) The visual approach slope indicator.

(vii) The touchdown zone or touchdown zone markings.

(viii) The touchdown zone lights.

(ix) The runway or runway markings.

(x) The runway lights.

(d) *Landing.* No pilot operating an aircraft, except a military aircraft of the United States, may land that aircraft when—

(1) For operations conducted under paragraph (l) of this section, the requirements of (l)(4) of this section are not met; or

(2) For all other part 91 operations and parts 121, 125, 129, and 135 operations, the flight visibility is less than the visibility prescribed in the standard instrument approach procedure being used.

(e) *Missed approach procedures.* Each pilot operating an aircraft, except a military aircraft of the United States, shall immediately execute an appropriate missed approach procedure when either of the following conditions exist:

(1) Whenever operating an aircraft pursuant to paragraph (c) or (l) of this section and the requirements of that paragraph are not met at either of the following times:

(i) When the aircraft is being operated below MDA; or

(ii) Upon arrival at the missed approach point, including a DA/DH where a DA/DH is specified and its use is required, and at any time after that until touchdown.

(2) Whenever an identifiable part of the airport is not distinctly visible to the pilot during a circling maneuver at or above MDA, unless the inability to see an identifiable part of the airport

results only from a normal bank of the aircraft during the circling approach.

(f) *Civil airport takeoff minimums.* This paragraph applies to persons operating an aircraft under part 121, 125, 129, or 135 of this chapter.

(1) Unless otherwise authorized by the FAA, no pilot may takeoff from a civil airport under IFR unless the weather conditions at time of takeoff are at or above the weather minimums for IFR takeoff prescribed for that airport under part 97 of this chapter.

(2) If takeoff weather minimums are not prescribed under part 97 of this chapter for a particular airport, the following weather minimums apply to takeoffs under IFR:

(i) For aircraft, other than helicopters, having two engines or less—1 statute mile visibility.

(ii) For aircraft having more than two engines—½ statute mile visibility.

(iii) For helicopters—½ statute mile visibility.

(3) Except as provided in paragraph (f)(4) of this section, no pilot may takeoff under IFR from a civil airport having published obstacle departure procedures (ODPs) under part 97 of this chapter for the takeoff runway to be used, unless the pilot uses such ODPs.

(4) Notwithstanding the requirements of paragraph (f)(3) of this section, no pilot may takeoff from an airport under IFR unless:

(i) For part 121 and part 135 operators, the pilot uses a takeoff obstacle clearance or avoidance procedure that ensures compliance with the applicable airplane performance operating limitations requirements under part 121, subpart I or part 135, subpart I for takeoff at that airport; or

(ii) For part 129 operators, the pilot uses a takeoff obstacle clearance or avoidance procedure that ensures compliance with the airplane performance operating limitations prescribed by the State of the operator for takeoff at that airport.

(g) *Military airports.* Unless otherwise prescribed by the Administrator, each person operating a civil aircraft under IFR into or out of a military airport shall comply with the instrument approach procedures and the takeoff and landing minimum prescribed by the military authority having jurisdiction of that airport.

(h) *Comparable values of RVR and ground visibility.* (1) Except for Category II or Category III minimums, if RVR minimums for takeoff or landing are prescribed in an instrument approach procedure, but RVR is not reported for the runway of intended operation, the RVR minimum shall be converted to ground visibility in accordance with the table in paragraph (h)(2) of this section and shall be the visibility minimum for takeoff or landing on that runway.

(2)

RVR (feet)	Visibility (statute miles)
1,600	1/4
2,400	1/2
3,200	5/8
4,000	3/4
4,500	7/8
5,000	1
6,000	1 1/4

(i) *Operations on unpublished routes and use of radar in instrument approach procedures.* When radar is approved at certain locations for ATC purposes, it may be used not only for surveillance and precision radar approaches, as applicable, but also may be used in conjunction with instrument approach procedures predicated on other types of radio navigational aids. Radar vectors may be authorized to provide course guidance through the segments of an approach to the final course or fix. When operating on an unpublished route or while being radar vectored, the pilot, when an approach clearance is received, shall, in addition to complying with § 91.177, maintain the last altitude assigned to that pilot until the aircraft is established on a segment of a published route or instrument approach procedure unless a different altitude is assigned by ATC. After the aircraft is so established, published altitudes apply to descent within each succeeding route or approach segment unless a different altitude is assigned by ATC. Upon reaching the final approach course or fix, the pilot may either complete the instrument approach in accordance with a procedure approved for the facility or continue a

surveillance or precision radar approach to a landing.

(j) *Limitation on procedure turns.* In the case of a radar vector to a final approach course or fix, a timed approach from a holding fix, or an approach for which the procedure specifies ''No PT,'' no pilot may make a procedure turn unless cleared to do so by ATC.

(k) *ILS components.* The basic components of an ILS are the localizer, glide slope, and outer marker, and, when installed for use with Category II or Category III instrument approach procedures, an inner marker. The following means may be used to substitute for the outer marker: Compass locator; precision approach radar (PAR) or airport surveillance radar (ASR); DME, VOR, or nondirectional beacon fixes authorized in the standard instrument approach procedure; or a suitable RNAV system in conjunction with a fix identified in the standard instrument approach procedure. Applicability of, and substitution for, the inner marker for a Category II or III approach is determined by the appropriate 14 CFR part 97 approach procedure, letter of authorization, or operations specifications issued to an operator.

(l) *Approach to straight-in landing operations below DH, or MDA using an enhanced flight vision system (EFVS).* For straight-in instrument approach procedures other than Category II or Category III, no pilot operating under this section or §§ 121.651, 125.381, and 135.225 of this chapter may operate an aircraft at any airport below the authorized MDA or continue an approach below the authorized DH and land unless—

(1) The aircraft is continuously in a position from which a descent to a landing on the intended runway can be made at a normal rate of descent using normal maneuvers, and, for operations conducted under part 121 or part 135 of this chapter, the descent rate will allow touchdown to occur within the touchdown zone of the runway of intended landing;

(2) The pilot determines that the enhanced flight visibility observed by use of a certified enhanced flight vision system is not less than the visibility prescribed in the standard instrument approach procedure being used;

(3) The following visual references for the intended runway are distinctly visible and identifiable to the pilot using the enhanced flight vision system:

(i) The approach light system (if installed); or

(ii) The following visual references in both paragraphs (l)(3)(ii)(A) and (B) of this section:

(A) The runway threshold, identified by at least one of the following:

(*1*) The beginning of the runway landing surface;

(*2*) The threshold lights; or

(*3*) The runway end identifier lights.

(B) The touchdown zone, identified by at least one of the following:

(*1*) The runway touchdown zone landing surface;

(*2*) The touchdown zone lights;

(*3*) The touchdown zone markings; or

(*4*) The runway lights.

(4) At 100 feet above the touchdown zone elevation of the runway of intended landing and below that altitude, the flight visibility must be sufficient for the following to be distinctly visible and identifiable to the pilot without reliance on the enhanced flight vision system to continue to a landing:

(i) The lights or markings of the threshold; or

(ii) The lights or markings of the touchdown zone;

(5) The pilot(s) is qualified to use an EFVS as follows—

(i) For parts 119 and 125 certificate holders, the applicable training, testing and qualification provisions of parts 121, 125, and 135 of this chapter;

(ii) For foreign persons, in accordance with the requirements of the civil aviation authority of the State of the operator; or

(iii) For persons conducting any other operation, in accordance with the applicable currency and proficiency requirements of part 61 of this chapter;

(6) For parts 119 and 125 certificate holders, and part 129 operations specifications holders, their operations specifications authorize use of EFVS; and

(7) The aircraft is equipped with, and the pilot uses, an enhanced flight vision system, the display of which is suitable for maneuvering the aircraft

and has either an FAA type design approval or, for a foreign-registered aircraft, the EFVS complies with all of the EFVS requirements of this chapter.

(m) For purposes of this section, ''enhanced flight vision system'' (EFVS) is an installed airborne system comprised of the following features and characteristics:

(1) An electronic means to provide a display of the forward external scene topography (the natural or manmade features of a place or region especially in a way to show their relative positions and elevation) through the use of imaging sensors, such as a forward-looking infrared, millimeter wave radiometry, millimeter wave radar, and low-light level image intensifying;

(2) The EFVS sensor imagery and aircraft flight symbology (*i.e.*, at least airspeed, vertical speed, aircraft attitude, heading, altitude, command guidance as appropriate for the approach to be flown, path deviation indications, and flight path vector, and flight path angle reference cue) are presented on a head-up display, or an equivalent display, so that they are clearly visible to the pilot flying in his or her normal position and line of vision and looking forward along the flight path, to include:

(i) The displayed EFVS imagery, attitude symbology, flight path vector, and flight path angle reference cue, and other cues, which are referenced to this imagery and external scene topography, must be presented so that they are aligned with and scaled to the external view; and

(ii) The flight path angle reference cue must be displayed with the pitch scale, selectable by the pilot to the desired descent angle for the approach, and suitable for monitoring the vertical flight path of the aircraft on approaches without vertical guidance; and

(iii) The displayed imagery and aircraft flight symbology do not adversely obscure the pilot's outside view or field of view through the cockpit window;

(3) The EFVS includes the display element, sensors, computers and power supplies, indications, and controls. It may receive inputs from an airborne navigation system or flight guidance system; and

(4) The display characteristics and dynamics are suitable for manual control of the aircraft.

[Doc. No. 18334, 54 FR 34294, Aug. 18, 1989, as amended by Amdt. 91–267, 66 FR 21066, Apr. 27, 2001; Amdt. 91–281, 69 FR 1640, Jan. 9, 2004; Amdt. 91–296, 72 FR 31678, June 7, 2007]

§ 91.177 Minimum altitudes for IFR operations.

(a) *Operation of aircraft at minimum altitudes.* Except when necessary for takeoff or landing, no person may operate an aircraft under IFR below—

(1) The applicable minimum altitudes prescribed in parts 95 and 97 of this chapter. However, if both a MEA and a MOCA are prescribed for a particular route or route segment, a person may operate an aircraft below the MEA down to, but not below, the MOCA, provided the applicable navigation signals are available. For aircraft using VOR for navigation, this applies only when the aircraft is within 22 nautical miles of that VOR (based on the reasonable estimate by the pilot operating the aircraft of that distance); or

(2) If no applicable minimum altitude is prescribed in parts 95 and 97 of this chapter, then—

(i) In the case of operations over an area designated as a mountainous area in part 95 of this chapter, an altitude of 2,000 feet above the highest obstacle within a horizontal distance of 4 nautical miles from the course to be flown; or

(ii) In any other case, an altitude of 1,000 feet above the highest obstacle within a horizontal distance of 4 nautical miles from the course to be flown.

(b) *Climb.* Climb to a higher minimum IFR altitude shall begin immediately after passing the point beyond which that minimum altitude applies, except that when ground obstructions intervene, the point beyond which that higher minimum altitude applies shall be crossed at or above the applicable MCA.

[Doc. No. 18334, 54 FR 34294, Aug. 18, 1989, as amended by Amdt. 91–296, 72 FR 31678, June 7, 2007]

§ 91.179 IFR cruising altitude or flight level.

Unless otherwise authorized by ATC, the following rules apply—

(a) *In controlled airspace.* Each person operating an aircraft under IFR in level cruising flight in controlled airspace shall maintain the altitude or flight level assigned that aircraft by ATC. However, if the ATC clearance assigns ''VFR conditions on-top,'' that person shall maintain an altitude or flight level as prescribed by § 91.159.

(b) *In uncontrolled airspace.* Except while in a holding pattern of 2 minutes or less or while turning, each person operating an aircraft under IFR in level cruising flight in uncontrolled airspace shall maintain an appropriate altitude as follows:

(1) When operating below 18,000 feet MSL and—

(i) On a magnetic course of zero degrees through 179 degrees, any odd thousand foot MSL altitude (such as 3,000, 5,000, or 7,000); or

(ii) On a magnetic course of 180 degrees through 359 degrees, any even thousand foot MSL altitude (such as 2,000, 4,000, or 6,000).

(2) When operating at or above 18,000 feet MSL but below flight level 290, and—

(i) On a magnetic course of zero degrees through 179 degrees, any odd flight level (such as 190, 210, or 230); or

(ii) On a magnetic course of 180 degrees through 359 degrees, any even flight level (such as 180, 200, or 220).

(3) When operating at flight level 290 and above in non-RVSM airspace, and—

(i) On a magnetic course of zero degrees through 179 degrees, any flight level, at 4,000-foot intervals, beginning at and including flight level 290 (such as flight level 290, 330, or 370); or

(ii) On a magnetic course of 180 degrees through 359 degrees, any flight level, at 4,000-foot intervals, beginning at and including flight level 310 (such as flight level 310, 350, or 390).

(4) When operating at flight level 290 and above in airspace designated as Reduced Vertical Separation Minimum (RVSM) airspace and—

(i) On a magnetic course of zero degrees through 179 degrees, any odd flight level, at 2,000-foot intervals beginning at and including flight level 290 (such as flight level 290, 310, 330, 350, 370, 390, 410); or

(ii) On a magnetic course of 180 degrees through 359 degrees, any even flight level, at 2000-foot intervals beginning at and including flight level 300 (such as 300, 320, 340, 360, 380, 400).

[Doc. No. 18334, 54 FR 34294, Aug. 18, 1989, as amended by Amdt. 91–276, 68 FR 61321, Oct. 27, 2003; 68 FR 70133, Dec. 17, 2003; Amdt. 91–296, 72 FR 31679, June 7, 2007]

§ 91.180 Operations within airspace designated as Reduced Vertical Separation Minimum airspace.

(a) Except as provided in paragraph (b) of this section, no person may operate a civil aircraft in airspace designated as Reduced Vertical Separation Minimum (RVSM) airspace unless:

(1) The operator and the operator's aircraft comply with the minimum standards of appendix G of this part; and

(2) The operator is authorized by the Administrator or the country of registry to conduct such operations.

(b) The Administrator may authorize a deviation from the requirements of this section.

[Amdt. 91–276, 68 FR 70133, Dec. 17, 2003]

§ 91.181 Course to be flown.

Unless otherwise authorized by ATC, no person may operate an aircraft within controlled airspace under IFR except as follows:

(a) On an ATS route, along the centerline of that airway.

(b) On any other route, along the direct course between the navigational aids or fixes defining that route. However, this section does not prohibit maneuvering the aircraft to pass well clear of other air traffic or the maneuvering of the aircraft in VFR conditions to clear the intended flight path both before and during climb or descent.

[Doc. No. 18334, 54 FR 34294, Aug. 18, 1989, as amended by Amdt. 91–296, 72 FR 31679, June 7, 2007]

§ 91.183 IFR communications.

Unless otherwise authorized by ATC, the pilot in command of each aircraft operated under IFR in controlled airspace must ensure that a continuous watch is maintained on the appropriate frequency and must report the following as soon as possible—

(a) The time and altitude of passing each designated reporting point, or the reporting points specified by ATC, except that while the aircraft is under radar control, only the passing of those reporting points specifically requested by ATC need be reported;

(b) Any unforecast weather conditions encountered; and

(c) Any other information relating to the safety of flight.

[Doc. No. 18334, 54 FR 34294, Aug. 18, 1989, as amended by Amdt. 91–296, 72 FR 31679, June 7, 2007]

§ 91.185 IFR operations: Two-way radio communications failure.

(a) *General.* Unless otherwise authorized by ATC, each pilot who has two-way radio communications failure when operating under IFR shall comply with the rules of this section.

(b) *VFR conditions.* If the failure occurs in VFR conditions, or if VFR conditions are encountered after the failure, each pilot shall continue the flight under VFR and land as soon as practicable.

(c) *IFR conditions.* If the failure occurs in IFR conditions, or if paragraph (b) of this section cannot be complied with, each pilot shall continue the flight according to the following:

(1) *Route.* (i) By the route assigned in the last ATC clearance received;

(ii) If being radar vectored, by the direct route from the point of radio failure to the fix, route, or airway specified in the vector clearance;

(iii) In the absence of an assigned route, by the route that ATC has advised may be expected in a further clearance; or

(iv) In the absence of an assigned route or a route that ATC has advised may be expected in a further clearance, by the route filed in the flight plan.

(2) *Altitude.* At the highest of the following altitudes or flight levels for the route segment being flown:

(i) The altitude or flight level assigned in the last ATC clearance received;

(ii) The minimum altitude (converted, if appropriate, to minimum flight level as prescribed in § 91.121(c)) for IFR operations; or

(iii) The altitude or flight level ATC has advised may be expected in a further clearance.

(3) *Leave clearance limit.* (i) When the clearance limit is a fix from which an approach begins, commence descent or descent and approach as close as possible to the expect-further-clearance time if one has been received, or if one has not been received, as close as possible to the estimated time of arrival as calculated from the filed or amended (with ATC) estimated time en route.

(ii) If the clearance limit is not a fix from which an approach begins, leave the clearance limit at the expect-further-clearance time if one has been received, or if none has been received, upon arrival over the clearance limit, and proceed to a fix from which an approach begins and commence descent or descent and approach as close as possible to the estimated time of arrival as calculated from the filed or amended (with ATC) estimated time en route.

[Doc. No. 18334, 54 FR 34294, Aug. 18, 1989; Amdt. 91–211, 54 FR 41211, Oct. 5, 1989]

§ 91.187 Operation under IFR in controlled airspace: Malfunction reports.

(a) The pilot in command of each aircraft operated in controlled airspace under IFR shall report as soon as practical to ATC any malfunctions of navigational, approach, or communication equipment occurring in flight.

(b) In each report required by paragraph (a) of this section, the pilot in command shall include the—

(1) Aircraft identification;

(2) Equipment affected;

(3) Degree to which the capability of the pilot to operate under IFR in the ATC system is impaired; and

(4) Nature and extent of assistance desired from ATC.

§ 91.189 Category II and III operations: General operating rules.

(a) No person may operate a civil aircraft in a Category II or III operation unless—

(1) The flight crew of the aircraft consists of a pilot in command and a second in command who hold the appropriate authorizations and ratings prescribed in § 61.3 of this chapter;

(2) Each flight crewmember has adequate knowledge of, and familiarity with, the aircraft and the procedures to be used; and

(3) The instrument panel in front of the pilot who is controlling the aircraft has appropriate instrumentation for the type of flight control guidance system that is being used.

(b) Unless otherwise authorized by the Administrator, no person may operate a civil aircraft in a Category II or Category III operation unless each ground component required for that operation and the related airborne equipment is installed and operating.

(c) *Authorized DA/DH.* For the purpose of this section, when the approach procedure being used provides for and requires the use of a DA/DH, the authorized DA/DH is the highest of the following:

(1) The DA/DH prescribed by the approach procedure.

(2) The DA/DH prescribed for the pilot in command.

(3) The DA/DH for which the aircraft is equipped.

(d) Unless otherwise authorized by the Administrator, no pilot operating an aircraft in a Category II or Category III approach that provides and requires use of a DA/DH may continue the approach below the authorized decision height unless the following conditions are met:

(1) The aircraft is in a position from which a descent to a landing on the intended runway can be made at a normal rate of descent using normal maneuvers, and where that descent rate will allow touchdown to occur within the touchdown zone of the runway of intended landing.

(2) At least one of the following visual references for the intended runway is distinctly visible and identifiable to the pilot:

(i) The approach light system, except that the pilot may not descend below 100 feet above the touchdown zone elevation using the approach lights as a reference unless the red terminating bars or the red side row bars are also distinctly visible and identifiable.

(ii) The threshold.

(iii) The threshold markings.

(iv) The threshold lights.

(v) The touchdown zone or touchdown zone markings.

(vi) The touchdown zone lights.

(e) Unless otherwise authorized by the Administrator, each pilot operating an aircraft shall immediately execute an appropriate missed approach whenever, prior to touchdown, the requirements of paragraph (d) of this section are not met.

(f) No person operating an aircraft using a Category III approach without decision height may land that aircraft except in accordance with the provisions of the letter of authorization issued by the Administrator.

(g) Paragraphs (a) through (f) of this section do not apply to operations conducted by certificate holders operating under part 121, 125, 129, or 135 of this chapter, or holders of management specifications issued in accordance with subpart K of this part. Holders of operations specifications or management specifications may operate a civil aircraft in a Category II or Category III operation only in accordance with their operations specifications or management specifications, as applicable.

[Doc. No. 18334, 54 FR 34294, Aug. 18, 1989, as amended by Amdt. 91–280, 68 FR 54560, Sept. 17, 2003; Amdt. 91–296, 72 FR 31679, June 7, 2007]

§ 91.191 Category II and Category III manual.

(a) Except as provided in paragraph (c) of this section, after August 4, 1997, no person may operate a U.S.-registered civil aircraft in a Category II or a Category III operation unless—

(1) There is available in the aircraft a current and approved Category II or Category III manual, as appropriate, for that aircraft;

(2) The operation is conducted in accordance with the procedures, instructions, and limitations in the appropriate manual; and

(3) The instruments and equipment listed in the manual that are required for a particular Category II or Category III operation have been inspected and maintained in accordance with the maintenance program contained in the manual.

(b) Each operator must keep a current copy of each approved manual at its principal base of operations and

must make each manual available for inspection upon request by the Administrator.

(c) This section does not apply to operations conducted by a certificate holder operating under part 121 or part 135 of this chapter or a holder of management specifications issued in accordance with subpart K of this part.

[Doc. No. 26933, 61 FR 34560, July 2, 1996, as amended by Amdt. 91–280, 68 FR 54560, Sept. 17, 2003]

§ 91.193 Certificate of authorization for certain Category II operations.

The Administrator may issue a certificate of authorization authorizing deviations from the requirements of §§ 91.189, 91.191, and 91.205(f) for the operation of small aircraft identified as Category A aircraft in § 97.3 of this chapter in Category II operations if the Administrator finds that the proposed operation can be safely conducted under the terms of the certificate. Such authorization does not permit operation of the aircraft carrying persons or property for compensation or hire.

§§ 91.195–91.199 [Reserved]

Subpart C—Equipment, Instrument, and Certificate Requirements

SOURCE: Docket No. 18334, 54 FR 34304, Aug. 18, 1989, unless otherwise noted.

§ 91.201 [Reserved]

§ 91.203 Civil aircraft: Certifications required.

(a) Except as provided in § 91.715, no person may operate a civil aircraft unless it has within it the following:

(1) An appropriate and current airworthiness certificate. Each U.S. airworthiness certificate used to comply with this subparagraph (except a special flight permit, a copy of the applicable operations specifications issued under § 21.197(c) of this chapter, appropriate sections of the air carrier manual required by parts 121 and 135 of this chapter containing that portion of the operations specifications issued under § 21.197(c), or an authorization under § 91.611) must have on it the registration number assigned to the aircraft under part 47 of this chapter. However, the airworthiness certificate need not have on it an assigned special identification number before 10 days after that number is first affixed to the aircraft. A revised airworthiness certificate having on it an assigned special identification number, that has been affixed to an aircraft, may only be obtained upon application to an FAA Flight Standards district office.

(2) An effective U.S. registration certificate issued to its owner or, for operation within the United States, the second duplicate copy (pink) of the Aircraft Registration Application as provided for in § 47.31(b), or a registration certificate issued under the laws of a foreign country.

(b) No person may operate a civil aircraft unless the airworthiness certificate required by paragraph (a) of this section or a special flight authorization issued under § 91.715 is displayed at the cabin or cockpit entrance so that it is legible to passengers or crew.

(c) No person may operate an aircraft with a fuel tank installed within the passenger compartment or a baggage compartment unless the installation was accomplished pursuant to part 43 of this chapter, and a copy of FAA Form 337 authorizing that installation is on board the aircraft.

(d) No person may operate a civil airplane (domestic or foreign) into or out of an airport in the United States unless it complies with the fuel venting and exhaust emissions requirements of part 34 of this chapter.

[Doc. No. 18334, 54 FR 34292, Aug. 18, 1989, as amended by Amdt. 91–218, 55 FR 32861, Aug. 10, 1990]

§ 91.205 Powered civil aircraft with standard category U.S. airworthiness certificates: Instrument and equipment requirements.

(a) *General.* Except as provided in paragraphs (c)(3) and (e) of this section, no person may operate a powered civil aircraft with a standard category U.S. airworthiness certificate in any operation described in paragraphs (b) through (f) of this section unless that aircraft contains the instruments and equipment specified in those paragraphs (or FAA-approved equivalents) for that type of operation, and those

instruments and items of equipment are in operable condition.

(b) *Visual-flight rules (day).* For VFR flight during the day, the following instruments and equipment are required:

(1) Airspeed indicator.

(2) Altimeter.

(3) Magnetic direction indicator.

(4) Tachometer for each engine.

(5) Oil pressure gauge for each engine using pressure system.

(6) Temperature gauge for each liquid-cooled engine.

(7) Oil temperature gauge for each air-cooled engine.

(8) Manifold pressure gauge for each altitude engine.

(9) Fuel gauge indicating the quantity of fuel in each tank.

(10) Landing gear position indicator, if the aircraft has a retractable landing gear.

(11) For small civil airplanes certificated after March 11, 1996, in accordance with part 23 of this chapter, an approved aviation red or aviation white anticollision light system. In the event of failure of any light of the anticollision light system, operation of the aircraft may continue to a location where repairs or replacement can be made.

(12) If the aircraft is operated for hire over water and beyond power-off gliding distance from shore, approved flotation gear readily available to each occupant and, unless the aircraft is operating under part 121 of this subchapter, at least one pyrotechnic signaling device. As used in this section, ''shore'' means that area of the land adjacent to the water which is above the high water mark and excludes land areas which are intermittently under water.

(13) An approved safety belt with an approved metal-to-metal latching device for each occupant 2 years of age or older.

(14) For small civil airplanes manufactured after July 18, 1978, an approved shoulder harness for each front seat. The shoulder harness must be designed to protect the occupant from serious head injury when the occupant experiences the ultimate inertia forces specified in § 23.561(b)(2) of this chapter. Each shoulder harness installed at a flight crewmember station must permit the crewmember, when seated and with the safety belt and shoulder harness fastened, to perform all functions necessary for flight operations. For purposes of this paragraph—

(i) The date of manufacture of an airplane is the date the inspection acceptance records reflect that the airplane is complete and meets the FAA-approved type design data; and

(ii) A front seat is a seat located at a flight crewmember station or any seat located alongside such a seat.

(15) An emergency locator transmitter, if required by § 91.207.

(16) For normal, utility, and acrobatic category airplanes with a seating configuration, excluding pilot seats, of 9 or less, manufactured after December 12, 1986, a shoulder harness for—

(i) Each front seat that meets the requirements of § 23.785 (g) and (h) of this chapter in effect on December 12, 1985;

(ii) Each additional seat that meets the requirements of § 23.785(g) of this chapter in effect on December 12, 1985.

(17) For rotorcraft manufactured after September 16, 1992, a shoulder harness for each seat that meets the requirements of § 27.2 or § 29.2 of this chapter in effect on September 16, 1991.

(c) *Visual flight rules (night).* For VFR flight at night, the following instruments and equipment are required:

(1) Instruments and equipment specified in paragraph (b) of this section.

(2) Approved position lights.

(3) An approved aviation red or aviation white anticollision light system on all U.S.-registered civil aircraft. Anticollision light systems initially installed after August 11, 1971, on aircraft for which a type certificate was issued or applied for before August 11, 1971, must at least meet the anticollision light standards of part 23, 25, 27, or 29 of this chapter, as applicable, that were in effect on August 10, 1971, except that the color may be either aviation red or aviation white. In the event of failure of any light of the anticollision light system, operations with the aircraft may be continued to a stop where repairs or replacement can be made.

(4) If the aircraft is operated for hire, one electric landing light.

(5) An adequate source of electrical energy for all installed electrical and radio equipment.

(6) One spare set of fuses, or three spare fuses of each kind required, that are accessible to the pilot in flight.

(d) *Instrument flight rules.* For IFR flight, the following instruments and equipment are required:

(1) Instruments and equipment specified in paragraph (b) of this section, and, for night flight, instruments and equipment specified in paragraph (c) of this section.

(2) Two-way radio communication and navigation equipment suitable for the route to be flown.

(3) Gyroscopic rate-of-turn indicator, except on the following aircraft:

(i) Airplanes with a third attitude instrument system usable through flight attitudes of 360 degrees of pitch and roll and installed in accordance with the instrument requirements prescribed in §121.305(j) of this chapter; and

(ii) Rotorcraft with a third attitude instrument system usable through flight attitudes of ±80 degrees of pitch and ±120 degrees of roll and installed in accordance with §29.1303(g) of this chapter.

(4) Slip-skid indicator.

(5) Sensitive altimeter adjustable for barometric pressure.

(6) A clock displaying hours, minutes, and seconds with a sweep-second pointer or digital presentation.

(7) Generator or alternator of adequate capacity.

(8) Gyroscopic pitch and bank indicator (artificial horizon).

(9) Gyroscopic direction indicator (directional gyro or equivalent).

(e) *Flight at and above 24,000 feet MSL (FL 240).* If VOR navigation equipment is required under paragraph (d)(2) of this section, no person may operate a U.S.-registered civil aircraft within the 50 states and the District of Columbia at or above FL 240 unless that aircraft is equipped with approved DME or a suitable RNAV system. When the DME or RNAV system required by this paragraph fails at and above FL 240, the pilot in command of the aircraft must notify ATC immediately, and then may continue operations at and above FL 240 to the next airport of intended landing where repairs or replacement of the equipment can be made.

(f) *Category II operations.* The requirements for Category II operations are the instruments and equipment specified in—

(1) Paragraph (d) of this section; and

(2) Appendix A to this part.

(g) *Category III operations.* The instruments and equipment required for Category III operations are specified in paragraph (d) of this section.

(h) *Exclusions.* Paragraphs (f) and (g) of this section do not apply to operations conducted by a holder of a certificate issued under part 121 or part 135 of this chapter.

[Doc. No. 18334, 54 FR 34292, Aug. 18, 1989, as amended by Amdt. 91–220, 55 FR 43310, Oct. 26, 1990; Amdt. 91–223, 56 FR 41052, Aug. 16, 1991; Amdt. 91–231, 57 FR 42672, Sept. 15, 1992; Amdt. 91–248, 61 FR 5171, Feb. 9, 1996; Amdt. 91–251, 61 FR 34560, July 2, 1996; Amdt. 91–285, 69 FR 77599, Dec. 27, 2004; Amdt. 91–296, 72 FR 31679, June 7, 2007]

§ 91.207 Emergency locator transmitters.

(a) Except as provided in paragraphs (e) and (f) of this section, no person may operate a U.S.-registered civil airplane unless—

(1) There is attached to the airplane an approved automatic type emergency locator transmitter that is in operable condition for the following operations, except that after June 21, 1995, an emergency locator transmitter that meets the requirements of TSO-C91 may not be used for new installations:

(i) Those operations governed by the supplemental air carrier and commercial operator rules of parts 121 and 125;

(ii) Charter flights governed by the domestic and flag air carrier rules of part 121 of this chapter; and

(iii) Operations governed by part 135 of this chapter; or

(2) For operations other than those specified in paragraph (a)(1) of this section, there must be attached to the airplane an approved personal type or an approved automatic type emergency locator transmitter that is in operable condition, except that after June 21, 1995, an emergency locator transmitter that meets the requirements of TSO-C91 may not be used for new installations.

(b) Each emergency locator transmitter required by paragraph (a) of this

section must be attached to the airplane in such a manner that the probability of damage to the transmitter in the event of crash impact is minimized. Fixed and deployable automatic type transmitters must be attached to the airplane as far aft as practicable.

(c) Batteries used in the emergency locator transmitters required by paragraphs (a) and (b) of this section must be replaced (or recharged, if the batteries are rechargeable)—

(1) When the transmitter has been in use for more than 1 cumulative hour; or

(2) When 50 percent of their useful life (or, for rechargeable batteries, 50 percent of their useful life of charge) has expired, as established by the transmitter manufacturer under its approval.

The new expiration date for replacing (or recharging) the battery must be legibly marked on the outside of the transmitter and entered in the aircraft maintenance record. Paragraph (c)(2) of this section does not apply to batteries (such as water-activated batteries) that are essentially unaffected during probable storage intervals.

(d) Each emergency locator transmitter required by paragraph (a) of this section must be inspected within 12 calendar months after the last inspection for—

(1) Proper installation;

(2) Battery corrosion;

(3) Operation of the controls and crash sensor; and

(4) The presence of a sufficient signal radiated from its antenna.

(e) Notwithstanding paragraph (a) of this section, a person may—

(1) Ferry a newly acquired airplane from the place where possession of it was taken to a place where the emergency locator transmitter is to be installed; and

(2) Ferry an airplane with an inoperative emergency locator transmitter from a place where repairs or replacements cannot be made to a place where they can be made.

No person other than required crewmembers may be carried aboard an airplane being ferried under paragraph (e) of this section.

(f) Paragraph (a) of this section does not apply to—

(1) Before January 1, 2004, turbojet-powered aircraft;

(2) Aircraft while engaged in scheduled flights by scheduled air carriers;

(3) Aircraft while engaged in training operations conducted entirely within a 50-nautical mile radius of the airport from which such local flight operations began;

(4) Aircraft while engaged in flight operations incident to design and testing;

(5) New aircraft while engaged in flight operations incident to their manufacture, preparation, and delivery;

(6) Aircraft while engaged in flight operations incident to the aerial application of chemicals and other substances for agricultural purposes;

(7) Aircraft certificated by the Administrator for research and development purposes;

(8) Aircraft while used for showing compliance with regulations, crew training, exhibition, air racing, or market surveys;

(9) Aircraft equipped to carry not more than one person.

(10) An aircraft during any period for which the transmitter has been temporarily removed for inspection, repair, modification, or replacement, subject to the following:

(i) No person may operate the aircraft unless the aircraft records contain an entry which includes the date of initial removal, the make, model, serial number, and reason for removing the transmitter, and a placard located in view of the pilot to show ''ELT not installed.''

(ii) No person may operate the aircraft more than 90 days after the ELT is initially removed from the aircraft; and

(11) On and after January 1, 2004, aircraft with a maximum payload capacity of more than 18,000 pounds when used in air transportation.

[Doc. No. 18334, 54 FR 34304, Aug. 18, 1989, as amended by Amdt. 91–242, 59 FR 32057, June 21, 1994; 59 FR 34578, July 6, 1994; Amdt. 91–265, 65 FR 81319, Dec. 22, 2000; 66 FR 16316, Mar. 23, 2001]

§ 91.209 Aircraft lights.

No person may:

(a) During the period from sunset to sunrise (or, in Alaska, during the period a prominent unlighted object cannot be seen from a distance of 3 statute miles or the sun is more than 6 degrees below the horizon)—

(1) Operate an aircraft unless it has lighted position lights;

(2) Park or move an aircraft in, or in dangerous proximity to, a night flight operations area of an airport unless the aircraft—

(i) Is clearly illuminated;

(ii) Has lighted position lights; or

(iii) is in an area that is marked by obstruction lights;

(3) Anchor an aircraft unless the aircraft—

(i) Has lighted anchor lights; or

(ii) Is in an area where anchor lights are not required on vessels; or

(b) Operate an aircraft that is equipped with an anticollision light system, unless it has lighted anticollision lights. However, the anticollision lights need not be lighted when the pilot-in-command determines that, because of operating conditions, it would be in the interest of safety to turn the lights off.

[Doc. No. 27806, 61 FR 5171, Feb. 9, 1996]

§ 91.211 Supplemental oxygen.

(a) *General.* No person may operate a civil aircraft of U.S. registry—

(1) At cabin pressure altitudes above 12,500 feet (MSL) up to and including 14,000 feet (MSL) unless the required minimum flight crew is provided with and uses supplemental oxygen for that part of the flight at those altitudes that is of more than 30 minutes duration;

(2) At cabin pressure altitudes above 14,000 feet (MSL) unless the required minimum flight crew is provided with and uses supplemental oxygen during the entire flight time at those altitudes; and

(3) At cabin pressure altitudes above 15,000 feet (MSL) unless each occupant of the aircraft is provided with supplemental oxygen.

(b) *Pressurized cabin aircraft.* (1) No person may operate a civil aircraft of U.S. registry with a pressurized cabin—

(i) At flight altitudes above flight level 250 unless at least a 10-minute supply of supplemental oxygen, in addition to any oxygen required to satisfy paragraph (a) of this section, is available for each occupant of the aircraft for use in the event that a descent is necessitated by loss of cabin pressurization; and

(ii) At flight altitudes above flight level 350 unless one pilot at the controls of the airplane is wearing and using an oxygen mask that is secured and sealed and that either supplies oxygen at all times or automatically supplies oxygen whenever the cabin pressure altitude of the airplane exceeds 14,000 feet (MSL), except that the one pilot need not wear and use an oxygen mask while at or below flight level 410 if there are two pilots at the controls and each pilot has a quick-donning type of oxygen mask that can be placed on the face with one hand from the ready position within 5 seconds, supplying oxygen and properly secured and sealed.

(2) Notwithstanding paragraph (b)(1)(ii) of this section, if for any reason at any time it is necessary for one pilot to leave the controls of the aircraft when operating at flight altitudes above flight level 350, the remaining pilot at the controls shall put on and use an oxygen mask until the other pilot has returned to that crewmember's station.

§ 91.213 Inoperative instruments and equipment.

(a) Except as provided in paragraph (d) of this section, no person may take off an aircraft with inoperative instruments or equipment installed unless the following conditions are met:

(1) An approved Minimum Equipment List exists for that aircraft.

(2) The aircraft has within it a letter of authorization, issued by the FAA Flight Standards district office having jurisdiction over the area in which the operator is located, authorizing operation of the aircraft under the Minimum Equipment List. The letter of authorization may be obtained by written request of the airworthiness certificate holder. The Minimum Equipment List and the letter of authorization constitute a supplemental type certificate for the aircraft.

(3) The approved Minimum Equipment List must—

(i) Be prepared in accordance with the limitations specified in paragraph (b) of this section; and

(ii) Provide for the operation of the aircraft with the instruments and equipment in an inoperable condition.

(4) The aircraft records available to the pilot must include an entry describing the inoperable instruments and equipment.

(5) The aircraft is operated under all applicable conditions and limitations contained in the Minimum Equipment List and the letter authorizing the use of the list.

(b) The following instruments and equipment may not be included in a Minimum Equipment List:

(1) Instruments and equipment that are either specifically or otherwise required by the airworthiness requirements under which the aircraft is type certificated and which are essential for safe operations under all operating conditions.

(2) Instruments and equipment required by an airworthiness directive to be in operable condition unless the airworthiness directive provides otherwise.

(3) Instruments and equipment required for specific operations by this part.

(c) A person authorized to use an approved Minimum Equipment List issued for a specific aircraft under subpart K of this part, part 121, 125, or 135 of this chapter must use that Minimum Equipment List to comply with the requirements in this section.

(d) Except for operations conducted in accordance with paragraph (a) or (c) of this section, a person may takeoff an aircraft in operations conducted under this part with inoperative instruments and equipment without an approved Minimum Equipment List provided—

(1) The flight operation is conducted in a—

(i) Rotorcraft, non-turbine-powered airplane, glider, lighter-than-air aircraft, powered parachute, or weight-shift-control aircraft, for which a master minimum equipment list has not been developed; or

(ii) Small rotorcraft, nonturbine-powered small airplane, glider, or lighter-than-air aircraft for which a Master Minimum Equipment List has been developed; and

(2) The inoperative instruments and equipment are not—

(i) Part of the VFR-day type certification instruments and equipment prescribed in the applicable airworthiness regulations under which the aircraft was type certificated;

(ii) Indicated as required on the aircraft's equipment list, or on the Kinds of Operations Equipment List for the kind of flight operation being conducted;

(iii) Required by § 91.205 or any other rule of this part for the specific kind of flight operation being conducted; or

(iv) Required to be operational by an airworthiness directive; and

(3) The inoperative instruments and equipment are—

(i) Removed from the aircraft, the cockpit control placarded, and the maintenance recorded in accordance with § 43.9 of this chapter; or

(ii) Deactivated and placarded ''Inoperative.'' If deactivation of the inoperative instrument or equipment involves maintenance, it must be accomplished and recorded in accordance with part 43 of this chapter; and

(4) A determination is made by a pilot, who is certificated and appropriately rated under part 61 of this chapter, or by a person, who is certificated and appropriately rated to perform maintenance on the aircraft, that the inoperative instrument or equipment does not constitute a hazard to the aircraft.

An aircraft with inoperative instruments or equipment as provided in paragraph (d) of this section is considered to be in a properly altered condition acceptable to the Administrator.

(e) Notwithstanding any other provision of this section, an aircraft with inoperable instruments or equipment may be operated under a special flight permit issued in accordance with §§ 21.197 and 21.199 of this chapter.

[Doc. No. 18334, 54 FR 34304, Aug. 18, 1989, as amended by Amdt. 91–280, 68 FR 54560, Sept. 17, 2003; Amdt. 91–282, 69 FR 44880, July 27, 2004]

§ 91.215 ATC transponder and altitude reporting equipment and use.

(a) *All airspace: U.S.-registered civil aircraft.* For operations not conducted under part 121 or 135 of this chapter, ATC transponder equipment installed must meet the performance and environmental requirements of any class of TSO-C74b (Mode A) or any class of TSO-C74c (Mode A with altitude reporting capability) as appropriate, or the appropriate class of TSO-C112 (Mode S).

(b) *All airspace.* Unless otherwise authorized or directed by ATC, no person may operate an aircraft in the airspace described in paragraphs (b)(1) through (b)(5) of this section, unless that aircraft is equipped with an operable coded radar beacon transponder having either Mode 3/A 4096 code capability, replying to Mode 3/A interrogations with the code specified by ATC, or a Mode S capability, replying to Mode 3/A interrogations with the code specified by ATC and intermode and Mode S interrogations in accordance with the applicable provisions specified in TSO C–112, and that aircraft is equipped with automatic pressure altitude reporting equipment having a Mode C capability that automatically replies to Mode C interrogations by transmitting pressure altitude information in 100-foot increments. This requirement applies—

(1) *All aircraft.* In Class A, Class B, and Class C airspace areas;

(2) *All aircraft.* In all airspace within 30 nautical miles of an airport listed in appendix D, section 1 of this part from the surface upward to 10,000 feet MSL;

(3) Notwithstanding paragraph (b)(2) of this section, any aircraft which was not originally certificated with an engine-driven electrical system or which has not subsequently been certified with such a system installed, balloon or glider may conduct operations in the airspace within 30 nautical miles of an airport listed in appendix D, section 1 of this part provided such operations are conducted—

(i) Outside any Class A, Class B, or Class C airspace area; and

(ii) Below the altitude of the ceiling of a Class B or Class C airspace area designated for an airport or 10,000 feet MSL, whichever is lower; and

(4) All aircraft in all airspace above the ceiling and within the lateral boundaries of a Class B or Class C airspace area designated for an airport upward to 10,000 feet MSL; and

(5) All aircraft except any aircraft which was not originally certificated with an engine-driven electrical system or which has not subsequently been certified with such a system installed, balloon, or glider—

(i) In all airspace of the 48 contiguous states and the District of Columbia at and above 10,000 feet MSL, excluding the airspace at and below 2,500 feet above the surface; and

(ii) In the airspace from the surface to 10,000 feet MSL within a 10-nautical-mile radius of any airport listed in appendix D, section 2 of this part, excluding the airspace below 1,200 feet outside of the lateral boundaries of the surface area of the airspace designated for that airport.

(c) *Transponder-on operation.* While in the airspace as specified in paragraph (b) of this section or in all controlled airspace, each person operating an aircraft equipped with an operable ATC transponder maintained in accordance with § 91.413 of this part shall operate the transponder, including Mode C equipment if installed, and shall reply on the appropriate code or as assigned by ATC.

(d) *ATC authorized deviations.* Requests for ATC authorized deviations must be made to the ATC facility having jurisdiction over the concerned airspace within the time periods specified as follows:

(1) For operation of an aircraft with an operating transponder but without operating automatic pressure altitude reporting equipment having a Mode C capability, the request may be made at any time.

(2) For operation of an aircraft with an inoperative transponder to the airport of ultimate destination, including any intermediate stops, or to proceed to a place where suitable repairs can be made or both, the request may be made at any time.

(3) For operation of an aircraft that is not equipped with a transponder, the

request must be made at least one hour before the proposed operation.

(Approved by the Office of Management and Budget under control number 2120–0005)

[Doc. No. 18334, 54 FR 34304, Aug. 18, 1989, as amended by Amdt. 91–221, 56 FR 469, Jan. 4, 1991; Amdt. 91–227, 56 FR 65660, Dec. 17, 1991; Amdt. 91–227, 7 FR 328, Jan. 3, 1992; Amdt. 91–229, 57 FR 34618, Aug. 5, 1992; Amdt. 91–267, 66 FR 21066, Apr. 27, 2001]

§ 91.217 Data correspondence between automatically reported pressure altitude data and the pilot's altitude reference.

No person may operate any automatic pressure altitude reporting equipment associated with a radar beacon transponder—

(a) When deactivation of that equipment is directed by ATC;

(b) Unless, as installed, that equipment was tested and calibrated to transmit altitude data corresponding within 125 feet (on a 95 percent probability basis) of the indicated or calibrated datum of the altimeter normally used to maintain flight altitude, with that altimeter referenced to 29.92 inches of mercury for altitudes from sea level to the maximum operating altitude of the aircraft; or

(c) Unless the altimeters and digitizers in that equipment meet the standards of TSO-C10b and TSO-C88, respectively.

§ 91.219 Altitude alerting system or device: Turbojet-powered civil airplanes.

(a) Except as provided in paragraph (d) of this section, no person may operate a turbojet-powered U.S.-registered civil airplane unless that airplane is equipped with an approved altitude alerting system or device that is in operable condition and meets the requirements of paragraph (b) of this section.

(b) Each altitude alerting system or device required by paragraph (a) of this section must be able to—

(1) Alert the pilot—

(i) Upon approaching a preselected altitude in either ascent or descent, by a sequence of both aural and visual signals in sufficient time to establish level flight at that preselected altitude; or

(ii) Upon approaching a preselected altitude in either ascent or descent, by a sequence of visual signals in sufficient time to establish level flight at that preselected altitude, and when deviating above and below that preselected altitude, by an aural signal;

(2) Provide the required signals from sea level to the highest operating altitude approved for the airplane in which it is installed;

(3) Preselect altitudes in increments that are commensurate with the altitudes at which the aircraft is operated;

(4) Be tested without special equipment to determine proper operation of the alerting signals; and

(5) Accept necessary barometric pressure settings if the system or device operates on barometric pressure. However, for operation below 3,000 feet AGL, the system or device need only provide one signal, either visual or aural, to comply with this paragraph. A radio altimeter may be included to provide the signal if the operator has an approved procedure for its use to determine DA/DH or MDA, as appropriate.

(c) Each operator to which this section applies must establish and assign procedures for the use of the altitude alerting system or device and each flight crewmember must comply with those procedures assigned to him.

(d) Paragraph (a) of this section does not apply to any operation of an airplane that has an experimental certificate or to the operation of any airplane for the following purposes:

(1) Ferrying a newly acquired airplane from the place where possession of it was taken to a place where the altitude alerting system or device is to be installed.

(2) Continuing a flight as originally planned, if the altitude alerting system or device becomes inoperative after the airplane has taken off; however, the flight may not depart from a place where repair or replacement can be made.

(3) Ferrying an airplane with any inoperative altitude alerting system or device from a place where repairs or replacements cannot be made to a place where it can be made.

(4) Conducting an airworthiness flight test of the airplane.

(5) Ferrying an airplane to a place outside the United States for the purpose of registering it in a foreign country.

(6) Conducting a sales demonstration of the operation of the airplane.

(7) Training foreign flight crews in the operation of the airplane before ferrying it to a place outside the United States for the purpose of registering it in a foreign country.

[Doc. No. 18334, 54 FR 34304, Aug. 18, 1989, as amended by Amdt. 91–296, 72 FR 31679, June 7, 2007]

§ 91.221 Traffic alert and collision avoidance system equipment and use.

(a) *All airspace: U.S.-registered civil aircraft.* Any traffic alert and collision avoidance system installed in a U.S.-registered civil aircraft must be approved by the Administrator.

(b) *Traffic alert and collision avoidance system, operation required.* Each person operating an aircraft equipped with an operable traffic alert and collision avoidance system shall have that system on and operating.

§ 91.223 Terrain awareness and warning system.

(a) *Airplanes manufactured after March 29, 2002.* Except as provided in paragraph (d) of this section, no person may operate a turbine-powered U.S.-registered airplane configured with six or more passenger seats, excluding any pilot seat, unless that airplane is equipped with an approved terrain awareness and warning system that as a minimum meets the requirements for Class B equipment in Technical Standard Order (TSO)–C151.

(b) *Airplanes manufactured on or before March 29, 2002.* Except as provided in paragraph (d) of this section, no person may operate a turbine-powered U.S.-registered airplane configured with six or more passenger seats, excluding any pilot seat, after March 29, 2005, unless that airplane is equipped with an approved terrain awareness and warning system that as a minimum meets the requirements for Class B equipment in Technical Standard Order (TSO)–C151.

(Approved by the Office of Management and Budget under control number 2120–0631)

(c) *Airplane Flight Manual.* The Airplane Flight Manual shall contain appropriate procedures for—

(1) The use of the terrain awareness and warning system; and

(2) Proper flight crew reaction in response to the terrain awareness and warning system audio and visual warnings.

(d) *Exceptions.* Paragraphs (a) and (b) of this section do not apply to—

(1) Parachuting operations when conducted entirely within a 50 nautical mile radius of the airport from which such local flight operations began.

(2) Firefighting operations.

(3) Flight operations when incident to the aerial application of chemicals and other substances.

[Doc. No. 29312, 65 FR 16755, Mar. 29, 2000]

§§ 91.224–91.299 [Reserved]

Subpart D—Special Flight Operations

SOURCE: Docket No. 18334, 54 FR 34308, Aug. 18, 1989, unless otherwise noted.

§ 91.301 [Reserved]

§ 91.303 Aerobatic flight.

No person may operate an aircraft in aerobatic flight—

(a) Over any congested area of a city, town, or settlement;

(b) Over an open air assembly of persons;

(c) Within the lateral boundaries of the surface areas of Class B, Class C, Class D, or Class E airspace designated for an airport;

(d) Within 4 nautical miles of the center line of any Federal airway;

(e) Below an altitude of 1,500 feet above the surface; or

(f) When flight visibility is less than 3 statute miles.

For the purposes of this section, aerobatic flight means an intentional maneuver involving an abrupt change in an aircraft's attitude, an abnormal attitude, or abnormal acceleration, not necessary for normal flight.

[Doc. No. 18834, 54 FR 34308, Aug. 18, 1989, as amended by Amdt. 91–227, 56 FR 65661, Dec. 17, 1991]

§ 91.305 Flight test areas.

No person may flight test an aircraft except over open water, or sparsely populated areas, having light air traffic.

§ 91.307 Parachutes and parachuting.

(a) No pilot of a civil aircraft may allow a parachute that is available for emergency use to be carried in that aircraft unless it is an approved type and—

(1) If a chair type (canopy in back), it has been packed by a certificated and appropriately rated parachute rigger within the preceding 120 days; or

(2) If any other type, it has been packed by a certificated and appropriately rated parachute rigger—

(i) Within the preceding 120 days, if its canopy, shrouds, and harness are composed exclusively of nylon, rayon, or other similar synthetic fiber or materials that are substantially resistant to damage from mold, mildew, or other fungi and other rotting agents propagated in a moist environment; or

(ii) Within the preceding 60 days, if any part of the parachute is composed of silk, pongee, or other natural fiber, or materials not specified in paragraph (a)(2)(i) of this section.

(b) Except in an emergency, no pilot in command may allow, and no person may conduct, a parachute operation from an aircraft within the United States except in accordance with part 105 of this chapter.

(c) Unless each occupant of the aircraft is wearing an approved parachute, no pilot of a civil aircraft carrying any person (other than a crewmember) may execute any intentional maneuver that exceeds—

(1) A bank of 60 degrees relative to the horizon; or

(2) A nose-up or nose-down attitude of 30 degrees relative to the horizon.

(d) Paragraph (c) of this section does not apply to—

(1) Flight tests for pilot certification or rating; or

(2) Spins and other flight maneuvers required by the regulations for any certificate or rating when given by—

(i) A certificated flight instructor; or

(ii) An airline transport pilot instructing in accordance with § 61.67 of this chapter.

(e) For the purposes of this section, *approved parachute* means—

(1) A parachute manufactured under a type certificate or a technical standard order (C–23 series); or

(2) A personnel-carrying military parachute identified by an NAF, AAF, or AN drawing number, an AAF order number, or any other military designation or specification number.

[Doc. No. 18334, 54 FR 34308, Aug. 18, 1989, as amended by Amdt. 91–255, 62 FR 68137, Dec. 30, 1997; Amdt. 91–268, 66 FR 23553, May 9, 2001]

§ 91.309 Towing: Gliders and unpowered ultralight vehicles.

(a) No person may operate a civil aircraft towing a glider or unpowered ultralight vehicle unless—

(1) The pilot in command of the towing aircraft is qualified under § 61.69 of this chapter;

(2) The towing aircraft is equipped with a tow-hitch of a kind, and installed in a manner, that is approved by the Administrator;

(3) The towline used has breaking strength not less than 80 percent of the maximum certificated operating weight of the glider or unpowered ultralight vehicle and not more than twice this operating weight. However, the towline used may have a breaking strength more than twice the maximum certificated operating weight of the glider or unpowered ultralight vehicle if—

(i) A safety link is installed at the point of attachment of the towline to the glider or unpowered ultralight vehicle with a breaking strength not less than 80 percent of the maximum certificated operating weight of the glider or unpowered ultralight vehicle and not greater than twice this operating weight;

(ii) A safety link is installed at the point of attachment of the towline to the towing aircraft with a breaking strength greater, but not more than 25 percent greater, than that of the safety link at the towed glider or unpowered ultralight vehicle end of the towline and not greater than twice the maximum certificated operating weight of the glider or unpowered ultralight vehicle;

(4) Before conducting any towing operation within the lateral boundaries of the surface areas of Class B, Class C, Class D, or Class E airspace designated for an airport, or before making each towing flight within such controlled airspace if required by ATC, the pilot in command notifies the control tower. If a control tower does not exist or is not in operation, the pilot in command must notify the FAA flight service station serving that controlled airspace before conducting any towing operations in that airspace; and

(5) The pilots of the towing aircraft and the glider or unpowered ultralight vehicle have agreed upon a general course of action, including takeoff and release signals, airspeeds, and emergency procedures for each pilot.

(b) No pilot of a civil aircraft may intentionally release a towline, after release of a glider or unpowered ultralight vehicle, in a manner that endangers the life or property of another.

[Doc. No. 18834, 54 FR 34308, Aug. 18, 1989, as amended by Amdt. 91–227, 56 FR 65661, Dec. 17, 1991; Amdt. 91–282, 69 FR 44880, July 27, 2004]

§ 91.311 Towing: Other than under § 91.309.

No pilot of a civil aircraft may tow anything with that aircraft (other than under § 91.309) except in accordance with the terms of a certificate of waiver issued by the Administrator.

§ 91.313 Restricted category civil aircraft: Operating limitations.

(a) No person may operate a restricted category civil aircraft—

(1) For other than the special purpose for which it is certificated; or

(2) In an operation other than one necessary to accomplish the work activity directly associated with that special purpose.

(b) For the purpose of paragraph (a) of this section, operating a restricted category civil aircraft to provide flight crewmember training in a special purpose operation for which the aircraft is certificated is considered to be an operation for that special purpose.

(c) No person may operate a restricted category civil aircraft carrying persons or property for compensation or hire. For the purposes of this paragraph, a special purpose operation involving the carriage of persons or material necessary to accomplish that operation, such as crop dusting, seeding, spraying, and banner towing (including the carrying of required persons or material to the location of that operation), and operation for the purpose of providing flight crewmember training in a special purpose operation, are not considered to be the carriage of persons or property for compensation or hire.

(d) No person may be carried on a restricted category civil aircraft unless that person—

(1) Is a flight crewmember;

(2) Is a flight crewmember trainee;

(3) Performs an essential function in connection with a special purpose operation for which the aircraft is certificated; or

(4) Is necessary to accomplish the work activity directly associated with that special purpose.

(e) Except when operating in accordance with the terms and conditions of a certificate of waiver or special operating limitations issued by the Administrator, no person may operate a restricted category civil aircraft within the United States—

(1) Over a densely populated area;

(2) In a congested airway; or

(3) Near a busy airport where passenger transport operations are conducted.

(f) This section does not apply to nonpassenger-carrying civil rotorcraft external-load operations conducted under part 133 of this chapter.

(g) No person may operate a small restricted-category civil airplane manufactured after July 18, 1978, unless an approved shoulder harness is installed for each front seat. The shoulder harness must be designed to protect each occupant from serious head injury when the occupant experiences the ultimate inertia forces specified in § 23.561(b)(2) of this chapter. The shoulder harness installation at each flight crewmember station must permit the crewmember, when seated and with the safety belt and shoulder harness fastened, to perform all functions necessary for flight operation. For purposes of this paragraph—

(1) The date of manufacture of an airplane is the date the inspection acceptance records reflect that the airplane is complete and meets the FAA-approved type design data; and

(2) A front seat is a seat located at a flight crewmember station or any seat located alongside such a seat.

§ 91.315 Limited category civil aircraft: Operating limitations.

No person may operate a limited category civil aircraft carrying persons or property for compensation or hire.

§ 91.317 Provisionally certificated civil aircraft: Operating limitations.

(a) No person may operate a provisionally certificated civil aircraft unless that person is eligible for a provisional airworthiness certificate under § 21.213 of this chapter.

(b) No person may operate a provisionally certificated civil aircraft outside the United States unless that person has specific authority to do so from the Administrator and each foreign country involved.

(c) Unless otherwise authorized by the Director, Flight Standards Service, no person may operate a provisionally certificated civil aircraft in air transportation.

(d) Unless otherwise authorized by the Administrator, no person may operate a provisionally certificated civil aircraft except—

(1) In direct conjunction with the type or supplemental type certification of that aircraft;

(2) For training flight crews, including simulated air carrier operations;

(3) Demonstration flight by the manufacturer for prospective purchasers;

(4) Market surveys by the manufacturer;

(5) Flight checking of instruments, accessories, and equipment that do not affect the basic airworthiness of the aircraft; or

(6) Service testing of the aircraft.

(e) Each person operating a provisionally certificated civil aircraft shall operate within the prescribed limitations displayed in the aircraft or set forth in the provisional aircraft flight manual or other appropriate document. However, when operating in direct conjunction with the type or supplemental type certification of the aircraft, that person shall operate under the experimental aircraft limitations of § 21.191 of this chapter and when flight testing, shall operate under the requirements of § 91.305 of this part.

(f) Each person operating a provisionally certificated civil aircraft shall establish approved procedures for—

(1) The use and guidance of flight and ground personnel in operating under this section; and

(2) Operating in and out of airports where takeoffs or approaches over populated areas are necessary. No person may operate that aircraft except in compliance with the approved procedures.

(g) Each person operating a provisionally certificated civil aircraft shall ensure that each flight crewmember is properly certificated and has adequate knowledge of, and familiarity with, the aircraft and procedures to be used by that crewmember.

(h) Each person operating a provisionally certificated civil aircraft shall maintain it as required by applicable regulations and as may be specially prescribed by the Administrator.

(i) Whenever the manufacturer, or the Administrator, determines that a change in design, construction, or operation is necessary to ensure safe operation, no person may operate a provisionally certificated civil aircraft until that change has been made and approved. Section 21.99 of this chapter applies to operations under this section.

(j) Each person operating a provisionally certificated civil aircraft—

(1) May carry in that aircraft only persons who have a proper interest in the operations allowed by this section or who are specifically authorized by both the manufacturer and the Administrator; and

(2) Shall advise each person carried that the aircraft is provisionally certificated.

(k) The Administrator may prescribe additional limitations or procedures that the Administrator considers necessary, including limitations on the

number of persons who may be carried in the aircraft.

(Approved by the Office of Management and Budget under control number 2120–0005)

[Doc. No. 18334, 54 FR 34308, Aug. 18, 1989, as amended by Amdt. 91–212, 54 FR 39293, Sept. 25, 1989]

§ 91.319 Aircraft having experimental certificates: Operating limitations.

(a) No person may operate an aircraft that has an experimental certificate—

(1) For other than the purpose for which the certificate was issued; or

(2) Carrying persons or property for compensation or hire.

(b) No person may operate an aircraft that has an experimental certificate outside of an area assigned by the Administrator until it is shown that—

(1) The aircraft is controllable throughout its normal range of speeds and throughout all the maneuvers to be executed; and

(2) The aircraft has no hazardous operating characteristics or design features.

(c) Unless otherwise authorized by the Administrator in special operating limitations, no person may operate an aircraft that has an experimental certificate over a densely populated area or in a congested airway. The Administrator may issue special operating limitations for particular aircraft to permit takeoffs and landings to be conducted over a densely populated area or in a congested airway, in accordance with terms and conditions specified in the authorization in the interest of safety in air commerce.

(d) Each person operating an aircraft that has an experimental certificate shall—

(1) Advise each person carried of the experimental nature of the aircraft;

(2) Operate under VFR, day only, unless otherwise specifically authorized by the Administrator; and

(3) Notify the control tower of the experimental nature of the aircraft when operating the aircraft into or out of airports with operating control towers.

(e) No person may operate an aircraft that is issued an experimental certificate under § 21.191(i) of this chapter for compensation or hire, except a person may operate an aircraft issued an experimental certificate under § 21.191(i)(1) for compensation or hire to—

(1) Tow a glider that is a light-sport aircraft or unpowered ultralight vehicle in accordance with § 91.309; or

(2) Conduct flight training in an aircraft which that person provides prior to January 31, 2010.

(f) No person may lease an aircraft that is issued an experimental certificate under § 21.191(i) of this chapter, except in accordance with paragraph (e)(1) of this section.

(g) No person may operate an aircraft issued an experimental certificate under § 21.191(i)(1) of this chapter to tow a glider that is a light-sport aircraft or unpowered ultralight vehicle for compensation or hire or to conduct flight training for compensation or hire in an aircraft which that persons provides unless within the preceding 100 hours of time in service the aircraft has—

(1) Been inspected by a certificated repairman (light-sport aircraft) with a maintenance rating, an appropriately rated mechanic, or an appropriately rated repair station in accordance with inspection procedures developed by the aircraft manufacturer or a person acceptable to the FAA; or

(2) Received an inspection for the issuance of an airworthiness certificate in accordance with part 21 of this chapter.

(h) The FAA may issue deviation authority providing relief from the provisions of paragraph (a) of this section for the purpose of conducting flight training. The FAA will issue this deviation authority as a letter of deviation authority.

(1) The FAA may cancel or amend a letter of deviation authority at any time.

(2) An applicant must submit a request for deviation authority to the FAA at least 60 days before the date of intended operations. A request for deviation authority must contain a complete description of the proposed operation and justification that establishes a level of safety equivalent to that provided under the regulations for the deviation requested.

(i) The Administrator may prescribe additional limitations that the Administrator considers necessary, including

limitations on the persons that may be carried in the aircraft.

(Approved by the Office of Management and Budget under control number 2120–0005)

[Doc. No. 18334, 54 FR 34308, Aug. 18, 1989, as amended by Amdt. 91–282, 69 FR 44881, July 27, 2004]

§ 91.321 Carriage of candidates in elections.

(a) As an aircraft operator, you may receive payment for carrying a candidate, agent of a candidate, or person traveling on behalf of a candidate, running for Federal, State, or local election, without having to comply with the rules in parts 121, 125 or 135 of this chapter, under the following conditions:

(1) Your primary business is not as an air carrier or commercial operator;

(2) You carry the candidate, agent, or person traveling on behalf of a candidate, under the rules of part 91; and

(3) By Federal, state or local law, you are required to receive payment for carrying the candidate, agent, or person traveling on behalf of a candidate. For federal elections, the payment may not exceed the amount required by the Federal Election Commission. For a state or local election, the payment may not exceed the amount required under the applicable state or local law.

(b) For the purposes of this section, for Federal elections, the terms *candidate* and *election* have the same meaning as set forth in the regulations of the Federal Election Commission. For State or local elections, the terms *candidate* and *election* have the same meaning as provided by the applicable State or local law and those terms relate to candidates for election to public office in State and local government elections.

[Doc. No. FAA–2005–20168, 70 FR 4982, Jan. 31, 2005]

§ 91.323 Increased maximum certificated weights for certain airplanes operated in Alaska.

(a) Notwithstanding any other provision of the Federal Aviation Regulations, the Administrator will approve, as provided in this section, an increase in the maximum certificated weight of an airplane type certificated under Aeronautics Bulletin No. 7–A of the U.S. Department of Commerce dated January 1, 1931, as amended, or under the normal category of part 4a of the former Civil Air Regulations (14 CFR part 4a, 1964 ed.) if that airplane is operated in the State of Alaska by—

(1) A certificate holder conducting operations under part 121 or part 135 of this chapter; or

(2) The U.S. Department of Interior in conducting its game and fish law enforcement activities or its management, fire detection, and fire suppression activities concerning public lands.

(b) The maximum certificated weight approved under this section may not exceed—

(1) 12,500 pounds;

(2) 115 percent of the maximum weight listed in the FAA aircraft specifications;

(3) The weight at which the airplane meets the positive maneuvering load factor requirement for the normal category specified in § 23.337 of this chapter; or

(4) The weight at which the airplane meets the climb performance requirements under which it was type certificated.

(c) In determining the maximum certificated weight, the Administrator considers the structural soundness of the airplane and the terrain to be traversed.

(d) The maximum certificated weight determined under this section is added to the airplane's operation limitations and is identified as the maximum weight authorized for operations within the State of Alaska.

[Doc. No. 18334, 54 FR 34308, Aug. 18, 1989; Amdt. 91–211, 54 FR 41211, Oct. 5, 1989, as amended by Amdt. 91–253, 62 FR 13253, Mar. 19, 1997]

§ 91.325 Primary category aircraft: Operating limitations.

(a) No person may operate a primary category aircraft carrying persons or property for compensation or hire.

(b) No person may operate a primary category aircraft that is maintained by the pilot-owner under an approved special inspection and maintenance program except—

(1) The pilot-owner; or

(2) A designee of the pilot-owner, provided that the pilot-owner does not receive compensation for the use of the aircraft.

[Doc. No. 23345, 57 FR 41370, Sept. 9, 1992]

§ 91.327 Aircraft having a special airworthiness certificate in the light-sport category: Operating limitations.

(a) No person may operate an aircraft that has a special airworthiness certificate in the light-sport category for compensation or hire except—

(1) To tow a glider or an unpowered ultralight vehicle in accordance with § 91.309 of this chapter; or

(2) To conduct flight training.

(b) No person may operate an aircraft that has a special airworthiness certificate in the light-sport category unless—

(1) The aircraft is maintained by a certificated repairman with a light-sport aircraft maintenance rating, an appropriately rated mechanic, or an appropriately rated repair station in accordance with the applicable provisions of part 43 of this chapter and maintenance and inspection procedures developed by the aircraft manufacturer or a person acceptable to the FAA;

(2) A condition inspection is performed once every 12 calendar months by a certificated repairman (light-sport aircraft) with a maintenance rating, an appropriately rated mechanic, or an appropriately rated repair station in accordance with inspection procedures developed by the aircraft manufacturer or a person acceptable to the FAA;

(3) The owner or operator complies with all applicable airworthiness directives;

(4) The owner or operator complies with each safety directive applicable to the aircraft that corrects an existing unsafe condition. In lieu of complying with a safety directive an owner or operator may—

(i) Correct the unsafe condition in a manner different from that specified in the safety directive provided the person issuing the directive concurs with the action; or

(ii) Obtain an FAA waiver from the provisions of the safety directive based on a conclusion that the safety directive was issued without adhering to the applicable consensus standard;

(5) Each alteration accomplished after the aircraft's date of manufacture meets the applicable and current consensus standard and has been authorized by either the manufacturer or a person acceptable to the FAA;

(6) Each major alteration to an aircraft product produced under a consensus standard is authorized, performed and inspected in accordance with maintenance and inspection procedures developed by the manufacturer or a person acceptable to the FAA; and

(7) The owner or operator complies with the requirements for the recording of major repairs and major alterations performed on type-certificated products in accordance with § 43.9(d) of this chapter, and with the retention requirements in § 91.417.

(c) No person may operate an aircraft issued a special airworthiness certificate in the light-sport category to tow a glider or unpowered ultralight vehicle for compensation or hire or conduct flight training for compensation or hire in an aircraft which that persons provides unless within the preceding 100 hours of time in service the aircraft has—

(1) Been inspected by a certificated repairman with a light-sport aircraft maintenance rating, an appropriately rated mechanic, or an appropriately rated repair station in accordance with inspection procedures developed by the aircraft manufacturer or a person acceptable to the FAA and been approved for return to service in accordance with part 43 of this chapter; or

(2) Received an inspection for the issuance of an airworthiness certificate in accordance with part 21 of this chapter.

(d) Each person operating an aircraft issued a special airworthiness certificate in the light-sport category must operate the aircraft in accordance with the aircraft's operating instructions, including any provisions for necessary operating equipment specified in the aircraft's equipment list.

(e) Each person operating an aircraft issued a special airworthiness certificate in the light-sport category must advise each person carried of the special nature of the aircraft and that the

aircraft does not meet the airworthiness requirements for an aircraft issued a standard airworthiness certificate.

(f) The FAA may prescribe additional limitations that it considers necessary.

[Doc. No. FAA–2001–11133, 69 FR 44881, July 27, 2004]

§§ 91.328–91.399 [Reserved]

Subpart E—Maintenance, Preventive Maintenance, and Alterations

SOURCE: Docket No. 18334, 54 FR 34311, Aug. 18, 1989, unless otherwise noted.

§ 91.401 Applicability.

(a) This subpart prescribes rules governing the maintenance, preventive maintenance, and alterations of U.S.-registered civil aircraft operating within or outside of the United States.

(b) Sections 91.405, 91.409, 91.411, 91.417, and 91.419 of this subpart do not apply to an aircraft maintained in accordance with a continuous airworthiness maintenance program as provided in part 121, 129, or §§ 91.1411 or 135.411(a)(2) of this chapter.

(c) Sections 91.405 and 91.409 of this part do not apply to an airplane inspected in accordance with part 125 of this chapter.

[Doc. No. 18334, 54 FR 34311, Aug. 18, 1989, as amended by Amdt. 91–267, 66 FR 21066, Apr. 27, 2001; Amdt. 91–280, 68 FR 54560, Sept. 17, 2003]

§ 91.403 General.

(a) The owner or operator of an aircraft is primarily responsible for maintaining that aircraft in an airworthy condition, including compliance with part 39 of this chapter.

(b) No person may perform maintenance, preventive maintenance, or alterations on an aircraft other than as prescribed in this subpart and other applicable regulations, including part 43 of this chapter.

(c) No person may operate an aircraft for which a manufacturer's maintenance manual or instructions for continued airworthiness has been issued that contains an airworthiness limitations section unless the mandatory replacement times, inspection intervals, and related procedures specified in that section or alternative inspection intervals and related procedures set forth in an operations specification approved by the Administrator under part 121 or 135 of this chapter or in accordance with an inspection program approved under § 91.409(e) have been complied with.

(d) A person must not alter an aircraft based on a supplemental type certificate unless the owner or operator of the aircraft is the holder of the supplemental type certificate, or has written permission from the holder.

[Doc. No. 18334, 54 FR 34311, Aug. 18, 1989, as amended by Amdt. 91–267, 66 FR 21066, Apr. 27, 2001; Amdt. 91–293, 71 FR 56005, Sept. 26, 2006]

§ 91.405 Maintenance required.

Each owner or operator of an aircraft—

(a) Shall have that aircraft inspected as prescribed in subpart E of this part and shall between required inspections, except as provided in paragraph (c) of this section, have discrepancies repaired as prescribed in part 43 of this chapter;

(b) Shall ensure that maintenance personnel make appropriate entries in the aircraft maintenance records indicating the aircraft has been approved for return to service;

(c) Shall have any inoperative instrument or item of equipment, permitted to be inoperative by § 91.213(d)(2) of this part, repaired, replaced, removed, or inspected at the next required inspection; and

(d) When listed discrepancies include inoperative instruments or equipment, shall ensure that a placard has been installed as required by § 43.11 of this chapter.

§ 91.407 Operation after maintenance, preventive maintenance, rebuilding, or alteration.

(a) No person may operate any aircraft that has undergone maintenance, preventive maintenance, rebuilding, or alteration unless—

(1) It has been approved for return to service by a person authorized under § 43.7 of this chapter; and

(2) The maintenance record entry required by § 43.9 or § 43.11, as applicable, of this chapter has been made.

(b) No person may carry any person (other than crewmembers) in an aircraft that has been maintained, rebuilt, or altered in a manner that may have appreciably changed its flight characteristics or substantially affected its operation in flight until an appropriately rated pilot with at least a private pilot certificate flies the aircraft, makes an operational check of the maintenance performed or alteration made, and logs the flight in the aircraft records.

(c) The aircraft does not have to be flown as required by paragraph (b) of this section if, prior to flight, ground tests, inspection, or both show conclusively that the maintenance, preventive maintenance, rebuilding, or alteration has not appreciably changed the flight characteristics or substantially affected the flight operation of the aircraft.

(Approved by the Office of Management and Budget under control number 2120–0005)

§ 91.409 Inspections.

(a) Except as provided in paragraph (c) of this section, no person may operate an aircraft unless, within the preceding 12 calendar months, it has had—

(1) An annual inspection in accordance with part 43 of this chapter and has been approved for return to service by a person authorized by § 43.7 of this chapter; or

(2) An inspection for the issuance of an airworthiness certificate in accordance with part 21 of this chapter.

No inspection performed under paragraph (b) of this section may be substituted for any inspection required by this paragraph unless it is performed by a person authorized to perform annual inspections and is entered as an ''annual'' inspection in the required maintenance records.

(b) Except as provided in paragraph (c) of this section, no person may operate an aircraft carrying any person (other than a crewmember) for hire, and no person may give flight instruction for hire in an aircraft which that person provides, unless within the preceding 100 hours of time in service the aircraft has received an annual or 100-hour inspection and been approved for return to service in accordance with part 43 of this chapter or has received an inspection for the issuance of an airworthiness certificate in accordance with part 21 of this chapter. The 100-hour limitation may be exceeded by not more than 10 hours while en route to reach a place where the inspection can be done. The excess time used to reach a place where the inspection can be done must be included in computing the next 100 hours of time in service.

(c) Paragraphs (a) and (b) of this section do not apply to—

(1) An aircraft that carries a special flight permit, a current experimental certificate, or a light-sport or provisional airworthiness certificate;

(2) An aircraft inspected in accordance with an approved aircraft inspection program under part 125 or 135 of this chapter and so identified by the registration number in the operations specifications of the certificate holder having the approved inspection program;

(3) An aircraft subject to the requirements of paragraph (d) or (e) of this section; or

(4) Turbine-powered rotorcraft when the operator elects to inspect that rotorcraft in accordance with paragraph (e) of this section.

(d) *Progressive inspection.* Each registered owner or operator of an aircraft desiring to use a progressive inspection program must submit a written request to the FAA Flight Standards district office having jurisdiction over the area in which the applicant is located, and shall provide—

(1) A certificated mechanic holding an inspection authorization, a certificated airframe repair station, or the manufacturer of the aircraft to supervise or conduct the progressive inspection;

(2) A current inspection procedures manual available and readily understandable to pilot and maintenance personnel containing, in detail—

(i) An explanation of the progressive inspection, including the continuity of inspection responsibility, the making of reports, and the keeping of records and technical reference material;

(ii) An inspection schedule, specifying the intervals in hours or days

when routine and detailed inspections will be performed and including instructions for exceeding an inspection interval by not more than 10 hours while en route and for changing an inspection interval because of service experience;

(iii) Sample routine and detailed inspection forms and instructions for their use; and

(iv) Sample reports and records and instructions for their use;

(3) Enough housing and equipment for necessary disassembly and proper inspection of the aircraft; and

(4) Appropriate current technical information for the aircraft.

The frequency and detail of the progressive inspection shall provide for the complete inspection of the aircraft within each 12 calendar months and be consistent with the manufacturer's recommendations, field service experience, and the kind of operation in which the aircraft is engaged. The progressive inspection schedule must ensure that the aircraft, at all times, will be airworthy and will conform to all applicable FAA aircraft specifications, type certificate data sheets, airworthiness directives, and other approved data. If the progressive inspection is discontinued, the owner or operator shall immediately notify the local FAA Flight Standards district office, in writing, of the discontinuance. After the discontinuance, the first annual inspection under §91.409(a)(1) is due within 12 calendar months after the last complete inspection of the aircraft under the progressive inspection. The 100-hour inspection under §91.409(b) is due within 100 hours after that complete inspection. A complete inspection of the aircraft, for the purpose of determining when the annual and 100-hour inspections are due, requires a detailed inspection of the aircraft and all its components in accordance with the progressive inspection. A routine inspection of the aircraft and a detailed inspection of several components is not considered to be a complete inspection.

(e) *Large airplanes (to which part 125 is not applicable), turbojet multiengine airplanes, turbopropeller-powered multiengine airplanes, and turbine-powered rotorcraft.* No person may operate a large airplane, turbojet multiengine airplane, turbopropeller-powered multiengine airplane, or turbine-powered rotorcraft unless the replacement times for life-limited parts specified in the aircraft specifications, type data sheets, or other documents approved by the Administrator are complied with and the airplane or turbine-powered rotorcraft, including the airframe, engines, propellers, rotors, appliances, survival equipment, and emergency equipment, is inspected in accordance with an inspection program selected under the provisions of paragraph (f) of this section, except that, the owner or operator of a turbine-powered rotorcraft may elect to use the inspection provisions of §91.409(a), (b), (c), or (d) in lieu of an inspection option of §91.409(f).

(f) *Selection of inspection program under paragraph (e) of this section.* The registered owner or operator of each airplane or turbine-powered rotorcraft described in paragraph (e) of this section must select, identify in the aircraft maintenance records, and use one of the following programs for the inspection of the aircraft:

(1) A continuous airworthiness inspection program that is part of a continuous airworthiness maintenance program currently in use by a person holding an air carrier operating certificate or an operating certificate issued under part 121 or 135 of this chapter and operating that make and model aircraft under part 121 of this chapter or operating that make and model under part 135 of this chapter and maintaining it under §135.411(a)(2) of this chapter.

(2) An approved aircraft inspection program approved under §135.419 of this chapter and currently in use by a person holding an operating certificate issued under part 135 of this chapter.

(3) A current inspection program recommended by the manufacturer.

(4) Any other inspection program established by the registered owner or operator of that airplane or turbine-powered rotorcraft and approved by the Administrator under paragraph (g) of this section. However, the Administrator may require revision of this inspection program in accordance with the provisions of §91.415.

Each operator shall include in the selected program the name and address of the person responsible for scheduling the inspections required by the program and make a copy of that program available to the person performing inspections on the aircraft and, upon request, to the Administrator.

(g) *Inspection program approved under paragraph (e) of this section.* Each operator of an airplane or turbine-powered rotorcraft desiring to establish or change an approved inspection program under paragraph (f)(4) of this section must submit the program for approval to the local FAA Flight Standards district office having jurisdiction over the area in which the aircraft is based. The program must be in writing and include at least the following information:

(1) Instructions and procedures for the conduct of inspections for the particular make and model airplane or turbine-powered rotorcraft, including necessary tests and checks. The instructions and procedures must set forth in detail the parts and areas of the airframe, engines, propellers, rotors, and appliances, including survival and emergency equipment required to be inspected.

(2) A schedule for performing the inspections that must be performed under the program expressed in terms of the time in service, calendar time, number of system operations, or any combination of these.

(h) *Changes from one inspection program to another.* When an operator changes from one inspection program under paragraph (f) of this section to another, the time in service, calendar times, or cycles of operation accumulated under the previous program must be applied in determining inspection due times under the new program.

(Approved by the Office of Management and Budget under control number 2120–0005)

[Doc. No. 18334, 54 FR 34311, Aug. 18, 1989; Amdt. 91–211, 54 FR 41211, Oct. 5, 1989; Amdt. 91–267, 66 FR 21066, Apr. 27, 2001; Amdt. 91–282, 69 FR 44882, July 27, 2004]

§ 91.410 [Reserved]

§ 91.411 Altimeter system and altitude reporting equipment tests and inspections.

(a) No person may operate an airplane, or helicopter, in controlled airspace under IFR unless—

(1) Within the preceding 24 calendar months, each static pressure system, each altimeter instrument, and each automatic pressure altitude reporting system has been tested and inspected and found to comply with appendices E and F of part 43 of this chapter;

(2) Except for the use of system drain and alternate static pressure valves, following any opening and closing of the static pressure system, that system has been tested and inspected and found to comply with paragraph (a), appendix E, of part 43 of this chapter; and

(3) Following installation or maintenance on the automatic pressure altitude reporting system of the ATC transponder where data correspondence error could be introduced, the integrated system has been tested, inspected, and found to comply with paragraph (c), appendix E, of part 43 of this chapter.

(b) The tests required by paragraph (a) of this section must be conducted by—

(1) The manufacturer of the airplane, or helicopter, on which the tests and inspections are to be performed;

(2) A certificated repair station properly equipped to perform those functions and holding—

(i) An instrument rating, Class I;

(ii) A limited instrument rating appropriate to the make and model of appliance to be tested;

(iii) A limited rating appropriate to the test to be performed;

(iv) An airframe rating appropriate to the airplane, or helicopter, to be tested; or

(3) A certificated mechanic with an airframe rating (static pressure system tests and inspections only).

(c) Altimeter and altitude reporting equipment approved under Technical Standard Orders are considered to be tested and inspected as of the date of their manufacture.

(d) No person may operate an airplane, or helicopter, in controlled airspace under IFR at an altitude above the maximum altitude at which all altimeters and the automatic altitude reporting system of that airplane, or helicopter, have been tested.

[Docket No. 18334, 54 FR 34308, Aug. 18, 1989, as amended by Amdt. 91–269, 66 FR 41116, Aug. 6, 2001; 72 FR 7739, Feb. 20, 2007]

§ 91.413 ATC transponder tests and inspections.

(a) No persons may use an ATC transponder that is specified in 91.215(a), 121.345(c), or § 135.143(c) of this chapter unless, within the preceding 24 calendar months, the ATC transponder has been tested and inspected and found to comply with appendix F of part 43 of this chapter; and

(b) Following any installation or maintenance on an ATC transponder where data correspondence error could be introduced, the integrated system has been tested, inspected, and found to comply with paragraph (c), appendix E, of part 43 of this chapter.

(c) The tests and inspections specified in this section must be conducted by—

(1) A certificated repair station properly equipped to perform those functions and holding—

(i) A radio rating, Class III;

(ii) A limited radio rating appropriate to the make and model transponder to be tested;

(iii) A limited rating appropriate to the test to be performed;

(2) A holder of a continuous airworthiness maintenance program as provided in part 121 or § 135.411(a)(2) of this chapter; or

(3) The manufacturer of the aircraft on which the transponder to be tested is installed, if the transponder was installed by that manufacturer.

[Doc. No. 18334, 54 FR 34311, Aug. 18, 1989, as amended by Amdt. 91–267, 66 FR 21066, Apr. 27, 2001; Amdt. 91–269, 66 FR 41116, Aug. 6, 2001]

§ 91.415 Changes to aircraft inspection programs.

(a) Whenever the Administrator finds that revisions to an approved aircraft inspection program under § 91.409(f)(4) or § 91.1109 are necessary for the continued adequacy of the program, the owner or operator must, after notification by the Administrator, make any changes in the program found to be necessary by the Administrator.

(b) The owner or operator may petition the Administrator to reconsider the notice to make any changes in a program in accordance with paragraph (a) of this section.

(c) The petition must be filed with the Director, Flight Standards Service within 30 days after the certificate holder or fractional ownership program manager receives the notice.

(d) Except in the case of an emergency requiring immediate action in the interest of safety, the filing of the petition stays the notice pending a decision by the Administrator.

[Doc. No. 18334, 54 FR 34311, Aug. 18, 1989, as amended by Amdt. 91–280, 68 FR 54560, Sept. 17, 2003]

§ 91.417 Maintenance records.

(a) Except for work performed in accordance with §§ 91.411 and 91.413, each registered owner or operator shall keep the following records for the periods specified in paragraph (b) of this section:

(1) Records of the maintenance, preventive maintenance, and alteration and records of the 100-hour, annual, progressive, and other required or approved inspections, as appropriate, for each aircraft (including the airframe) and each engine, propeller, rotor, and appliance of an aircraft. The records must include—

(i) A description (or reference to data acceptable to the Administrator) of the work performed; and

(ii) The date of completion of the work performed; and

(iii) The signature, and certificate number of the person approving the aircraft for return to service.

(2) Records containing the following information:

(i) The total time in service of the airframe, each engine, each propeller, and each rotor.

(ii) The current status of life-limited parts of each airframe, engine, propeller, rotor, and appliance.

(iii) The time since last overhaul of all items installed on the aircraft

which are required to be overhauled on a specified time basis.

(iv) The current inspection status of the aircraft, including the time since the last inspection required by the inspection program under which the aircraft and its appliances are maintained.

(v) The current status of applicable airworthiness directives (AD) including, for each, the method of compliance, the AD number, and revision date. If the AD involves recurring action, the time and date when the next action is required.

(vi) Copies of the forms prescribed by §43.9(a) of this chapter for each major alteration to the airframe and currently installed engines, rotors, propellers, and appliances.

(b) The owner or operator shall retain the following records for the periods prescribed:

(1) The records specified in paragraph (a)(1) of this section shall be retained until the work is repeated or superseded by other work or for 1 year after the work is performed.

(2) The records specified in paragraph (a)(2) of this section shall be retained and transferred with the aircraft at the time the aircraft is sold.

(3) A list of defects furnished to a registered owner or operator under §43.11 of this chapter shall be retained until the defects are repaired and the aircraft is approved for return to service.

(c) The owner or operator shall make all maintenance records required to be kept by this section available for inspection by the Administrator or any authorized representative of the National Transportation Safety Board (NTSB). In addition, the owner or operator shall present Form 337 described in paragraph (d) of this section for inspection upon request of any law enforcement officer.

(d) When a fuel tank is installed within the passenger compartment or a baggage compartment pursuant to part 43 of this chapter, a copy of FAA Form 337 shall be kept on board the modified aircraft by the owner or operator.

(Approved by the Office of Management and Budget under control number 2120–0005)

§ 91.419 Transfer of maintenance records.

Any owner or operator who sells a U.S.-registered aircraft shall transfer to the purchaser, at the time of sale, the following records of that aircraft, in plain language form or in coded form at the election of the purchaser, if the coded form provides for the preservation and retrieval of information in a manner acceptable to the Administrator:

(a) The records specified in §91.417(a)(2).

(b) The records specified in §91.417(a)(1) which are not included in the records covered by paragraph (a) of this section, except that the purchaser may permit the seller to keep physical custody of such records. However, custody of records by the seller does not relieve the purchaser of the responsibility under §91.417(c) to make the records available for inspection by the Administrator or any authorized representative of the National Transportation Safety Board (NTSB).

§ 91.421 Rebuilt engine maintenance records.

(a) The owner or operator may use a new maintenance record, without previous operating history, for an aircraft engine rebuilt by the manufacturer or by an agency approved by the manufacturer.

(b) Each manufacturer or agency that grants zero time to an engine rebuilt by it shall enter in the new record—

(1) A signed statement of the date the engine was rebuilt;

(2) Each change made as required by airworthiness directives; and

(3) Each change made in compliance with manufacturer's service bulletins, if the entry is specifically requested in that bulletin.

(c) For the purposes of this section, a rebuilt engine is a used engine that has been completely disassembled, inspected, repaired as necessary, reassembled, tested, and approved in the same manner and to the same tolerances and limits as a new engine with either new or used parts. However, all parts used in it must conform to the production drawing tolerances and limits for new parts or be of approved

oversized or undersized dimensions for a new engine.

§§ 91.423–91.499 [Reserved]

Subpart F—Large and Turbine-Powered Multiengine Airplanes and Fractional Ownership Program Aircraft

SOURCE: Docket No. 18334, 54 FR 34314, Aug. 18, 1989, unless otherwise noted.

§ 91.501 Applicability.

(a) This subpart prescribes operating rules, in addition to those prescribed in other subparts of this part, governing the operation of large airplanes of U.S. registry, turbojet-powered multiengine civil airplanes of U.S. registry, and fractional ownership program aircraft of U.S. registry that are operating under subpart K of this part in operations not involving common carriage. The operating rules in this subpart do not apply to those aircraft when they are required to be operated under parts 121, 125, 129, 135, and 137 of this chapter. (Section 91.409 prescribes an inspection program for large and for turbine-powered (turbojet and turboprop) multiengine airplanes and turbine-powered rotorcraft of U.S. registry when they are operated under this part or part 129 or 137.)

(b) Operations that may be conducted under the rules in this subpart instead of those in parts 121, 129, 135, and 137 of this chapter when common carriage is not involved, include—

(1) Ferry or training flights;

(2) Aerial work operations such as aerial photography or survey, or pipeline patrol, but not including fire fighting operations;

(3) Flights for the demonstration of an airplane to prospective customers when no charge is made except for those specified in paragraph (d) of this section;

(4) Flights conducted by the operator of an airplane for his personal transportation, or the transportation of his guests when no charge, assessment, or fee is made for the transportation;

(5) Carriage of officials, employees, guests, and property of a company on an airplane operated by that company, or the parent or a subsidiary of the company or a subsidiary of the parent, when the carriage is within the scope of, and incidental to, the business of the company (other than transportation by air) and no charge, assessment or fee is made for the carriage in excess of the cost of owning, operating, and maintaining the airplane, except that no charge of any kind may be made for the carriage of a guest of a company, when the carriage is not within the scope of, and incidental to, the business of that company;

(6) The carriage of company officials, employees, and guests of the company on an airplane operated under a time sharing, interchange, or joint ownership agreement as defined in paragraph (c) of this section;

(7) The carriage of property (other than mail) on an airplane operated by a person in the furtherance of a business or employment (other than transportation by air) when the carriage is within the scope of, and incidental to, that business or employment and no charge, assessment, or fee is made for the carriage other than those specified in paragraph (d) of this section;

(8) The carriage on an airplane of an athletic team, sports group, choral group, or similar group having a common purpose or objective when there is no charge, assessment, or fee of any kind made by any person for that carriage; and

(9) The carriage of persons on an airplane operated by a person in the furtherance of a business other than transportation by air for the purpose of selling them land, goods, or property, including franchises or distributorships, when the carriage is within the scope of, and incidental to, that business and no charge, assessment, or fee is made for that carriage.

(10) Any operation identified in paragraphs (b)(1) through (b)(9) of this section when conducted—

(i) By a fractional ownership program manager, or

(ii) By a fractional owner in a fractional ownership program aircraft operated under subpart K of this part, except that a flight under a joint ownership arrangement under paragraph (b)(6) of this section may not be conducted. For a flight under an interchange agreement under paragraph

(b)(6) of this section, the exchange of equal time for the operation must be properly accounted for as part of the total hours associated with the fractional owner's share of ownership.

(c) As used in this section—

(1) A *time sharing agreement* means an arrangement whereby a person leases his airplane with flight crew to another person, and no charge is made for the flights conducted under that arrangement other than those specified in paragraph (d) of this section;

(2) An *interchange agreement* means an arrangement whereby a person leases his airplane to another person in exchange for equal time, when needed, on the other person's airplane, and no charge, assessment, or fee is made, except that a charge may be made not to exceed the difference between the cost of owning, operating, and maintaining the two airplanes;

(3) A *joint ownership agreement* means an arrangement whereby one of the registered joint owners of an airplane employs and furnishes the flight crew for that airplane and each of the registered joint owners pays a share of the charge specified in the agreement.

(d) The following may be charged, as expenses of a specific flight, for transportation as authorized by paragraphs (b) (3) and (7) and (c)(1) of this section:

(1) Fuel, oil, lubricants, and other additives.

(2) Travel expenses of the crew, including food, lodging, and ground transportation.

(3) Hangar and tie-down costs away from the aircraft's base of operation.

(4) Insurance obtained for the specific flight.

(5) Landing fees, airport taxes, and similar assessments.

(6) Customs, foreign permit, and similar fees directly related to the flight.

(7) In flight food and beverages.

(8) Passenger ground transportation.

(9) Flight planning and weather contract services.

(10) An additional charge equal to 100 percent of the expenses listed in paragraph (d)(1) of this section.

[Doc. No. 18334, 54 FR 34314, Aug. 18, 1989, as amended by Amdt. 91–280, 68 FR 54560, Sept. 17, 2003]

§ 91.503 Flying equipment and operating information.

(a) The pilot in command of an airplane shall ensure that the following flying equipment and aeronautical charts and data, in current and appropriate form, are accessible for each flight at the pilot station of the airplane:

(1) A flashlight having at least two size ''D'' cells, or the equivalent, that is in good working order.

(2) A cockpit checklist containing the procedures required by paragraph (b) of this section.

(3) Pertinent aeronautical charts.

(4) For IFR, VFR over-the-top, or night operations, each pertinent navigational en route, terminal area, and approach and letdown chart.

(5) In the case of multiengine airplanes, one-engine inoperative climb performance data.

(b) Each cockpit checklist must contain the following procedures and shall be used by the flight crewmembers when operating the airplane:

(1) Before starting engines.

(2) Before takeoff.

(3) Cruise.

(4) Before landing.

(5) After landing.

(6) Stopping engines.

(7) Emergencies.

(c) Each emergency cockpit checklist procedure required by paragraph (b)(7) of this section must contain the following procedures, as appropriate:

(1) Emergency operation of fuel, hydraulic, electrical, and mechanical systems.

(2) Emergency operation of instruments and controls.

(3) Engine inoperative procedures.

(4) Any other procedures necessary for safety.

(d) The equipment, charts, and data prescribed in this section shall be used by the pilot in command and other members of the flight crew, when pertinent.

§ 91.505 Familiarity with operating limitations and emergency equipment.

(a) Each pilot in command of an airplane shall, before beginning a flight, become familiar with the Airplane Flight Manual for that airplane, if one

is required, and with any placards, listings, instrument markings, or any combination thereof, containing each operating limitation prescribed for that airplane by the Administrator, including those specified in § 91.9(b).

(b) Each required member of the crew shall, before beginning a flight, become familiar with the emergency equipment installed on the airplane to which that crewmember is assigned and with the procedures to be followed for the use of that equipment in an emergency situation.

§ 91.507 Equipment requirements: Over-the-top or night VFR operations.

No person may operate an airplane over-the-top or at night under VFR unless that airplane is equipped with the instruments and equipment required for IFR operations under § 91.205(d) and one electric landing light for night operations. Each required instrument and item of equipment must be in operable condition.

§ 91.509 Survival equipment for overwater operations.

(a) No person may take off an airplane for a flight over water more than 50 nautical miles from the nearest shore unless that airplane is equipped with a life preserver or an approved flotation means for each occupant of the airplane.

(b) Except as provided in paragraph (c) of this section, no person may take off an airplane for flight over water more than 30 minutes flying time or 100 nautical miles from the nearest shore, whichever is less, unless it has on board the following survival equipment:

(1) A life preserver, equipped with an approved survivor locator light, for each occupant of the airplane.

(2) Enough liferafts (each equipped with an approved survival locator light) of a rated capacity and buoyancy to accommodate the occupants of the airplane.

(3) At least one pyrotechnic signaling device for each liferaft.

(4) One self-buoyant, water-resistant, portable emergency radio signaling device that is capable of transmission on the appropriate emergency frequency or frequencies and not dependent upon the airplane power supply.

(5) A lifeline stored in accordance with § 25.1411(g) of this chapter.

(c) A fractional ownership program manager under subpart K of this part may apply for a deviation from paragraphs (b)(2) through (5) of this section for a particular over water operation or the Administrator may amend the management specifications to require the carriage of all or any specific items of the equipment listed in paragraphs (b)(2) through (5) of this section.

(d) The required life rafts, life preservers, and signaling devices must be installed in conspicuously marked locations and easily accessible in the event of a ditching without appreciable time for preparatory procedures.

(e) A survival kit, appropriately equipped for the route to be flown, must be attached to each required life raft.

(f) As used in this section, the term shore means that area of the land adjacent to the water that is above the high water mark and excludes land areas that are intermittently under water.

[Doc. No. 18334, 54 FR 34314, Aug. 18, 1989, as amended by Amdt. 91–280, 68 FR 54561, Sept. 17, 2003]

§ 91.511 Communication and navigation equipment for overwater operations.

(a) Except as provided in paragraphs (c), (d), and (f) of this section, no person may take off an airplane for a flight over water more than 30 minutes flying time or 100 nautical miles from the nearest shore unless it has at least the following operable equipment:

(1) Radio communication equipment appropriate to the facilities to be used and able to transmit to, and receive from, at least one communication facility from any place along the route:

(i) Two transmitters.

(ii) Two microphones.

(iii) Two headsets or one headset and one speaker.

(iv) Two independent receivers.

(2) Appropriate electronic navigational equipment consisting of at least two independent electronic navigation units capable of providing the pilot with the information necessary to

navigate the airplane within the airspace assigned by air traffic control. However, a receiver that can receive both communications and required navigational signals may be used in place of a separate communications receiver and a separate navigational signal receiver or unit.

(b) For the purposes of paragraphs (a)(1)(iv) and (a)(2) of this section, a receiver or electronic navigation unit is independent if the function of any part of it does not depend on the functioning of any part of another receiver or electronic navigation unit.

(c) Notwithstanding the provisions of paragraph (a) of this section, a person may operate an airplane on which no passengers are carried from a place where repairs or replacement cannot be made to a place where they can be made, if not more than one of each of the dual items of radio communication and navigational equipment specified in paragraphs (a)(1) (i) through (iv) and (a)(2) of this section malfunctions or becomes inoperative.

(d) Notwithstanding the provisions of paragraph (a) of this section, when both VHF and HF communications equipment are required for the route and the airplane has two VHF transmitters and two VHF receivers for communications, only one HF transmitter and one HF receiver is required for communications.

(e) As used in this section, the term *shore* means that area of the land adjacent to the water which is above the high-water mark and excludes land areas which are intermittently under water.

(f) Notwithstanding the requirements in paragraph (a)(2) of this section, a person may operate in the Gulf of Mexico, the Caribbean Sea, and the Atlantic Ocean west of a line which extends from 44°47′00″ N / 67°00′00″ W to 39°00′00″ N / 67°00′00″ W to 38°30′00″ N / 60°00′00″ W south along the 60°00′00″ W longitude line to the point where the line intersects with the northern coast of South America, when:

(1) A single long-range navigation system is installed, operational, and appropriate for the route; and

(2) Flight conditions and the aircraft's capabilities are such that no more than a 30-minute gap in two-way radio very high frequency communications is expected to exist.

[Doc. No. 18334, 54 FR 34314, Aug. 18, 1989, as amended by Amdt. 91–249, 61 FR 7190, Feb. 26, 1996; Amdt. 91–296, 72 FR 31679, June 7, 2007]

§ 91.513 Emergency equipment.

(a) No person may operate an airplane unless it is equipped with the emergency equipment listed in this section.

(b) Each item of equipment—

(1) Must be inspected in accordance with § 91.409 to ensure its continued serviceability and immediate readiness for its intended purposes;

(2) Must be readily accessible to the crew;

(3) Must clearly indicate its method of operation; and

(4) When carried in a compartment or container, must have that compartment or container marked as to contents and date of last inspection.

(c) Hand fire extinguishers must be provided for use in crew, passenger, and cargo compartments in accordance with the following:

(1) The type and quantity of extinguishing agent must be suitable for the kinds of fires likely to occur in the compartment where the extinguisher is intended to be used.

(2) At least one hand fire extinguisher must be provided and located on or near the flight deck in a place that is readily accessible to the flight crew.

(3) At least one hand fire extinguisher must be conveniently located in the passenger compartment of each airplane accommodating more than six but less than 31 passengers, and at least two hand fire extinguishers must be conveniently located in the passenger compartment of each airplane accommodating more than 30 passengers.

(4) Hand fire extinguishers must be installed and secured in such a manner that they will not interfere with the safe operation of the airplane or adversely affect the safety of the crew and passengers. They must be readily accessible and, unless the locations of the fire extinguishers are obvious, their stowage provisions must be properly identified.

(d) First aid kits for treatment of injuries likely to occur in flight or in minor accidents must be provided.

(e) Each airplane accommodating more than 19 passengers must be equipped with a crash axe.

(f) Each passenger-carrying airplane must have a portable battery-powered megaphone or megaphones readily accessible to the crewmembers assigned to direct emergency evacuation, installed as follows:

(1) One megaphone on each airplane with a seating capacity of more than 60 but less than 100 passengers, at the most rearward location in the passenger cabin where it would be readily accessible to a normal flight attendant seat. However, the Administrator may grant a deviation from the requirements of this subparagraph if the Administrator finds that a different location would be more useful for evacuation of persons during an emergency.

(2) On each airplane with a seating capacity of 100 or more passengers, one megaphone installed at the forward end and one installed at the most rearward location where it would be readily accessible to a normal flight attendant seat.

§ 91.515 Flight altitude rules.

(a) Notwithstanding § 91.119, and except as provided in paragraph (b) of this section, no person may operate an airplane under VFR at less than—

(1) One thousand feet above the surface, or 1,000 feet from any mountain, hill, or other obstruction to flight, for day operations; and

(2) The altitudes prescribed in § 91.177, for night operations.

(b) This section does not apply—

(1) During takeoff or landing;

(2) When a different altitude is authorized by a waiver to this section under subpart J of this part; or

(3) When a flight is conducted under the special VFR weather minimums of § 91.157 with an appropriate clearance from ATC.

§ 91.517 Passenger information.

(a) Except as provided in paragraph (b) of this section, no person may operate an airplane carrying passengers unless it is equipped with signs that are visible to passengers and flight attendants to notify them when smoking is prohibited and when safety belts must be fastened. The signs must be so constructed that the crew can turn them on and off. They must be turned on during airplane movement on the surface, for each takeoff, for each landing, and when otherwise considered to be necessary by the pilot in command.

(b) The pilot in command of an airplane that is not required, in accordance with applicable aircraft and equipment requirements of this chapter, to be equipped as provided in paragraph (a) of this section shall ensure that the passengers are notified orally each time that it is necessary to fasten their safety belts and when smoking is prohibited.

(c) If passenger information signs are installed, no passenger or crewmember may smoke while any ''no smoking'' sign is lighted nor may any passenger or crewmember smoke in any lavatory.

(d) Each passenger required by § 91.107(a)(3) to occupy a seat or berth shall fasten his or her safety belt about him or her and keep it fastened while any ''fasten seat belt'' sign is lighted.

(e) Each passenger shall comply with instructions given him or her by crewmembers regarding compliance with paragraphs (b), (c), and (d) of this section.

[Doc. No. 26142, 57 FR 42672, Sept. 15, 1992]

§ 91.519 Passenger briefing.

(a) Before each takeoff the pilot in command of an airplane carrying passengers shall ensure that all passengers have been orally briefed on—

(1) *Smoking.* Each passenger shall be briefed on when, where, and under what conditions smoking is prohibited. This briefing shall include a statement, as appropriate, that the Federal Aviation Regulations require passenger compliance with lighted passenger information signs and no smoking placards, prohibit smoking in lavatories, and require compliance with crewmember instructions with regard to these items;

(2) *Use of safety belts and shoulder harnesses.* Each passenger shall be briefed on when, where, and under what conditions it is necessary to have his or her safety belt and, if installed, his or her shoulder harness fastened about him or

her. This briefing shall include a statement, as appropriate, that Federal Aviation Regulations require passenger compliance with the lighted passenger sign and/or crewmember instructions with regard to these items;

(3) Location and means for opening the passenger entry door and emergency exits;

(4) Location of survival equipment;

(5) Ditching procedures and the use of flotation equipment required under § 91.509 for a flight over water; and

(6) The normal and emergency use of oxygen equipment installed on the airplane.

(b) The oral briefing required by paragraph (a) of this section shall be given by the pilot in command or a member of the crew, but need not be given when the pilot in command determines that the passengers are familiar with the contents of the briefing. It may be supplemented by printed cards for the use of each passenger containing—

(1) A diagram of, and methods of operating, the emergency exits; and

(2) Other instructions necessary for use of emergency equipment.

(c) Each card used under paragraph (b) must be carried in convenient locations on the airplane for the use of each passenger and must contain information that is pertinent only to the type and model airplane on which it is used.

(d) For operations under subpart K of this part, the passenger briefing requirements of § 91.1035 apply, instead of the requirements of paragraphs (a) through (c) of this section.

[Doc. No. 18334, 54 FR 34314, Aug. 18, 1989, as amended by Amdt. 91–231, 57 FR 42672, Sept. 15, 1992; Amdt. 91–280, 68 FR 54561, Sept. 17, 2003]

§ 91.521 Shoulder harness.

(a) No person may operate a transport category airplane that was type certificated after January 1, 1958, unless it is equipped at each seat at a flight deck station with a combined safety belt and shoulder harness that meets the applicable requirements specified in § 25.785 of this chapter, except that—

(1) Shoulder harnesses and combined safety belt and shoulder harnesses that were approved and installed before March 6, 1980, may continue to be used; and

(2) Safety belt and shoulder harness restraint systems may be designed to the inertia load factors established under the certification basis of the airplane.

(b) No person may operate a transport category airplane unless it is equipped at each required flight attendant seat in the passenger compartment with a combined safety belt and shoulder harness that meets the applicable requirements specified in § 25.785 of this chapter, except that—

(1) Shoulder harnesses and combined safety belt and shoulder harnesses that were approved and installed before March 6, 1980, may continue to be used; and

(2) Safety belt and shoulder harness restraint systems may be designed to the inertia load factors established under the certification basis of the airplane.

§ 91.523 Carry-on baggage.

No pilot in command of an airplane having a seating capacity of more than 19 passengers may permit a passenger to stow baggage aboard that airplane except—

(a) In a suitable baggage or cargo storage compartment, or as provided in § 91.525; or

(b) Under a passenger seat in such a way that it will not slide forward under crash impacts severe enough to induce the ultimate inertia forces specified in § 25.561(b)(3) of this chapter, or the requirements of the regulations under which the airplane was type certificated. Restraining devices must also limit sideward motion of under-seat baggage and be designed to withstand crash impacts severe enough to induce sideward forces specified in § 25.561(b)(3) of this chapter.

§ 91.525 Carriage of cargo.

(a) No pilot in command may permit cargo to be carried in any airplane unless—

(1) It is carried in an approved cargo rack, bin, or compartment installed in the airplane;

(2) It is secured by means approved by the Administrator; or

(3) It is carried in accordance with each of the following:

(i) It is properly secured by a safety belt or other tiedown having enough strength to eliminate the possibility of shifting under all normally anticipated flight and ground conditions.

(ii) It is packaged or covered to avoid possible injury to passengers.

(iii) It does not impose any load on seats or on the floor structure that exceeds the load limitation for those components.

(iv) It is not located in a position that restricts the access to or use of any required emergency or regular exit, or the use of the aisle between the crew and the passenger compartment.

(v) It is not carried directly above seated passengers.

(b) When cargo is carried in cargo compartments that are designed to require the physical entry of a crewmember to extinguish any fire that may occur during flight, the cargo must be loaded so as to allow a crewmember to effectively reach all parts of the compartment with the contents of a hand fire extinguisher.

§ 91.527 Operating in icing conditions.

(a) No pilot may take off an airplane that has—

(1) Frost, snow, or ice adhering to any propeller, windshield, or powerplant installation or to an airspeed, altimeter, rate of climb, or flight attitude instrument system;

(2) Snow or ice adhering to the wings or stabilizing or control surfaces; or

(3) Any frost adhering to the wings or stabilizing or control surfaces, unless that frost has been polished to make it smooth.

(b) Except for an airplane that has ice protection provisions that meet the requirements in section 34 of Special Federal Aviation Regulation No. 23, or those for transport category airplane type certification, no pilot may fly—

(1) Under IFR into known or forecast moderate icing conditions; or

(2) Under VFR into known light or moderate icing conditions unless the aircraft has functioning de-icing or anti-icing equipment protecting each propeller, windshield, wing, stabilizing or control surface, and each airspeed, altimeter, rate of climb, or flight attitude instrument system.

(c) Except for an airplane that has ice protection provisions that meet the requirements in section 34 of Special Federal Aviation Regulation No. 23, or those for transport category airplane type certification, no pilot may fly an airplane into known or forecast severe icing conditions.

(d) If current weather reports and briefing information relied upon by the pilot in command indicate that the forecast icing conditions that would otherwise prohibit the flight will not be encountered during the flight because of changed weather conditions since the forecast, the restrictions in paragraphs (b) and (c) of this section based on forecast conditions do not apply.

§ 91.529 Flight engineer requirements.

(a) No person may operate the following airplanes without a flight crewmember holding a current flight engineer certificate:

(1) An airplane for which a type certificate was issued before January 2, 1964, having a maximum certificated takeoff weight of more than 80,000 pounds.

(2) An airplane type certificated after January 1, 1964, for which a flight engineer is required by the type certification requirements.

(b) No person may serve as a required flight engineer on an airplane unless, within the preceding 6 calendar months, that person has had at least 50 hours of flight time as a flight engineer on that type airplane or has been checked by the Administrator on that type airplane and is found to be familiar and competent with all essential current information and operating procedures.

§ 91.531 Second in command requirements.

(a) Except as provided in paragraph (b) and (d) of this section, no person may operate the following airplanes without a pilot who is designated as second in command of that airplane:

(1) A large airplane, except that a person may operate an airplane certificated under SFAR 41 without a pilot

who is designated as second in command if that airplane is certificated for operation with one pilot.

(2) A turbojet-powered multiengine airplane for which two pilots are required under the type certification requirements for that airplane.

(3) A commuter category airplane, except that a person may operate a commuter category airplane notwithstanding paragraph (a)(1) of this section, that has a passenger seating configuration, excluding pilot seats, of nine or less without a pilot who is designated as second in command if that airplane is type certificated for operations with one pilot.

(b) The Administrator may issue a letter of authorization for the operation of an airplane without compliance with the requirements of paragraph (a) of this section if that airplane is designed for and type certificated with only one pilot station. The authorization contains any conditions that the Administrator finds necessary for safe operation.

(c) No person may designate a pilot to serve as second in command, nor may any pilot serve as second in command, of an airplane required under this section to have two pilots unless that pilot meets the qualifications for second in command prescribed in §61.55 of this chapter.

(d) No person may operate an aircraft under subpart K of this part without a pilot who is designated as second in command of that aircraft in accordance with §91.1049(d). The second in command must meet the experience requirements of §91.1053.

[Doc. No. 18334, 54 FR 34314, Aug. 18, 1989, as amended by Amdt. 91–280, 68 FR 54561, Sept. 17, 2003]

§91.533 Flight attendant requirements.

(a) No person may operate an airplane unless at least the following number of flight attendants are on board the airplane:

(1) For airplanes having more than 19 but less than 51 passengers on board, one flight attendant.

(2) For airplanes having more than 50 but less than 101 passengers on board, two flight attendants.

(3) For airplanes having more than 100 passengers on board, two flight attendants plus one additional flight attendant for each unit (or part of a unit) of 50 passengers above 100.

(b) No person may serve as a flight attendant on an airplane when required by paragraph (a) of this section unless that person has demonstrated to the pilot in command familiarity with the necessary functions to be performed in an emergency or a situation requiring emergency evacuation and is capable of using the emergency equipment installed on that airplane.

§91.535 Stowage of food, beverage, and passenger service equipment during aircraft movement on the surface, takeoff, and landing.

(a) No operator may move an aircraft on the surface, take off, or land when any food, beverage, or tableware furnished by the operator is located at any passenger seat.

(b) No operator may move an aircraft on the surface, take off, or land unless each food and beverage tray and seat back tray table is secured in its stowed position.

(c) No operator may permit an aircraft to move on the surface, take off, or land unless each passenger serving cart is secured in its stowed position.

(d) No operator may permit an aircraft to move on the surface, take off, or land unless each movie screen that extends into the aisle is stowed.

(e) Each passenger shall comply with instructions given by a crewmember with regard to compliance with this section.

[Doc. No. 26142, 57 FR 42672, Sept. 15, 1992]

§§91.536–91.599 [Reserved]

Subpart G—Additional Equipment and Operating Requirements for Large and Transport Category Aircraft

SOURCE: Docket No. 18334, 54 FR 34318, Aug. 18, 1989, unless otherwise noted.

§91.601 Applicability.

This subpart applies to operation of large and transport category U.S.-registered civil aircraft.

§ 91.603 Aural speed warning device.

No person may operate a transport category airplane in air commerce unless that airplane is equipped with an aural speed warning device that complies with § 25.1303(c)(1).

§ 91.605 Transport category civil airplane weight limitations.

(a) No person may take off any transport category airplane (other than a turbine-engine-powered airplane certificated after September 30, 1958) unless—

(1) The takeoff weight does not exceed the authorized maximum takeoff weight for the elevation of the airport of takeoff;

(2) The elevation of the airport of takeoff is within the altitude range for which maximum takeoff weights have been determined;

(3) Normal consumption of fuel and oil in flight to the airport of intended landing will leave a weight on arrival not in excess of the authorized maximum landing weight for the elevation of that airport; and

(4) The elevations of the airport of intended landing and of all specified alternate airports are within the altitude range for which the maximum landing weights have been determined.

(b) No person may operate a turbine-engine-powered transport category airplane certificated after September 30, 1958, contrary to the Airplane Flight Manual, or take off that airplane unless—

(1) The takeoff weight does not exceed the takeoff weight specified in the Airplane Flight Manual for the elevation of the airport and for the ambient temperature existing at the time of takeoff;

(2) Normal consumption of fuel and oil in flight to the airport of intended landing and to the alternate airports will leave a weight on arrival not in excess of the landing weight specified in the Airplane Flight Manual for the elevation of each of the airports involved and for the ambient temperatures expected at the time of landing;

(3) The takeoff weight does not exceed the weight shown in the Airplane Flight Manual to correspond with the minimum distances required for takeoff, considering the elevation of the airport, the runway to be used, the effective runway gradient, the ambient temperature and wind component at the time of takeoff, and, if operating limitations exist for the minimum distances required for takeoff from wet runways, the runway surface condition (dry or wet). Wet runway distances associated with grooved or porous friction course runways, if provided in the Airplane Flight Manual, may be used only for runways that are grooved or treated with a porous friction course (PFC) overlay, and that the operator determines are designed, constructed, and maintained in a manner acceptable to the Administrator.

(4) Where the takeoff distance includes a clearway, the clearway distance is not greater than one-half of—

(i) The takeoff run, in the case of airplanes certificated after September 30, 1958, and before August 30, 1959; or

(ii) The runway length, in the case of airplanes certificated after August 29, 1959.

(c) No person may take off a turbine-engine-powered transport category airplane certificated after August 29, 1959, unless, in addition to the requirements of paragraph (b) of this section—

(1) The accelerate-stop distance is no greater than the length of the runway plus the length of the stopway (if present); and

(2) The takeoff distance is no greater than the length of the runway plus the length of the clearway (if present); and

(3) The takeoff run is no greater than the length of the runway.

[Doc. No. 18334, 54 FR 34318, Aug. 18, 1989, as amended by Amdt. 91–256, 63 FR 8321, Feb. 18, 1998]

§ 91.607 Emergency exits for airplanes carrying passengers for hire.

(a) Notwithstanding any other provision of this chapter, no person may operate a large airplane (type certificated under the Civil Air Regulations effective before April 9, 1957) in passenger-carrying operations for hire, with more than the number of occupants—

(1) Allowed under Civil Air Regulations § 4b.362 (a), (b), and (c) as in effect on December 20, 1951; or

(2) Approved under Special Civil Air Regulations SR–387, SR–389, SR–389A,

or SR–389B, or under this section as in effect.

However, an airplane type listed in the following table may be operated with up to the listed number of occupants (including crewmembers) and the corresponding number of exits (including emergency exits and doors) approved for the emergency exit of passengers or with an occupant-exit configuration approved under paragraph (b) or (c) of this section.

Airplane type	Maximum number of occupants including all crewmembers	Corresponding number of exits authorized for passenger use
B–307	61	4
B–377	96	9
C–46	67	4
CV–240	53	6
CV–340 and CV–440	53	6
DC–3	35	4
DC–3 (Super)	39	5
DC–4	86	5
DC–6	87	7
DC–6B	112	11
L–18	17	3
L–049, L–649, L–749	87	7
L–1049 series	96	9
M–202	53	6
M–404	53	7
Viscount 700 series	53	7

(b) Occupants in addition to those authorized under paragraph (a) of this section may be carried as follows:

(1) For each additional floor-level exit at least 24 inches wide by 48 inches high, with an unobstructed 20-inch-wide access aisleway between the exit and the main passenger aisle, 12 additional occupants.

(2) For each additional window exit located over a wing that meets the requirements of the airworthiness standards under which the airplane was type certificated or that is large enough to inscribe an ellipse 19×26 inches, eight additional occupants.

(3) For each additional window exit that is not located over a wing but that otherwise complies with paragraph (b)(2) of this section, five additional occupants.

(4) For each airplane having a ratio (as computed from the table in paragraph (a) of this section) of maximum number of occupants to number of exits greater than 14:1, and for each airplane that does not have at least one full-size, door-type exit in the side of the fuselage in the rear part of the cabin, the first additional exit must be a floor-level exit that complies with paragraph (b)(1) of this section and must be located in the rear part of the cabin on the opposite side of the fuselage from the main entrance door. However, no person may operate an airplane under this section carrying more than 115 occupants unless there is such an exit on each side of the fuselage in the rear part of the cabin.

(c) No person may eliminate any approved exit except in accordance with the following:

(1) The previously authorized maximum number of occupants must be reduced by the same number of additional occupants authorized for that exit under this section.

(2) Exits must be eliminated in accordance with the following priority schedule: First, non-over-wing window exits; second, over-wing window exits; third, floor-level exits located in the forward part of the cabin; and fourth, floor-level exits located in the rear of the cabin.

(3) At least one exit must be retained on each side of the fuselage regardless of the number of occupants.

(4) No person may remove any exit that would result in a ratio of maximum number of occupants to approved exits greater than 14:1.

(d) This section does not relieve any person operating under part 121 of this chapter from complying with § 121.291.

§ 91.609 Flight recorders and cockpit voice recorders.

(a) No holder of an air carrier operating certificate or an operating certificate may conduct any operation under this part with an aircraft listed in the holder's operations specifications or current list of aircraft used in air transportation unless that aircraft complies with any applicable flight recorder and cockpit voice recorder requirements of the part under which its certificate is issued except that the operator may—

(1) Ferry an aircraft with an inoperative flight recorder or cockpit voice recorder from a place where repair or replacement cannot be made to a place where they can be made;

(2) Continue a flight as originally planned, if the flight recorder or cockpit voice recorder becomes inoperative after the aircraft has taken off;

(3) Conduct an airworthiness flight test during which the flight recorder or cockpit voice recorder is turned off to test it or to test any communications or electrical equipment installed in the aircraft; or

(4) Ferry a newly acquired aircraft from the place where possession of it is taken to a place where the flight recorder or cockpit voice recorder is to be installed.

(b) Notwithstanding paragraphs (c) and (e) of this section, an operator other than the holder of an air carrier or a commercial operator certificate may—

(1) Ferry an aircraft with an inoperative flight recorder or cockpit voice recorder from a place where repair or replacement cannot be made to a place where they can be made;

(2) Continue a flight as originally planned if the flight recorder or cockpit voice recorder becomes inoperative after the aircraft has taken off;

(3) Conduct an airworthiness flight test during which the flight recorder or cockpit voice recorder is turned off to test it or to test any communications or electrical equipment installed in the aircraft;

(4) Ferry a newly acquired aircraft from a place where possession of it was taken to a place where the flight recorder or cockpit voice recorder is to be installed; or

(5) Operate an aircraft:

(i) For not more than 15 days while the flight recorder and/or cockpit voice recorder is inoperative and/or removed for repair provided that the aircraft maintenance records contain an entry that indicates the date of failure, and a placard is located in view of the pilot to show that the flight recorder or cockpit voice recorder is inoperative.

(ii) For not more than an additional 15 days, provided that the requirements in paragraph (b)(5)(i) are met and that a certificated pilot, or a certificated person authorized to return an aircraft to service under §43.7 of this chapter, certifies in the aircraft maintenance records that additional time is required to complete repairs or obtain a replacement unit.

(c) No person may operate a U.S. civil registered, multiengine, turbine-powered airplane or rotorcraft having a passenger seating configuration, excluding any pilot seats of 10 or more that has been manufactured after October 11, 1991, unless it is equipped with one or more approved flight recorders that utilize a digital method of recording and storing data and a method of readily retrieving that data from the storage medium, that are capable of recording the data specified in appendix E to this part, for an airplane, or appendix F to this part, for a rotorcraft, of this part within the range, accuracy, and recording interval specified, and that are capable of retaining no less than 8 hours of aircraft operation.

(d) Whenever a flight recorder, required by this section, is installed, it must be operated continuously from the instant the airplane begins the takeoff roll or the rotorcraft begins lift-off until the airplane has completed the landing roll or the rotorcraft has landed at its destination.

(e) Unless otherwise authorized by the Administrator, after October 11, 1991, no person may operate a U.S. civil registered multiengine, turbine-powered airplane or rotorcraft having a passenger seating configuration of six passengers or more and for which two pilots are required by type certification or operating rule unless it is equipped with an approved cockpit voice recorder that:

(1) Is installed in compliance with §23.1457(a) (1) and (2), (b), (c), (d), (e), (f), and (g); §25.1457(a) (1) and (2), (b), (c), (d), (e), (f), and (g); §27.1457(a) (1) and (2), (b), (c), (d), (e), (f), and (g); or §29.1457(a) (1) and (2), (b), (c), (d), (e), (f), and (g) of this chapter, as applicable; and

(2) Is operated continuously from the use of the checklist before the flight to completion of the final checklist at the end of the flight.

(f) In complying with this section, an approved cockpit voice recorder having an erasure feature may be used, so that at any time during the operation of the recorder, information recorded more than 15 minutes earlier may be erased or otherwise obliterated.

(g) In the event of an accident or occurrence requiring immediate notification to the National Transportation Safety Board under part 830 of its regulations that results in the termination of the flight, any operator who has installed approved flight recorders and approved cockpit voice recorders shall keep the recorded information for at least 60 days or, if requested by the Administrator or the Board, for a longer period. Information obtained from the record is used to assist in determining the cause of accidents or occurrences in connection with the investigation under part 830. The Administrator does not use the cockpit voice recorder record in any civil penalty or certificate action.

[Doc. No. 18334, 54 FR 34318, Aug. 18, 1989, as amended by Amdt. 91–226, 56 FR 51621, Oct. 11, 1991; Amdt. 91–228, 57 FR 19353, May 5, 1992]

§ 91.611 Authorization for ferry flight with one engine inoperative.

(a) *General.* The holder of an air carrier operating certificate or an operating certificate issued under part 125 may conduct a ferry flight of a four-engine airplane or a turbine-engine-powered airplane equipped with three engines, with one engine inoperative, to a base for the purpose of repairing that engine subject to the following:

(1) The airplane model has been test flown and found satisfactory for safe flight in accordance with paragraph (b) or (c) of this section, as appropriate. However, each operator who before November 19, 1966, has shown that a model of airplane with an engine inoperative is satisfactory for safe flight by a test flight conducted in accordance with performance data contained in the applicable Airplane Flight Manual under paragraph (a)(2) of this section need not repeat the test flight for that model.

(2) The approved Airplane Flight Manual contains the following performance data and the flight is conducted in accordance with that data:

(i) Maximum weight.

(ii) Center of gravity limits.

(iii) Configuration of the inoperative propeller (if applicable).

(iv) Runway length for takeoff (including temperature accountability).

(v) Altitude range.

(vi) Certificate limitations.

(vii) Ranges of operational limits.

(viii) Performance information.

(ix) Operating procedures.

(3) The operator has FAA approved procedures for the safe operation of the airplane, including specific requirements for—

(i) Limiting the operating weight on any ferry flight to the minimum necessary for the flight plus the necessary reserve fuel load;

(ii) A limitation that takeoffs must be made from dry runways unless, based on a showing of actual operating takeoff techniques on wet runways with one engine inoperative, takeoffs with full controllability from wet runways have been approved for the specific model aircraft and included in the Airplane Flight Manual:

(iii) Operations from airports where the runways may require a takeoff or approach over populated areas; and

(iv) Inspection procedures for determining the operating condition of the operative engines.

(4) No person may take off an airplane under this section if—

(i) The initial climb is over thickly populated areas; or

(ii) Weather conditions at the takeoff or destination airport are less than those required for VFR flight.

(5) Persons other than required flight crewmembers shall not be carried during the flight.

(6) No person may use a flight crewmember for flight under this section unless that crewmember is thoroughly familiar with the operating procedures for one-engine inoperative ferry flight contained in the certificate holder's manual and the limitations and performance information in the Airplane Flight Manual.

(b) *Flight tests: reciprocating-engine-powered airplanes.* The airplane performance of a reciprocating-engine-powered airplane with one engine inoperative must be determined by flight test as follows:

(1) A speed not less than 1.3 V_{S1} must be chosen at which the airplane may be controlled satisfactorily in a climb with the critical engine inoperative (with its propeller removed or in a configuration desired by the operator and

with all other engines operating at the maximum power determined in paragraph (b)(3) of this section.

(2) The distance required to accelerate to the speed listed in paragraph (b)(1) of this section and to climb to 50 feet must be determined with—

(i) The landing gear extended;

(ii) The critical engine inoperative and its propeller removed or in a configuration desired by the operator; and

(iii) The other engines operating at not more than maximum power established under paragraph (b)(3) of this section.

(3) The takeoff, flight and landing procedures, such as the approximate trim settings, method of power application, maximum power, and speed must be established.

(4) The performance must be determined at a maximum weight not greater than the weight that allows a rate of climb of at least 400 feet per minute in the en route configuration set forth in §25.67(d) of this chapter in effect on January 31, 1977, at an altitude of 5,000 feet.

(5) The performance must be determined using temperature accountability for the takeoff field length, computed in accordance with §25.61 of this chapter in effect on January 31, 1977.

(c) *Flight tests: Turbine-engine-powered airplanes.* The airplane performance of a turbine-engine-powered airplane with one engine inoperative must be determined by flight tests, including at least three takeoff tests, in accordance with the following:

(1) Takeoff speeds V_R and V_2, not less than the corresponding speeds under which the airplane was type certificated under §25.107 of this chapter, must be chosen at which the airplane may be controlled satisfactorily with the critical engine inoperative (with its propeller removed or in a configuration desired by the operator, if applicable) and with all other engines operating at not more than the power selected for type certification as set forth in §25.101 of this chapter.

(2) The minimum takeoff field length must be the horizontal distance required to accelerate and climb to the 35-foot height at V_2 speed (including any additional speed increment obtained in the tests) multiplied by 115 percent and determined with—

(i) The landing gear extended;

(ii) The critical engine inoperative and its propeller removed or in a configuration desired by the operator (if applicable); and

(iii) The other engine operating at not more than the power selected for type certification as set forth in §25.101 of this chapter.

(3) The takeoff, flight, and landing procedures such as the approximate trim setting, method of power application, maximum power, and speed must be established. The airplane must be satisfactorily controllable during the entire takeoff run when operated according to these procedures.

(4) The performance must be determined at a maximum weight not greater than the weight determined under §25.121(c) of this chapter but with—

(i) The actual steady gradient of the final takeoff climb requirement not less than 1.2 percent at the end of the takeoff path with two critical engines inoperative; and

(ii) The climb speed not less than the two-engine inoperative trim speed for the actual steady gradient of the final takeoff climb prescribed by paragraph (c)(4)(i) of this section.

(5) The airplane must be satisfactorily controllable in a climb with two critical engines inoperative. Climb performance may be shown by calculations based on, and equal in accuracy to, the results of testing.

(6) The performance must be determined using temperature accountability for takeoff distance and final takeoff climb computed in accordance with §25.101 of this chapter.

For the purpose of paragraphs (c)(4) and (5) of this section, *two critical engines* means two adjacent engines on one side of an airplane with four engines, and the center engine and one outboard engine on an airplane with three engines.

§91.613 Materials for compartment interiors.

(a) No person may operate an airplane that conforms to an amended or supplemental type certificate issued in accordance with SFAR No. 41 for a maximum certificated takeoff weight

in excess of 12,500 pounds unless within 1 year after issuance of the initial airworthiness certificate under that SFAR the airplane meets the compartment interior requirements set forth in § 25.853 (a), (b), (b–1), (b–2), and (b–3) of this chapter in effect on September 26, 1978.

(b) Thermal/acoustic insulation materials. For transport category airplanes type certificated after January 1, 1958:

(1) For airplanes manufactured before September 2, 2005, when thermal/acoustic insulation is installed in the fuselage as replacements after September 2, 2005, the insulation must meet the flame propagation requirements of § 25.856 of this chapter, effective September 2, 2003, if it is:

(i) Of a blanket construction or

(ii) Installed around air ducting.

(2) For airplanes manufactured after September 2, 2005, thermal/acoustic insulation materials installed in the fuselage must meet the flame propagation requirements of § 25.856 of this chapter, effective September 2, 2003.

[Doc. No. 18334, 54 FR 34318, Aug. 18, 1989, as amended by Amdt. 91–279, 68 FR 45083, July 31, 2003; Amdt. 91–290, 70 FR 77752, Dec. 30, 2005]

§§ 91.615–91.699 [Reserved]

Subpart H—Foreign Aircraft Operations and Operations of U.S.-Registered Civil Aircraft Outside of the United States; and Rules Governing Persons on Board Such Aircraft

SOURCE: Docket No. 18334, 54 FR 34320, Aug. 18, 1989, unless otherwise noted.

§ 91.701 Applicability.

(a) This subpart applies to the operations of civil aircraft of U.S. registry outside of the United States and the operations of foreign civil aircraft within the United States.

(b) Section 91.702 of this subpart also applies to each person on board an aircraft operated as follows:

(1) A U.S. registered civil aircraft operated outside the United States;

(2) Any aircraft operated outside the United States—

(i) That has its next scheduled destination or last place of departure in the United States if the aircraft next lands in the United States; or

(ii) If the aircraft lands in the United States with the individual still on the aircraft regardless of whether it was a scheduled or otherwise planned landing site.

[Doc. No. FAA–1998–4954, 64 FR 1079, Jan. 7, 1999]

§ 91.702 Persons on board.

Section 91.11 of this part (Prohibitions on interference with crewmembers) applies to each person on board an aircraft.

[Doc. No. FAA–1998–4954, 64 FR 1079, Jan. 7, 1999]

§ 91.703 Operations of civil aircraft of U.S. registry outside of the United States.

(a) Each person operating a civil aircraft of U.S. registry outside of the United States shall—

(1) When over the high seas, comply with annex 2 (Rules of the Air) to the Convention on International Civil Aviation and with §§ 91.117(c), 91.127, 91.129, and 91.131;

(2) When within a foreign country, comply with the regulations relating to the flight and maneuver of aircraft there in force;

(3) Except for §§ 91.307(b), 91.309, 91.323, and 91.711, comply with this part so far as it is not inconsistent with applicable regulations of the foreign country where the aircraft is operated or annex 2 of the Convention on International Civil Aviation; and

(4) When operating within airspace designated as Minimum Navigation Performance Specifications (MNPS) airspace, comply with § 91.705. When operating within airspace designated as Reduced Vertical Separation Minimum (RVSM) airspace, comply with § 91.706.

(b) Annex 2 to the Convention on International Civil Aviation, Ninth Edition—July 1990, with Amendments through Amendment 32 effective February 19, 1996, to which reference is made in this part, is incorporated into this part and made a part hereof as provided in 5 U.S.C. § 552 and pursuant to 1 CFR part 51. Annex 2 (including a

complete historic file of changes thereto) is available for public inspection at the Rules Docket, AGC–200, Federal Aviation Administration, 800 Independence Avenue SW., Washington, DC 20591; or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal__register/code__of__federal__regulations/ibr__locations.html*. In addition, Annex 2 may be purchased from the International Civil Aviation Organization (Attention: Distribution Officer), P.O. Box 400, Succursale, Place de L'Aviation Internationale, 1000 Sherbrooke Street West, Montreal, Quebec, Canada H3A 2R2.

[Doc. No. 18834, 54 FR 34320, Aug. 18, 1989, as amended by Amdt. 91–227, 56 FR 65661, Dec. 17, 1991; Amdt. 91–254, 62 FR 17487, Apr. 9, 1997; 69 FR 18803, Apr. 9, 2004]

§ 91.705 Operations within airspace designated as Minimum Navigation Performance Specification Airspace.

(a) Except as provided in paragraph (b) of this section, no person may operate a civil aircraft of U.S. registry in airspace designated as Minimum Navigation Performance Specifications airspace unless—

(1) The aircraft has approved navigation performance capability that complies with the requirements of appendix C of this part; and

(2) The operator is authorized by the Administrator to perform such operations.

(b) The Administrator may authorize a deviation from the requirements of this section in accordance with Section 3 of appendix C to this part.

[Doc. No. 28870, 62 FR 17487, Apr. 9, 1997]

§ 91.706 Operations within airspace designed as Reduced Vertical Separation Minimum Airspace.

(a) Except as provided in paragraph (b) of this section, no person may operate a civil aircraft of U.S. registry in airspace designated as Reduced Vertical Separation Minimum (RVSM) airspace unless:

(1) The operator and the operator's aircraft comply with the requirements of appendix G of this part; and

(2) The operator is authorized by the Administrator to conduct such operations.

(b) The Administrator may authorize a deviation from the requirements of this section in accordance with Section 5 of appendix G to this part.

[Doc. No. 28870, 62 FR 17487, Apr. 9, 1997]

§ 91.707 Flights between Mexico or Canada and the United States.

Unless otherwise authorized by ATC, no person may operate a civil aircraft between Mexico or Canada and the United States without filing an IFR or VFR flight plan, as appropriate.

§ 91.709 Operations to Cuba.

No person may operate a civil aircraft from the United States to Cuba unless—

(a) Departure is from an international airport of entry designated in § 6.13 of the Air Commerce Regulations of the Bureau of Customs (19 CFR 6.13); and

(b) In the case of departure from any of the 48 contiguous States or the District of Columbia, the pilot in command of the aircraft has filed—

(1) A DVFR or IFR flight plan as prescribed in § 99.11 or § 99.13 of this chapter; and

(2) A written statement, within 1 hour before departure, with the Office of Immigration and Naturalization Service at the airport of departure, containing—

(i) All information in the flight plan;

(ii) The name of each occupant of the aircraft;

(iii) The number of occupants of the aircraft; and

(iv) A description of the cargo, if any.

This section does not apply to the operation of aircraft by a scheduled air carrier over routes authorized in operations specifications issued by the Administrator.

(Approved by the Office of Management and Budget under control number 2120–0005)

§ 91.711 Special rules for foreign civil aircraft.

(a) *General.* In addition to the other applicable regulations of this part, each person operating a foreign civil aircraft within the United States shall comply with this section.

(b) *VFR.* No person may conduct VFR operations which require two-way radio communications under this part unless at least one crewmember of that aircraft is able to conduct two-way radio communications in the English language and is on duty during that operation.

(c) *IFR.* No person may operate a foreign civil aircraft under IFR unless—

(1) That aircraft is equipped with—

(i) Radio equipment allowing two-way radio communication with ATC when it is operated in controlled airspace; and

(ii) Navigation equipment suitable for the route to be flown.

(2) Each person piloting the aircraft—

(i) Holds a current United States instrument rating or is authorized by his foreign airman certificate to pilot under IFR; and

(ii) Is thoroughly familiar with the United States en route, holding, and letdown procedures; and

(3) At least one crewmember of that aircraft is able to conduct two-way radiotelephone communications in the English language and that crewmember is on duty while the aircraft is approaching, operating within, or leaving the United States.

(d) *Over water.* Each person operating a foreign civil aircraft over water off the shores of the United States shall give flight notification or file a flight plan in accordance with the Supplementary Procedures for the ICAO region concerned.

(e) *Flight at and above FL 240.* If VOR navigation equipment is required under paragraph (c)(1)(ii) of this section, no person may operate a foreign civil aircraft within the 50 States and the District of Columbia at or above FL 240, unless the aircraft is equipped with approved DME or a suitable RNAV system. When the DME or RNAV system required by this paragraph fails at and above FL 240, the pilot in command of the aircraft must notify ATC immediately and may then continue operations at and above FL 240 to the next airport of intended landing where repairs or replacement of the equipment can be made. A foreign civil aircraft may be operated within the 50 States and the District of Columbia at or above FL 240 without DME or an RNAV system when operated for the following purposes, and ATC is notified before each takeoff:

(1) Ferry flights to and from a place in the United States where repairs or alterations are to be made.

(2) Ferry flights to a new country of registry.

(3) Flight of a new aircraft of U.S. manufacture for the purpose of—

(i) Flight testing the aircraft;

(ii) Training foreign flight crews in the operation of the aircraft; or

(iii) Ferrying the aircraft for export delivery outside the United States.

(4) Ferry, demonstration, and test flight of an aircraft brought to the United States for the purpose of demonstration or testing the whole or any part thereof.

[Doc. No. 18834, 54 FR 34320, Aug. 18, 1989, as amended by Amdt. 91–227, 56 FR 65661, Dec. 17, 1991; Amdt. 91–296, 72 FR 31679, June 7, 2007]

§ 91.713 Operation of civil aircraft of Cuban registry.

No person may operate a civil aircraft of Cuban registry except in controlled airspace and in accordance with air traffic clearance or air traffic control instructions that may require use of specific airways or routes and landings at specific airports.

§ 91.715 Special flight authorizations for foreign civil aircraft.

(a) Foreign civil aircraft may be operated without airworthiness certificates required under § 91.203 if a special flight authorization for that operation is issued under this section. Application for a special flight authorization must be made to the Flight Standards Division Manager or Aircraft Certification Directorate Manager of the FAA region in which the applicant is located or to the region within which the U.S. point of entry is located. However, in the case of an aircraft to be operated in

the U.S. for the purpose of demonstration at an airshow, the application may be made to the Flight Standards Division Manager or Aircraft Certification Directorate Manager of the FAA region in which the airshow is located.

(b) The Administrator may issue a special flight authorization for a foreign civil aircraft subject to any conditions and limitations that the Administrator considers necessary for safe operation in the U.S. airspace.

(c) No person may operate a foreign civil aircraft under a special flight authorization unless that operation also complies with part 375 of the Special Regulations of the Department of Transportation (14 CFR part 375).

(Approved by the Office of Management and Budget under control number 2120–0005)

[Doc. No. 18334, 54 FR 34320, Aug. 18, 1989, as amended by Amdt. 91–212, 54 FR 39293, Sept. 25, 1989]

§§ 91.717–91.799 [Reserved]

Subpart I—Operating Noise Limits

SOURCE: Docket No. 18334, 54 FR 34321, Aug. 18, 1989, unless otherwise noted.

§ 91.801 Applicability: Relation to part 36.

(a) This subpart prescribes operating noise limits and related requirements that apply, as follows, to the operation of civil aircraft in the United States.

(1) Sections 91.803, 91.805, 91.807, 91.809, and 91.811 apply to civil subsonic jet (turbojet) airplanes with maximum weights of more than 75,000 pounds and—

(i) If U.S. registered, that have standard airworthiness certificates; or

(ii) If foreign registered, that would be required by this chapter to have a U.S. standard airworthiness certificate in order to conduct the operations intended for the airplane were it registered in the United States. Those sections apply to operations to or from airports in the United States under this part and parts 121, 125, 129, and 135 of this chapter.

(2) Section 91.813 applies to U.S. operators of civil subsonic jet (turbojet) airplanes covered by this subpart. This section applies to operators operating to or from airports in the United States under this part and parts 121, 125, and 135, but not to those operating under part 129 of this chapter.

(3) Sections 91.803, 91.819, and 91.821 apply to U.S.-registered civil supersonic airplanes having standard airworthiness certificates and to foreign-registered civil supersonic airplanes that, if registered in the United States, would be required by this chapter to have U.S. standard airworthiness certificates in order to conduct the operations intended for the airplane. Those sections apply to operations under this part and under parts 121, 125, 129, and 135 of this chapter.

(b) Unless otherwise specified, as used in this subpart ''part 36'' refers to 14 CFR part 36, including the noise levels under appendix C of that part, notwithstanding the provisions of that part excepting certain airplanes from the specified noise requirements. For purposes of this subpart, the various stages of noise levels, the terms used to describe airplanes with respect to those levels, and the terms ''subsonic airplane'' and ''supersonic airplane'' have the meanings specified under part 36 of this chapter. For purposes of this subpart, for subsonic airplanes operated in foreign air commerce in the United States, the Administrator may accept compliance with the noise requirements under annex 16 of the International Civil Aviation Organization when those requirements have been shown to be substantially compatible with, and achieve results equivalent to those achievable under, part 36 for that airplane. Determinations made under these provisions are subject to the limitations of §36.5 of this chapter as if those noise levels were part 36 noise levels.

(c) Sections 91.851 through 91.877 of this subpart prescribe operating noise limits and related requirements that apply to any civil subsonic jet (turbojet) airplane (for which an airworthiness certificate other than an experimental certificate has been issued by the Administrator) with a maximum certificated takeoff weight of more than 75,000 pounds operating to or from an airport in the 48 contiguous United States and the District of Columbia under this part, parts 121, 125, 129, or

135 of this chapter on and after September 25, 1991.

(d) Section 91.877 prescribes reporting requirements that apply to any civil subsonic jet (turbojet) airplane with a maximum weight of more than 75,000 pounds operated by an air carrier or foreign air carrier between the contiguous United States and the State of Hawaii, between the State of Hawaii and any point outside of the 48 contiguous United States, or between the islands of Hawaii in turnaround service, under part 121 or 129 of this chapter on or after November 5, 1990.

[Doc. No. 18334, 54 FR 34321, Aug. 18, 1989; Amdt. 91–211, 54 FR 41211, Oct. 5, 1989, as amended by Amdt. 91–225, 56 FR 48658, Sept. 25, 1991; Amdt. 91–252, 61 FR 66185, Dec. 16, 1996; Amdt. 91–275, 67 FR 45237, July 8, 2002; Amdt. 91–276, 67 FR 46571, July 15, 2002]

§ 91.803 Part 125 operators: Designation of applicable regulations.

For airplanes covered by this subpart and operated under part 125 of this chapter, the following regulations apply as specified:

(a) For each airplane operation to which requirements prescribed under this subpart applied before November 29, 1980, those requirements of this subpart continue to apply.

(b) For each subsonic airplane operation to which requirements prescribed under this subpart did not apply before November 29, 1980, because the airplane was not operated in the United States under this part or part 121, 129, or 135 of this chapter, the requirements prescribed under § 91.805 of this subpart apply.

(c) For each supersonic airplane operation to which requirements prescribed under this subpart did not apply before November 29, 1980, because the airplane was not operated in the United States under this part or part 121, 129, or 135 of this chapter, the requirements of §§ 91.819 and 91.821 of this subpart apply.

(d) For each airplane required to operate under part 125 for which a deviation under that part is approved to operate, in whole or in part, under this part or part 121, 129, or 135 of this chapter, notwithstanding the approval, the requirements prescribed under paragraphs (a), (b), and (c) of this section continue to apply.

[Docket No. 18334, 54 FR 34321, Aug. 18, 1989, as amended by Amdt. 91–276, 67 FR 46571, July 15, 2002]

§ 91.805 Final compliance: Subsonic airplanes.

Except as provided in §§ 91.809 and 91.811, on and after January 1, 1985, no person may operate to or from an airport in the United States any subsonic airplane covered by this subpart unless that airplane has been shown to comply with Stage 2 or Stage 3 noise levels under part 36 of this chapter.

§§ 91.807–91.813 [Reserved]

§ 91.815 Agricultural and fire fighting airplanes: Noise operating limitations.

(a) This section applies to propeller-driven, small airplanes having standard airworthiness certificates that are designed for ''agricultural aircraft operations'' (as defined in § 137.3 of this chapter, as effective on January 1, 1966) or for dispensing fire fighting materials.

(b) If the Airplane Flight Manual, or other approved manual material information, markings, or placards for the airplane indicate that the airplane has not been shown to comply with the noise limits under part 36 of this chapter, no person may operate that airplane, except—

(1) To the extent necessary to accomplish the work activity directly associated with the purpose for which it is designed;

(2) To provide flight crewmember training in the special purpose operation for which the airplane is designed; and

(3) To conduct ''nondispensing aerial work operations'' in accordance with the requirements under § 137.29(c) of this chapter.

§ 91.817 Civil aircraft sonic boom.

(a) No person may operate a civil aircraft in the United States at a true flight Mach number greater than 1 except in compliance with conditions and limitations in an authorization to exceed Mach 1 issued to the operator under appendix B of this part.

(b) In addition, no person may operate a civil aircraft for which the maximum operating limit speed M_{M0} exceeds a Mach number of 1, to or from an airport in the United States, unless—

(1) Information available to the flight crew includes flight limitations that ensure that flights entering or leaving the United States will not cause a sonic boom to reach the surface within the United States; and

(2) The operator complies with the flight limitations prescribed in paragraph (b)(1) of this section or complies with conditions and limitations in an authorization to exceed Mach 1 issued under appendix B of this part.

(Approved by the Office of Management and Budget under control number 2120–0005)

§ 91.819 Civil supersonic airplanes that do not comply with part 36.

(a) *Applicability*. This section applies to civil supersonic airplanes that have not been shown to comply with the Stage 2 noise limits of part 36 in effect on October 13, 1977, using applicable trade-off provisions, and that are operated in the United States, after July 31, 1978.

(b) *Airport use.* Except in an emergency, the following apply to each person who operates a civil supersonic airplane to or from an airport in the United States:

(1) Regardless of whether a type design change approval is applied for under part 21 of this chapter, no person may land or take off an airplane covered by this section for which the type design is changed, after July 31, 1978, in a manner constituting an ''acoustical change'' under §21.93 unless the acoustical change requirements of part 36 are complied with.

(2) No flight may be scheduled, or otherwise planned, for takeoff or landing after 10 p.m. and before 7 a.m. local time.

§ 91.821 Civil supersonic airplanes: Noise limits.

Except for Concorde airplanes having flight time before January 1, 1980, no person may operate in the United States, a civil supersonic airplane that does not comply with Stage 2 noise limits of part 36 in effect on October 13, 1977, using applicable trade-off provisions.

§§ 91.823–91.849 [Reserved]

§ 91.851 Definitions.

For the purposes of §§91.851 through 91.877 of this subpart:

Chapter 4 noise level means a noise level at or below the maximum noise level prescribed in Chapter 4, Paragraph 4.4, Maximum Noise Levels, of the International Civil Aviation Organization (ICAO) Annex 16, Volume I, Amendment 7, effective March 21, 2002. The Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51 approved the incorporation by reference of this document, which can be obtained from the International Civil Aviation Organization (ICAO), Document Sales Unit, 999 University Street, Montreal, Quebec H3C 5H7, Canada. Also, you may obtain documents on the Internet at *http://www.ICAO.int/eshop/index.cfm.* Copies may be reviewed at the U.S. Department of Transportation, Docket Operations, West Building Ground Floor, Room W12–140, 1200 New Jersey Avenue, SE., Washington, DC 20590 or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.*

Contiguous United States means the area encompassed by the 48 contiguous United States and the District of Columbia.

Fleet means those civil subsonic jet (turbojet) airplanes with a maximum certificated weight of more than 75,000 pounds that are listed on an operator's operations specifications as eligible for operation in the contiguous United States.

Import means a change in ownership of an airplane from a non-U.S. person to a U.S. person when the airplane is brought into the United States for operation.

Operations specifications means an enumeration of airplanes by type, model, series, and serial number operated by the operator or foreign air carrier on a given day, regardless of how

or whether such airplanes are formally listed or designated by the operator.

Owner means any person that has indicia of ownership sufficient to register the airplane in the United States pursuant to part 47 of this chapter.

New entrant means an air carrier or foreign air carrier that, on or before November 5, 1990, did not conduct operations under part 121 or 129 of this chapter using an airplane covered by this subpart to or from any airport in the contiguous United States, but that initiates such operation after that date.

Stage 2 noise levels mean the requirements for Stage 2 noise levels as defined in part 36 of this chapter in effect on November 5, 1990.

Stage 3 noise levels mean the requirements for Stage 3 noise levels as defined in part 36 of this chapter in effect on November 5, 1990.

Stage 4 noise level means a noise level at or below the Stage 4 noise limit prescribed in part 36 of this chapter.

Stage 2 airplane means a civil subsonic jet (turbojet) airplane with a maximum certificated weight of 75,000 pounds or more that complies with Stage 2 noise levels as defined in part 36 of this chapter.

Stage 3 airplane means a civil subsonic jet (turbojet) airplane with a maximum certificated weight of 75,000 pounds or more that complies with Stage 3 noise levels as defined in part 36 of this chapter.

Stage 4 airplane means an airplane that has been shown not to exceed the Stage 4 noise limit prescribed in part 36 of this chapter. A Stage 4 airplane complies with all of the noise operating rules of this part.

[Doc. No. 26433, 56 FR 48658, Sept. 25, 1991, as amended by Amdt. 91–252, 61 FR 66185, Dec. 16, 1996; Amdt. 91–275, 67 FR 45237, July 8, 2002; Amdt. 91–288, 70 FR 38749, July 5, 2005; 72 FR 68475, Dec. 5, 2007]

§ 91.853 Final compliance: Civil subsonic airplanes.

Except as provided in § 91.873, after December 31, 1999, no person shall operate to or from any airport in the contiguous United States any airplane subject to § 91.801(c) of this subpart, unless that airplane has been shown to comply with Stage 3 or Stage 4 noise levels.

[Doc. No. FAA–2003–16526, 70 FR 38749, July 5, 2005]

§ 91.855 Entry and nonaddition rule.

No person may operate any airplane subject to § 91.801(c) of this subpart to or from an airport in the contiguous United States unless one or more of the following apply:

(a) The airplane complies with Stage 3 or Stage 4 noise levels.

(b) The airplane complies with Stage 2 noise levels and was owned by a U.S. person on and since November 5, 1990. Stage 2 airplanes that meet these criteria and are leased to foreign airlines are also subject to the return provisions of paragraph (e) of this section.

(c) The airplane complies with Stage 2 noise levels, is owned by a non-U.S. person, and is the subject of a binding lease to a U.S. person effective before and on September 25, 1991. Any such airplane may be operated for the term of the lease in effect on that date, and any extensions thereof provided for in that lease.

(d) The airplane complies with Stage 2 noise levels and is operated by a foreign air carrier.

(e) The airplane complies with Stage 2 noise levels and is operated by a foreign operator other than for the purpose of foreign air commerce.

(f) The airplane complies with Stage 2 noise levels and—

(1) On November 5, 1990, was owned by:

(i) A corporation, trust, or partnership organized under the laws of the United States or any State (including individual States, territories, possessions, and the District of Columbia);

(ii) An individual who is a citizen of the United States; or

(iii) An entity owned or controlled by a corporation, trust, partnership, or individual described in paragraph (f)(1) (i) or (ii) of this section; and

(2) Enters into the United States not later than 6 months after the expiration of a lease agreement (including any extensions thereof) between an owner described in paragraph (f)(1) of this section and a foreign airline.

(g) The airplane complies with Stage 2 noise levels and was purchased by the

importer under a written contract executed before November 5, 1990.

(h) Any Stage 2 airplane described in this section is eligible for operation in the contiguous United States only as provided under § 91.865 or 91.867.

[Doc. No. 26433, 56 FR 48658, Sept. 25, 1991; 56 FR 51167, Oct. 10, 1991, as amended by Amdt. 91–288, 70 FR 38750, July 5, 2005]

§ 91.857 Stage 2 operations outside of the 48 contiguous United States.

An operator of a Stage 2 airplane that is operating only between points outside the contiguous United States on or after November 5, 1990, must include in its operations specifications a statement that such airplane may not be used to provide air transportation to or from any airport in the contiguous United States.

[Doc. No. FAA–2002–12771, 67 FR 46571, July 15, 2002]

§ 91.858 Special flight authorizations for non-revenue Stage 2 operations.

(a) After December 31, 1999, any operator of a Stage 2 airplane over 75,000 pounds may operate that airplane in nonrevenue service in the contiguous United States only for the following purposes:

(1) Sell, lease, or scrap the airplane;

(2) Obtain modifications to meet Stage 3 noise levels;

(3) Obtain scheduled heavy maintenance or significant modifications;

(4) Deliver the airplane to a lessee or return it to a lessor;

(5) Park or store the airplane; and

(6) Prepare the airplane for any of the purposes listed in paragraph (a)(1) thru (a)(5) of this section.

(b) An operator of a Stage 2 airplane that needs to operate in the contiguous United States for any of the purposes listed above may apply to FAA's Office of Environment and Energy for a special flight authorization. The applicant must file in advance. Applications are due 30 days in advance of the planned flight and must provide the information necessary for the FAA to determine that the planned flight is within the limits prescribed in the law.

[Doc. No. FAA–2002–12771, 67 FR 46571, July 15, 2002]

§ 91.859 Modification to meet Stage 3 or Stage 4 noise levels.

For an airplane subject to § 91.801(c) of this subpart and otherwise prohibited from operation to or from an airport in the contiguous United States by § 91.855, any person may apply for a special flight authorization for that airplane to operate in the contiguous United States for the purpose of obtaining modifications to meet Stage 3 or Stage 4 noise levels.

[Doc. No. FAA–2003–16526, 70 FR 38750, July 5, 2005]

§ 91.861 Base level.

(a) *U.S. Operators.* The base level of a U.S. operator is equal to the number of owned or leased Stage 2 airplanes subject to § 91.801(c) of this subpart that were listed on that operator's operations specifications for operations to or from airports in the contiguous United States on any one day selected by the operator during the period January 1, 1990, through July 1, 1991, plus or minus adjustments made pursuant to paragraphs (a) (1) and (2).

(1) The base level of a U.S. operator shall be increased by a number equal to the total of the following—

(i) The number of Stage 2 airplanes returned to service in the United States pursuant to § 91.855(f);

(ii) The number of Stage 2 airplanes purchased pursuant to § 91.855(g); and

(iii) Any U.S. operator base level acquired with a Stage 2 airplane transferred from another person under § 91.863.

(2) The base level of a U.S. operator shall be decreased by the amount of U.S. operator base level transferred with the corresponding number of Stage 2 airplanes to another person under § 91.863.

(b) Foreign air carriers. The base level of a foreign air carrier is equal to the number of owned or leased Stage 2 airplanes that were listed on that carrier's U.S. operations specifications on any one day during the period January 1, 1990, through July 1, 1991, plus or minus any adjustments to the base levels made pursuant to paragraphs (b) (1) and (2).

(1) The base level of a foreign air carrier shall be increased by the amount

of foreign air carrier base level acquired with a Stage 2 airplane from another person under § 91.863.

(2) The base level of a foreign air carrier shall be decreased by the amount of foreign air carrier base level transferred with a Stage 2 airplane to another person under § 91.863.

(c) New entrants do not have a base level.

[Doc. No. 26433, 56 FR 48659, Sept. 25, 1991; 56 FR 51167, Oct. 10, 1991]

§ 91.863 Transfers of Stage 2 airplanes with base level.

(a) Stage 2 airplanes may be transferred with or without the corresponding amount of base level. Base level may not be transferred without the corresponding number of Stage 2 airplanes.

(b) No portion of a U.S. operator's base level established under § 91.861(a) may be used for operations by a foreign air carrier. No portion of a foreign air carrier's base level established under § 91.861(b) may be used for operations by a U.S. operator.

(c) Whenever a transfer of Stage 2 airplanes with base level occurs, the transferring and acquiring parties shall, within 10 days, jointly submit written notification of the transfer to the FAA, Office of Environment and Energy. Such notification shall state:

(1) The names of the transferring and acquiring parties;

(2) The name, address, and telephone number of the individual responsible for submitting the notification on behalf of the transferring and acquiring parties;

(3) The total number of Stage 2 airplanes transferred, listed by airplane type, model, series, and serial number;

(4) The corresponding amount of base level transferred and whether it is U.S. operator or foreign air carrier base level; and

(5) The effective date of the transaction.

(d) If, taken as a whole, a transaction or series of transactions made pursuant to this section does not produce an increase or decrease in the number of Stage 2 airplanes for either the acquiring or transferring operator, such transaction or series of transactions may not be used to establish compliance with the requirements of § 91.865.

[Doc. No. 26433, 56 FR 48659, Sept. 25, 1991]

§ 91.865 Phased compliance for operators with base level.

Except as provided in paragraph (a) of this section, each operator that operates an airplane under part 91, 121, 125, 129, or 135 of this chapter, regardless of the national registry of the airplane, shall comply with paragraph (b) or (d) of this section at each interim compliance date with regard to its subsonic airplane fleet covered by § 91.801(c) of this subpart.

(a) This section does not apply to new entrants covered by § 91.867 or to foreign operators not engaged in foreign air commerce.

(b) Each operator that chooses to comply with this paragraph pursuant to any interim compliance requirement shall reduce the number of Stage 2 airplanes it operates that are eligible for operation in the contiguous United States to a maximum of:

(1) After December 31, 1994, 75 percent of the base level held by the operator;

(2) After December 31, 1996, 50 percent of the base level held by the operator;

(3) After December 31, 1998, 25 percent of the base level held by the operator.

(c) Except as provided under § 91.871, the number of Stage 2 airplanes that must be reduced at each compliance date contained in paragraph (b) of this section shall be determined by reference to the amount of base level held by the operator on that compliance date, as calculated under § 91.861.

(d) Each operator that chooses to comply with this paragraph pursuant to any interim compliance requirement shall operate a fleet that consists of:

(1) After December 31, 1994, not less than 55 percent Stage 3 airplanes;

(2) After December 31, 1996, not less than 65 percent Stage 3 airplanes;

(3) After December 31, 1998, not less than 75 percent Stage 3 airplanes.

(e) Calculations resulting in fractions may be rounded to permit the continued operation of the next whole number of Stage 2 airplanes.

[Doc. No. 26433, 56 FR 48659, Sept. 25, 1991]

§ 91.867 Phased compliance for new entrants.

(a) New entrant U.S. air carriers.

(1) A new entrant initiating operations under part 121 of this chapter on or before December 31, 1994, may initiate service without regard to the percentage of its fleet composed of Stage 3 airplanes.

(2) After December 31, 1994, at least 25 percent of the fleet of a new entrant must comply with Stage 3 noise levels.

(3) After December 31, 1996, at least 50 percent of the fleet of a new entrant must comply with Stage 3 noise levels.

(4) After December 31, 1998, at least 75 percent of the fleet of a new entrant must comply with Stage 3 noise levels.

(b) New entrant foreign air carriers.

(1) A new entrant foreign air carrier initiating part 129 operations on or before December 31, 1994, may initiate service without regard to the percentage of its fleet composed of Stage 3 airplanes.

(2) After December 31, 1994, at least 25 percent of the fleet on U.S. operations specifications of a new entrant foreign air carrier must comply with Stage 3 noise levels.

(3) After December 31, 1996, at least 50 percent of the fleet on U.S. operations specifications of a new entrant foreign air carrier must comply with Stage 3 noise levels.

(4) After December 31, 1998, at least 75 percent of the fleet on U.S. operations specifications of a new entrant foreign air carrier must comply with Stage 3 noise levels.

(c) Calculations resulting in fractions may be rounded to permit the continued operation of the next whole number of Stage 2 airplanes.

[Doc. No. 26433, 56 FR 48659, Sept. 25, 1991, as amended by Amdt. 91–252, 61 FR 66185, Dec. 16, 1996]

§ 91.869 Carry-forward compliance.

(a) Any operator that exceeds the requirements of paragraph (b) of § 91.865 of this part on or before December 31, 1994, or on or before December 31, 1996, may claim a credit that may be applied at a subsequent interim compliance date.

(b) Any operator that eliminates or modifies more Stage 2 airplanes pursuant to § 91.865(b) than required as of December 31, 1994, or December 31, 1996, may count the number of additional Stage 2 airplanes reduced as a credit toward—

(1) The number of Stage 2 airplanes it would otherwise be required to reduce following a subsequent interim compliance date specified in § 91.865(b); or

(2) The number of Stage 3 airplanes it would otherwise be required to operate in its fleet following a subsequent interim compliance date to meet the percentage requirements specified in § 91.865(d).

[Doc. No. 26433, 56 FR 48659, Sept. 25, 1991; 56 FR 65783, Dec. 18, 1991]

§ 91.871 Waivers from interim compliance requirements.

(a) Any U.S. operator or foreign air carrier subject to the requirements of § 91.865 or 91.867 of this subpart may request a waiver from any individual compliance requirement.

(b) Applications must be filed with the Secretary of Transportation at least 120 days prior to the compliance date from which the waiver is requested.

(c) Applicants must show that a grant of waiver would be in the public interest, and must include in its application its plans and activities for modifying its fleet, including evidence of good faith efforts to comply with the requirements of § 91.865 or § 91.867. The application should contain all information the applicant considers relevant, including, as appropriate, the following:

(1) The applicant's balance sheet and cash flow positions;

(2) The composition of the applicant's current fleet; and

(3) The applicant's delivery position with respect to new airplanes or noise-abatement equipment.

(d) Waivers will be granted only upon a showing by the applicant that compliance with the requirements of § 91.865 or 91.867 at a particular interim compliance date is financially onerous, physically impossible, or technologically infeasible, or that it would have an adverse effect on competition or on service to small communities.

(e) The conditions of any waiver granted under this section shall be determined by the circumstances presented in the application, but in no case may the term extend beyond the next interim compliance date.

(f) A summary of any request for a waiver under this section will be published in the FEDERAL REGISTER, and public comment will be invited. Unless the Secretary finds that circumstances require otherwise, the public comment period will be at least 14 days.

[Doc. No. 26433, 56 FR 48660, Sept. 25, 1991]

§ 91.873 Waivers from final compliance.

(a) A U.S. air carrier or a foreign air carrier may apply for a waiver from the prohibition contained in § 91.853 of this part for its remaining Stage 2 airplanes, provided that, by July 1, 1999, at least 85 percent of the airplanes used by the carrier to provide service to or from an airport in the contiguous United States will comply with the Stage 3 noise levels.

(b) An application for the waiver described in paragraph (a) of this section must be filed with the Secretary of Transportation no later than January 1, 1999, or, in the case of a foreign air carrier, no later than April 20, 2000. Such application must include a plan with firm orders for replacing or modifying all airplanes to comply with Stage 3 noise levels at the earliest practicable time.

(c) To be eligible to apply for the waiver under this section, a new entrant U.S. air carrier must initiate service no later than January 1, 1999, and must comply fully with all provisions of this section.

(d) The Secretary may grant a waiver under this section if the Secretary finds that granting such waiver is in the public interest. In making such a finding, the Secretary shall include consideration of the effect of granting such waiver on competition in the air carrier industry and the effect on small community air service, and any other information submitted by the applicant that the Secretary considers relevant.

(e) The term of any waiver granted under this section shall be determined by the circumstances presented in the application, but in no case will the waiver permit the operation of any Stage 2 airplane covered by this subchapter in the contiguous United States after December 31, 2003.

(f) A summary of any request for a waiver under this section will be published in the FEDERAL REGISTER, and public comment will be invited. Unless the secretary finds that circumstances require otherwise, the public comment period will be at least 14 days.

[Doc. No. 26433, 56 FR 48660, Sept. 25, 1991; 56 FR 51167 Oct. 10, 1991; Amdt. 91–276, 67 FR 46571, July 15, 2002]

§ 91.875 Annual progress reports.

(a) Each operator subject to § 91.865 or § 91.867 of this chapter shall submit an annual report to the FAA, Office of Environment and Energy, on the progress it has made toward complying with the requirements of that section. Such reports shall be submitted no later than 45 days after the end of a calendar year. All progress reports must provide the information through the end of the calendar year, be certified by the operator as true and complete (under penalty of 18 U.S.C. 1001), and include the following information:

(1) The name and address of the operator;

(2) The name, title, and telephone number of the person designated by the operator to be responsible for ensuring the accuracy of the information in the report;

(3) The operator's progress during the reporting period toward compliance with the requirements of § 91.853, § 91.865 or § 91.867. For airplanes on U.S. operations specifications, each operator shall identify the airplanes by type, model, series, and serial number.

(i) Each Stage 2 airplane added or removed from operation or U.S. operations specifications (grouped separately by those airplanes acquired with and without base level);

(ii) Each Stage 2 airplane modified to Stage 3 noise levels (identifying the manufacturer and model of noise abatement retrofit equipment;

(iii) Each Stage 3 airplane on U.S. operations specifications as of the last day of the reporting period; and

(iv) For each Stage 2 airplane transferred or acquired, the name and address of the recipient or transferor; and, if base level was transferred, the person to or from whom base level was transferred or acquired pursuant to Section 91.863 along with the effective date of each base level transaction, and the type of base level transferred or acquired.

(b) Each operator subject to §91.865 or §91.867 of this chapter shall submit an initial progress report covering the period from January 1, 1990, through December 31, 1991, and provide:

(1) For each operator subject to §91.865:

(i) The date used to establish its base level pursuant to §91.861(a); and

(ii) A list of those Stage 2 airplanes (by type, model, series and serial number) in its base level, including adjustments made pursuant to §91.861 after the date its base level was established.

(2) For each U.S. operator:

(i) A plan to meet the compliance schedules in §91.865 or §91.867 and the final compliance date of §91.853, including the schedule for delivery of replacement Stage 3 airplanes or the installation of noise abatement retrofit equipment; and

(ii) A separate list (by type, model, series, and serial number) of those airplanes included in the operator's base level, pursuant to §91.861(a)(1) (i) and (ii), under the categories ''returned'' or ''purchased,'' along with the date each was added to its operations specifications.

(c) Each operator subject to §91.865 or §91.867 of this chapter shall submit subsequent annual progress reports covering the calendar year preceding the report and including any changes in the information provided in paragraphs (a) and (b) of this section; including the use of any carry-forward credits pursuant to §91.869.

(d) An operator may request, in any report, that specific planning data be considered proprietary.

(e) If an operator's actions during any reporting period cause it to achieve compliance with §91.853, the report should include a statement to that effect. Further progress reports are not required unless there is any change in the information reported pursuant to paragraph (a) of this section.

(f) For each U.S. operator subject to §91.865, progress reports submitted for calendar years 1994, 1996, and 1998, shall also state how the operator achieved compliance with the requirements of that section, i.e.—

(1) By reducing the number of Stage 2 airplanes in its fleet to no more than the maximum permitted percentage of its base level under §91.865(b), or

(2) By operating a fleet that consists of at least the minimum required percentage of Stage 3 airplanes under §91.865(d).

(Approved by the Office of Management and Budget under control number 2120–0553)

[Doc. No. 26433, 56 FR 48660, Sept. 25, 1991; 56 FR 51168, Oct. 10, 1991, as amended by 57 FR 5977, Feb. 19, 1992]

§91.877 Annual reporting of Hawaiian operations.

(a) Each air carrier or foreign air carrier subject to §91.865 or §91.867 of this part that conducts operations between the contiguous United States and the State of Hawaii, between the State of Hawaii and any point outside of the contiguous United States, or between the islands of Hawaii in turnaround service, on or since November 5, 1990, shall include in its annual report the information described in paragraph (c) of this section.

(b) Each air carrier or foreign air carrier not subject to §91.865 or §91.867 of this part that conducts operations between the contiguous U.S. and the State of Hawaii, between the State of Hawaii and any point outside of the contiguous United States, or between the islands of Hawaii in turnaround service, on or since November 5, 1990, shall submit an annual report to the FAA, Office of Environment and Energy, on its compliance with the Hawaiian operations provisions of 49 U.S.C. 47528. Such reports shall be submitted no later than 45 days after the end of a calendar year. All progress reports must provide the information through the end of the calendar year, be certified by the operator as true and complete (under penalty of 18 U.S.C. 1001), and include the following information—

(1) The name and address of the air carrier or foreign air carrier;

(2) The name, title, and telephone number of the person designated by the air carrier or foreign air carrier to be responsible for ensuring the accuracy of the information in the report; and

(3) The information specified in paragraph (c) of this section.

(c) The following information must be included in reports filed pursuant to this section—

(1) For operations conducted between the contiguous United States and the State of Hawaii—

(i) The number of Stage 2 airplanes used to conduct such operations as of November 5, 1990;

(ii) Any change to that number during the calendar year being reported, including the date of such change;

(2) For air carriers that conduct inter-island turnaround service in the State of Hawaii—

(i) The number of Stage 2 airplanes used to conduct such operations as of November 5, 1990;

(ii) Any change to that number during the calendar year being reported, including the date of such change;

(iii) For an air carrier that provided inter-island trunaround service within the state of Hawaii on November 5, 1990, the number reported under paragraph (c)(2)(i) of this section may include all Stage 2 airplanes with a maximum certificated takeoff weight of more than 75,000 pounds that were owned or leased by the air carrier on November 5, 1990, regardless of whether such airplanes were operated by that air carrier or foreign air carrier on that date.

(3) For operations conducted between the State of Hawaii and a point outside the contiguous United States—

(i) The number of Stage 2 airplanes used to conduct such operations as of November 5, 1990; and

(ii) Any change to that number during the calendar year being reported, including the date of such change.

(d) Reports or amended reports for years predating this regulation are required to be filed concurrently with the next annual report.

[Doc. No. 28213, 61 FR 66185, Dec. 16, 1996]

§§ 91.879–91.899 [Reserved]

Subpart J—Waivers

§ 91.901 [Reserved]

§ 91.903 Policy and procedures.

(a) The Administrator may issue a certificate of waiver authorizing the operation of aircraft in deviation from any rule listed in this subpart if the Administrator finds that the proposed operation can be safely conducted under the terms of that certificate of waiver.

(b) An application for a certificate of waiver under this part is made on a form and in a manner prescribed by the Administrator and may be submitted to any FAA office.

(c) A certificate of waiver is effective as specified in that certificate of waiver.

[Doc. No. 18334, 54 FR 34325, Aug. 18, 1989]

§ 91.905 List of rules subject to waivers.

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91.707 Flights between Mexico or Canada and the United States.
91.713 Operation of civil aircraft of Cuban registry.

[Doc. No. 18334, 54 FR 34325, Aug. 18, 1989, as amended by Amdt. 91–227, 56 FR 65661, Dec. 17, 1991]

§§ 91.907–91.999 [Reserved]

Subpart K—Fractional Ownership Operations

SOURCE: Docket No. FAA–2001–10047, 68 FR 54561, Sept. 17, 2003, unless otherwise noted.

§ 91.1001 Applicability.

(a) This subpart prescribes rules, in addition to those prescribed in other subparts of this part, that apply to fractional owners and fractional ownership program managers governing—

(1) The provision of program management services in a fractional ownership program;

(2) The operation of a fractional ownership program aircraft in a fractional ownership program; and

(3) The operation of a program aircraft included in a fractional ownership program managed by an affiliate of the manager of the program to which the owner belongs.

(b) As used in this part—

(1) *Affiliate of a program manager* means a manager that, directly, or indirectly, through one or more intermediaries, controls, is controlled by, or is under common control with, another program manager. The holding of at least forty percent (40 percent) of the equity and forty percent (40 percent) of the voting power of an entity will be presumed to constitute control for purposes of determining an affiliation under this subpart.

(2) A *dry-lease aircraft exchange* means an arrangement, documented by the written program agreements, under which the program aircraft are available, on an as needed basis without crew, to each fractional owner.

(3) A *fractional owner or owner* means an individual or entity that possesses a minimum fractional ownership interest in a program aircraft and that has entered into the applicable program agreements; provided, however, that in the case of the flight operations described in paragraph (b)(6)(ii) of this section, and solely for purposes of requirements pertaining to those flight operations, the fractional owner operating the aircraft will be deemed to be a fractional owner in the program managed by the affiliate.

(4) A *fractional ownership interest* means the ownership of an interest or holding of a multi-year leasehold interest and/or a multi-year leasehold interest that is convertible into an ownership interest in a program aircraft.

(5) A *fractional ownership program or program* means any system of aircraft ownership and exchange that consists of all of the following elements:

(i) The provision for fractional ownership program management services by a single fractional ownership program manager on behalf of the fractional owners.

(ii) Two or more airworthy aircraft.

(iii) One or more fractional owners per program aircraft, with at least one program aircraft having more than one owner.

(iv) Possession of at least a minimum fractional ownership interest in one or more program aircraft by each fractional owner.

(v) A dry-lease aircraft exchange arrangement among all of the fractional owners.

(vi) Multi-year program agreements covering the fractional ownership, fractional ownership program management services, and dry-lease aircraft exchange aspects of the program.

(6) A *fractional ownership program aircraft or program aircraft* means:

(i) An aircraft in which a fractional owner has a minimal fractional ownership interest and that has been included in the dry-lease aircraft exchange pursuant to the program agreements, or

(ii) In the case of a fractional owner from one program operating an aircraft in a different fractional ownership program managed by an affiliate of the operating owner's program manager, the aircraft being operated by the fractional owner, so long as the aircraft is:

(A) Included in the fractional ownership program managed by the affiliate of the operating owner's program manager, and

(B) Included in the operating owner's program's dry-lease aircraft exchange pursuant to the program agreements of the operating owner's program.

(iii) An aircraft owned in whole or in part by the program manager that has been included in the dry-lease aircraft exchange and is used to supplement program operations.

(7) A *Fractional Ownership Program Flight or Program Flight* means a flight under this subpart when one or more passengers or property designated by a fractional owner are on board the aircraft.

(8) *Fractional ownership program management services or program management services* mean administrative and aviation support services furnished in accordance with the applicable requirements of this subpart or provided by the program manager on behalf of the fractional owners, including, but not limited to, the—

(i) Establishment and implementation of program safety guidelines;

(ii) Employment, furnishing, or contracting of pilots and other crewmembers;

(iii) Training and qualification of pilots and other crewmembers and personnel;

(iv) Scheduling and coordination of the program aircraft and crews;

(v) Maintenance of program aircraft;

(vi) Satisfaction of recordkeeping requirements;

(vii) Development and use of a program operations manual and procedures; and

(viii) Application for and maintenance of management specifications and other authorizations and approvals.

(9) A *fractional ownership program manager or program manager* means the entity that offers fractional ownership program management services to fractional owners, and is designated in the multi-year program agreements referenced in paragraph (b)(1)(v) of this section to fulfill the requirements of this chapter applicable to the manager of the program containing the aircraft being flown. When a fractional owner is operating an aircraft in a fractional ownership program managed by an affiliate of the owner's program manager, the references in this subpart to the flight-related responsibilities of the program manager apply, with respect to that particular flight, to the affiliate of the owner's program manager rather than to the owner's program manager.

(10) A *minimum fractional ownership interest* means—

(i) A fractional ownership interest equal to, or greater than, one-sixteenth (1/16) of at least one subsonic, fixed-wing or powered-lift program aircraft; or

(ii) A fractional ownership interest equal to, or greater than, one-thirty-second (1/32) of at least one rotorcraft program aircraft.

(c) The rules in this subpart that refer to a fractional owner or a fractional ownership program manager also apply to any person who engages in an operation governed by this subpart without the management specifications required by this subpart.

§91.1002 Compliance date.

No person that conducted flights before November 17, 2003 under a program that meets the definition of fractional ownership program in §91.1001 may conduct such flights after February 17, 2005 unless it has obtained management specifications under this subpart.

[Doc. No. FAA–2001–10047, 68 FR 54561, Sept. 17, 2003; 69 FR 74413, Dec. 14, 2004]

§91.1003 Management contract between owner and program manager.

Each owner must have a contract with the program manager that—

(a) Requires the program manager to ensure that the program conforms to

all applicable requirements of this chapter.

(b) Provides the owner the right to inspect and to audit, or have a designee of the owner inspect and audit, the records of the program manager pertaining to the operational safety of the program and those records required to show compliance with the management specifications and all applicable regulations. These records include, but are not limited to, the management specifications, authorizations, approvals, manuals, log books, and maintenance records maintained by the program manager.

(c) Designates the program manager as the owner's agent to receive service of notices pertaining to the program that the FAA seeks to provide to owners and authorizes the FAA to send such notices to the program manager in its capacity as the agent of the owner for such service.

(d) Acknowledges the FAA's right to contact the owner directly if the Administrator determines that direct contact is necessary.

§ 91.1005 Prohibitions and limitations.

(a) Except as provided in § 91.321 or § 91.501, no owner may carry persons or property for compensation or hire on a program flight.

(b) During the term of the multi-year program agreements under which a fractional owner has obtained a minimum fractional ownership interest in a program aircraft, the flight hours used during that term by the owner on program aircraft must not exceed the total hours associated with the fractional owner's share of ownership.

(c) No person may sell or lease an aircraft interest in a fractional ownership program that is smaller than that prescribed in the definition of ''minimum fractional ownership interest'' in § 91.1001(b)(10) unless flights associated with that interest are operated under part 121 or 135 of this chapter and are conducted by an air carrier or commercial operator certificated under part 119 of this chapter.

§ 91.1007 Flights conducted under part 121 or part 135 of this chapter.

(a) Except as provided in § 91.501(b), when a nonprogram aircraft is used to substitute for a program flight, the flight must be operated in compliance with part 121 or part 135 of this chapter, as applicable.

(b) A program manager who holds a certificate under part 119 of this chapter may conduct a flight for the use of a fractional owner under part 121 or part 135 of this chapter if the aircraft is listed on that certificate holder's operations specifications for part 121 or part 135, as applicable.

(c) The fractional owner must be informed when a flight is being conducted as a program flight or is being conducted under part 121 or part 135 of this chapter.

OPERATIONAL CONTROL

§ 91.1009 Clarification of operational control.

(a) An owner is in operational control of a program flight when the owner—

(1) Has the rights and is subject to the limitations set forth in §§ 91.1003 through 91.1013;

(2) Has directed that a program aircraft carry passengers or property designated by that owner; and

(3) The aircraft is carrying those passengers or property.

(b) An owner is not in operational control of a flight in the following circumstances:

(1) A program aircraft is used for a flight for administrative purposes such as demonstration, positioning, ferrying, maintenance, or crew training, and no passengers or property designated by such owner are being carried; or

(2) The aircraft being used for the flight is being operated under part 121 or 135 of this chapter.

§ 91.1011 Operational control responsibilities and delegation.

(a) Each owner in operational control of a program flight is ultimately responsible for safe operations and for complying with all applicable requirements of this chapter, including those related to airworthiness and operations in connection with the flight. Each owner may delegate some or all of the performance of the tasks associated with carrying out this responsibility to the program manager, and may rely on

the program manager for aviation expertise and program management services. When the owner delegates performance of tasks to the program manager or relies on the program manager's expertise, the owner and the program manager are jointly and individually responsible for compliance.

(b) The management specifications, authorizations, and approvals required by this subpart are issued to, and in the sole name of, the program manager on behalf of the fractional owners collectively. The management specifications, authorizations, and approvals will not be affected by any change in ownership of a program aircraft, as long as the aircraft remains a program aircraft in the identified program.

§91.1013 Operational control briefing and acknowledgment.

(a) Upon the signing of an initial program management services contract, or a renewal or extension of a program management services contract, the program manager must brief the fractional owner on the owner's operational control responsibilities, and the owner must review and sign an acknowledgment of these operational control responsibilities. The acknowledgment must be included with the program management services contract. The acknowledgment must define when a fractional owner is in operational control and the owner's responsibilities and liabilities under the program. These include:

(1) Responsibility for compliance with the management specifications and all applicable regulations.

(2) Enforcement actions for any noncompliance.

(3) Liability risk in the event of a flight-related occurrence that causes personal injury or property damage.

(b) The fractional owner's signature on the acknowledgment will serve as the owner's affirmation that the owner has read, understands, and accepts the operational control responsibilities described in the acknowledgment.

(c) Each program manager must ensure that the fractional owner or owner's representatives have access to the acknowledgments for such owner's program aircraft. Each program manager must ensure that the FAA has access to the acknowledgments for all program aircraft.

PROGRAM MANAGEMENT

§91.1014 Issuing or denying management specifications.

(a) A person applying to the Administrator for management specifications under this subpart must submit an application—

(1) In a form and manner prescribed by the Administrator; and

(2) Containing any information the Administrator requires the applicant to submit.

(b) Management specifications will be issued to the program manager on behalf of the fractional owners if, after investigation, the Administrator finds that the applicant:

(1) Meets the applicable requirements of this subpart; and

(2) Is properly and adequately equipped in accordance with the requirements of this chapter and is able to conduct safe operations under appropriate provisions of part 91 of this chapter and management specifications issued under this subpart.

(c) An application for management specifications will be denied if the Administrator finds that the applicant is not properly or adequately equipped or is not able to conduct safe operations under this part.

§91.1015 Management specifications.

(a) Each person conducting operations under this subpart or furnishing fractional ownership program management services to fractional owners must do so in accordance with management specifications issued by the Administrator to the fractional ownership program manager under this subpart. Management specifications must include:

(1) The current list of all fractional owners and types of aircraft, registration markings and serial numbers;

(2) The authorizations, limitations, and certain procedures under which these operations are to be conducted,

(3) Certain other procedures under which each class and size of aircraft is to be operated;

(4) Authorization for an inspection program approved under § 91.1109, including the type of aircraft, the registration markings and serial numbers of each aircraft to be operated under the program. No person may conduct any program flight using any aircraft not listed.

(5) Time limitations, or standards for determining time limitations, for overhauls, inspections, and checks for airframes, engines, propellers, rotors, appliances, and emergency equipment of aircraft.

(6) The specific location of the program manager's principal base of operations and, if different, the address that will serve as the primary point of contact for correspondence between the FAA and the program manager and the name and mailing address of the program manager's agent for service;

(7) Other business names the program manager may use;

(8) Authorization for the method of controlling weight and balance of aircraft;

(9) Any authorized deviation and exemption granted from any requirement of this chapter; and

(10) Any other information the Administrator determines is necessary.

(b) The program manager may keep the current list of all fractional owners required by paragraph (a)(1) of this section at its principal base of operation or other location approved by the Administrator and referenced in its management specifications. Each program manager shall make this list of owners available for inspection by the Administrator.

(c) Management specifications issued under this subpart are effective unless—

(1) The management specifications are amended as provided in § 91.1017; or

(2) The Administrator suspends or revokes the management specifications.

(d) At least 30 days before it proposes to establish or change the location of its principal base of operations, its main operations base, or its main maintenance base, a program manager must provide written notification to the Flight Standards District Office that issued the program manager's management specifications.

(e) Each program manager must maintain a complete and separate set of its management specifications at its principal base of operations, or at a place approved by the Administrator, and must make its management specifications available for inspection by the Administrator and the fractional owner(s) to whom the program manager furnishes its services for review and audit.

(f) Each program manager must insert pertinent excerpts of its management specifications, or references thereto, in its program manual and must—

(1) Clearly identify each such excerpt as a part of its management specifications; and

(2) State that compliance with each management specifications requirement is mandatory.

(g) Each program manager must keep each of its employees and other persons who perform duties material to its operations informed of the provisions of its management specifications that apply to that employee's or person's duties and responsibilities.

§ 91.1017 Amending program manager's management specifications.

(a) The Administrator may amend any management specifications issued under this subpart if—

(1) The Administrator determines that safety and the public interest require the amendment of any management specifications; or

(2) The program manager applies for the amendment of any management specifications, and the Administrator determines that safety and the public interest allows the amendment.

(b) Except as provided in paragraph (e) of this section, when the Administrator initiates an amendment of a program manager's management specifications, the following procedure applies:

(1) The Flight Standards District Office that issued the program manager's management specifications will notify the program manager in writing of the proposed amendment.

(2) The Flight Standards District Office that issued the program manager's management specifications will set a reasonable period (but not less than 7

days) within which the program manager may submit written information, views, and arguments on the amendment.

(3) After considering all material presented, the Flight Standards District Office that issued the program manager's management specifications will notify the program manager of—

(i) The adoption of the proposed amendment,

(ii) The partial adoption of the proposed amendment, or

(iii) The withdrawal of the proposed amendment.

(4) If the Flight Standards District Office that issued the program manager's management specifications issues an amendment of the management specifications, it becomes effective not less than 30 days after the program manager receives notice of it unless—

(i) The Flight Standards District Office that issued the program manager's management specifications finds under paragraph (e) of this section that there is an emergency requiring immediate action with respect to safety; or

(ii) The program manager petitions for reconsideration of the amendment under paragraph (d) of this section.

(c) When the program manager applies for an amendment to its management specifications, the following procedure applies:

(1) The program manager must file an application to amend its management specifications—

(i) At least 90 days before the date proposed by the applicant for the amendment to become effective, unless a shorter time is approved, in cases such as mergers, acquisitions of operational assets that require an additional showing of safety (for example, proving tests or validation tests), and resumption of operations following a suspension of operations as a result of bankruptcy actions.

(ii) At least 15 days before the date proposed by the applicant for the amendment to become effective in all other cases.

(2) The application must be submitted to the Flight Standards District Office that issued the program manager's management specifications in a form and manner prescribed by the Administrator.

(3) After considering all material presented, the Flight Standards District Office that issued the program manager's management specifications will notify the program manager of—

(i) The adoption of the applied for amendment;

(ii) The partial adoption of the applied for amendment; or

(iii) The denial of the applied for amendment. The program manager may petition for reconsideration of a denial under paragraph (d) of this section.

(4) If the Flight Standards District Office that issued the program manager's management specifications approves the amendment, following coordination with the program manager regarding its implementation, the amendment is effective on the date the Administrator approves it.

(d) When a program manager seeks reconsideration of a decision of the Flight Standards District Office that issued the program manager's management specifications concerning the amendment of management specifications, the following procedure applies:

(1) The program manager must petition for reconsideration of that decision within 30 days of the date that the program manager receives a notice of denial of the amendment of its management specifications, or of the date it receives notice of an FAA-initiated amendment of its management specifications, whichever circumstance applies.

(2) The program manager must address its petition to the Director, Flight Standards Service.

(3) A petition for reconsideration, if filed within the 30-day period, suspends the effectiveness of any amendment issued by the Flight Standards District Office that issued the program manager's management specifications unless that District Office has found, under paragraph (e) of this section, that an emergency exists requiring immediate action with respect to safety.

(4) If a petition for reconsideration is not filed within 30 days, the procedures of paragraph (c) of this section apply.

(e) If the Flight Standards District Office that issued the program manager's management specifications finds that an emergency exists requiring immediate action with respect to safety that makes the procedures set out in this section impracticable or contrary to the public interest—

(1) The Flight Standards District Office amends the management specifications and makes the amendment effective on the day the program manager receives notice of it; and

(2) In the notice to the program manager, the Flight Standards District Office will articulate the reasons for its finding that an emergency exists requiring immediate action with respect to safety or that makes it impracticable or contrary to the public interest to stay the effectiveness of the amendment.

§ 91.1019 Conducting tests and inspections.

(a) At any time or place, the Administrator may conduct an inspection or test, other than an en route inspection, to determine whether a program manager under this subpart is complying with title 49 of the United States Code, applicable regulations, and the program manager's management specifications.

(b) The program manager must—

(1) Make available to the Administrator at the program manager's principal base of operations, or at a place approved by the Administrator, the program manager's management specifications; and

(2) Allow the Administrator to make any test or inspection, other than an en route inspection, to determine compliance respecting any matter stated in paragraph (a) of this section.

(c) Each employee of, or person used by, the program manager who is responsible for maintaining the program manager's records required by or necessary to demonstrate compliance with this subpart must make those records available to the Administrator.

(d) The Administrator may determine a program manager's continued eligibility to hold its management specifications on any grounds listed in paragraph (a) of this section, or any other appropriate grounds.

(e) Failure by any program manager to make available to the Administrator upon request, the management specifications, or any required record, document, or report is grounds for suspension of all or any part of the program manager's management specifications.

§ 91.1021 Internal safety reporting and incident/accident response.

(a) Each program manager must establish an internal anonymous safety reporting procedure that fosters an environment of safety without any potential for retribution for filing the report.

(b) Each program manager must establish procedures to respond to an aviation incident/accident.

§ 91.1023 Program operating manual requirements.

(a) Each program manager must prepare and keep current a program operating manual setting forth procedures and policies acceptable to the Administrator. The program manager's management, flight, ground, and maintenance personnel must use this manual to conduct operations under this subpart. However, the Administrator may authorize a deviation from this paragraph if the Administrator finds that, because of the limited size of the operation, part of the manual is not necessary for guidance of management, flight, ground, or maintenance personnel.

(b) Each program manager must maintain at least one copy of the manual at its principal base of operations.

(c) No manual may be contrary to any applicable U.S. regulations, foreign regulations applicable to the program flights in foreign countries, or the program manager's management specifications.

(d) The program manager must make a copy of the manual, or appropriate portions of the manual (and changes and additions), available to its maintenance and ground operations personnel and must furnish the manual to—

(1) Its crewmembers; and

(2) Representatives of the Administrator assigned to the program manager.

(e) Each employee of the program manager to whom a manual or appropriate portions of it are furnished under paragraph (d)(1) of this section must keep it up-to-date with the changes and additions furnished to them.

(f) Except as provided in paragraph (h) of this section, the appropriate parts of the manual must be carried on each aircraft when away from the principal operations base. The appropriate parts must be available for use by ground or flight personnel.

(g) For the purpose of complying with paragraph (d) of this section, a program manager may furnish the persons listed therein with all or part of its manual in printed form or other form, acceptable to the Administrator, that is retrievable in the English language. If the program manager furnishes all or part of the manual in other than printed form, it must ensure there is a compatible reading device available to those persons that provides a legible image of the maintenance information and instructions, or a system that is able to retrieve the maintenance information and instructions in the English language.

(h) If a program manager conducts aircraft inspections or maintenance at specified facilities where the approved aircraft inspection program is available, the program manager is not required to ensure that the approved aircraft inspection program is carried aboard the aircraft en route to those facilities.

(i) Program managers that are also certificated to operate under part 121 or 135 of this chapter may be authorized to use the operating manual required by those parts to meet the manual requirements of subpart K, provided:

(1) The policies and procedures are consistent for both operations, or

(2) When policies and procedures are different, the applicable policies and procedures are identified and used.

§ 91.1025 Program operating manual contents.

Each program operating manual must have the date of the last revision on each revised page. Unless otherwise authorized by the Administrator, the manual must include the following:

(a) Procedures for ensuring compliance with aircraft weight and balance limitations;

(b) Copies of the program manager's management specifications or appropriate extracted information, including area of operations authorized, category and class of aircraft authorized, crew complements, and types of operations authorized;

(c) Procedures for complying with accident notification requirements;

(d) Procedures for ensuring that the pilot in command knows that required airworthiness inspections have been made and that the aircraft has been approved for return to service in compliance with applicable maintenance requirements;

(e) Procedures for reporting and recording mechanical irregularities that come to the attention of the pilot in command before, during, and after completion of a flight;

(f) Procedures to be followed by the pilot in command for determining that mechanical irregularities or defects reported for previous flights have been corrected or that correction of certain mechanical irregularities or defects have been deferred;

(g) Procedures to be followed by the pilot in command to obtain maintenance, preventive maintenance, and servicing of the aircraft at a place where previous arrangements have not been made by the program manager or owner, when the pilot is authorized to so act for the operator;

(h) Procedures under § 91.213 for the release of, and continuation of flight if any item of equipment required for the particular type of operation becomes inoperative or unserviceable en route;

(i) Procedures for refueling aircraft, eliminating fuel contamination, protecting from fire (including electrostatic protection), and supervising and protecting passengers during refueling;

(j) Procedures to be followed by the pilot in command in the briefing under § 91.1035.

(k) Procedures for ensuring compliance with emergency procedures, including a list of the functions assigned

each category of required crewmembers in connection with an emergency and emergency evacuation duties;

(l) The approved aircraft inspection program, when applicable;

(m) Procedures for the evacuation of persons who may need the assistance of another person to move expeditiously to an exit if an emergency occurs;

(n) Procedures for performance planning that take into account take off, landing and en route conditions;

(o) An approved Destination Airport Analysis, when required by §91.1037(c), that includes the following elements, supported by aircraft performance data supplied by the aircraft manufacturer for the appropriate runway conditions—

(1) Pilot qualifications and experience;

(2) Aircraft performance data to include normal, abnormal and emergency procedures as supplied by the aircraft manufacturer;

(3) Airport facilities and topography;

(4) Runway conditions (including contamination);

(5) Airport or area weather reporting;

(6) Appropriate additional runway safety margins, if required;

(7) Airplane inoperative equipment;

(8) Environmental conditions; and

(9) Other criteria that affect aircraft performance.

(p) A suitable system (which may include a coded or electronic system) that provides for preservation and retrieval of maintenance recordkeeping information required by §91.1113 in a manner acceptable to the Administrator that provides—

(1) A description (or reference to date acceptable to the Administrator) of the work performed:

(2) The name of the person performing the work if the work is performed by a person outside the organization of the program manager; and

(3) The name or other positive identification of the individual approving the work.

(q) Flight locating and scheduling procedures; and

(r) Other procedures and policy instructions regarding program operations that are issued by the program manager or required by the Administrator.

§ 91.1027 Recordkeeping.

(a) Each program manager must keep at its principal base of operations or at other places approved by the Administrator, and must make available for inspection by the Administrator all of the following:

(1) The program manager's management specifications.

(2) A current list of the aircraft used or available for use in operations under this subpart, the operations for which each is equipped (for example, MNPS, RNP5/10, RVSM.).

(3) An individual record of each pilot used in operations under this subpart, including the following information:

(i) The full name of the pilot.

(ii) The pilot certificate (by type and number) and ratings that the pilot holds.

(iii) The pilot's aeronautical experience in sufficient detail to determine the pilot's qualifications to pilot aircraft in operations under this subpart.

(iv) The pilot's current duties and the date of the pilot's assignment to those duties.

(v) The effective date and class of the medical certificate that the pilot holds.

(vi) The date and result of each of the initial and recurrent competency tests and proficiency checks required by this subpart and the type of aircraft flown during that test or check.

(vii) The pilot's flight time in sufficient detail to determine compliance with the flight time limitations of this subpart.

(viii) The pilot's check pilot authorization, if any.

(ix) Any action taken concerning the pilot's release from employment for physical or professional disqualification; and

(x) The date of the satisfactory completion of initial, transition, upgrade, and differences training and each recurrent training phase required by this subpart.

(4) An individual record for each flight attendant used in operations under this subpart, including the following information:

(i) The full name of the flight attendant, and

(ii) The date and result of training required by §91.1063, as applicable.

(5) A current list of all fractional owners and associated aircraft. This list or a reference to its location must be included in the management specifications and should be of sufficient detail to determine the minimum fractional ownership interest of each aircraft.

(b) Each program manager must keep each record required by paragraph (a)(2) of this section for at least 6 months, and must keep each record required by paragraphs (a)(3) and (a)(4) of this section for at least 12 months. When an employee is no longer employed or affiliated with the program manager or fractional owner, each record required by paragraphs (a)(3) and (a)(4) of this section must be retained for at least 12 months.

(c) Each program manager is responsible for the preparation and accuracy of a load manifest in duplicate containing information concerning the loading of the aircraft. The manifest must be prepared before each takeoff and must include—

(1) The number of passengers;

(2) The total weight of the loaded aircraft;

(3) The maximum allowable takeoff weight for that flight;

(4) The center of gravity limits;

(5) The center of gravity of the loaded aircraft, except that the actual center of gravity need not be computed if the aircraft is loaded according to a loading schedule or other approved method that ensures that the center of gravity of the loaded aircraft is within approved limits. In those cases, an entry must be made on the manifest indicating that the center of gravity is within limits according to a loading schedule or other approved method;

(6) The registration number of the aircraft or flight number;

(7) The origin and destination; and

(8) Identification of crewmembers and their crew position assignments.

(d) The pilot in command of the aircraft for which a load manifest must be prepared must carry a copy of the completed load manifest in the aircraft to its destination. The program manager must keep copies of completed load manifest for at least 30 days at its principal operations base, or at another location used by it and approved by the Administrator.

(e) Each program manager is responsible for providing a written document that states the name of the entity having operational control on that flight and the part of this chapter under which the flight is operated. The pilot in command of the aircraft must carry a copy of the document in the aircraft to its destination. The program manager must keep a copy of the document for at least 30 days at its principal operations base, or at another location used by it and approved by the Administrator.

(f) Records may be kept either in paper or other form acceptable to the Administrator.

(g) Program managers that are also certificated to operate under part 121 or 135 of this chapter may satisfy the recordkeeping requirements of this section and of §91.1113 with records maintained to fulfill equivalent obligations under part 121 or 135 of this chapter.

§91.1029 Flight scheduling and locating requirements.

(a) Each program manager must establish and use an adequate system to schedule and release program aircraft.

(b) Except as provided in paragraph (d) of this section, each program manager must have adequate procedures established for locating each flight, for which a flight plan is not filed, that—

(1) Provide the program manager with at least the information required to be included in a VFR flight plan;

(2) Provide for timely notification of an FAA facility or search and rescue facility, if an aircraft is overdue or missing; and

(3) Provide the program manager with the location, date, and estimated time for reestablishing radio or telephone communications, if the flight will operate in an area where communications cannot be maintained.

(c) Flight locating information must be retained at the program manager's principal base of operations, or at other places designated by the program

manager in the flight locating procedures, until the completion of the flight.

(d) The flight locating requirements of paragraph (b) of this section do not apply to a flight for which an FAA flight plan has been filed and the flight plan is canceled within 25 nautical miles of the destination airport.

§ 91.1031 Pilot in command or second in command: Designation required.

(a) Each program manager must designate a—

(1) Pilot in command for each program flight; and

(2) Second in command for each program flight requiring two pilots.

(b) The pilot in command, as designated by the program manager, must remain the pilot in command at all times during that flight.

§ 91.1033 Operating information required.

(a) Each program manager must, for all program operations, provide the following materials, in current and appropriate form, accessible to the pilot at the pilot station, and the pilot must use them—

(1) A cockpit checklist;

(2) For multiengine aircraft or for aircraft with retractable landing gear, an emergency cockpit checklist containing the procedures required by paragraph (c) of this section, as appropriate;

(3) At least one set of pertinent aeronautical charts; and

(4) For IFR operations, at least one set of pertinent navigational en route, terminal area, and instrument approach procedure charts.

(b) Each cockpit checklist required by paragraph (a)(1) of this section must contain the following procedures:

(1) Before starting engines;

(2) Before takeoff;

(3) Cruise;

(4) Before landing;

(5) After landing; and

(6) Stopping engines.

(c) Each emergency cockpit checklist required by paragraph (a)(2) of this section must contain the following procedures, as appropriate:

(1) Emergency operation of fuel, hydraulic, electrical, and mechanical systems.

(2) Emergency operation of instruments and controls.

(3) Engine inoperative procedures.

(4) Any other emergency procedures necessary for safety.

§ 91.1035 Passenger awareness.

(a) Prior to each takeoff, the pilot in command of an aircraft carrying passengers on a program flight must ensure that all passengers have been orally briefed on—

(1) *Smoking:* Each passenger must be briefed on when, where, and under what conditions smoking is prohibited. This briefing must include a statement, as appropriate, that the regulations require passenger compliance with lighted passenger information signs and no smoking placards, prohibit smoking in lavatories, and require compliance with crewmember instructions with regard to these items;

(2) *Use of safety belts, shoulder harnesses, and child restraint systems:* Each passenger must be briefed on when, where and under what conditions it is necessary to have his or her safety belt and, if installed, his or her shoulder harness fastened about him or her, and if a child is being transported, the appropriate use of child restraint systems, if available. This briefing must include a statement, as appropriate, that the regulations require passenger compliance with the lighted passenger information sign and/or crewmember instructions with regard to these items;

(3) The placement of seat backs in an upright position before takeoff and landing;

(4) Location and means for opening the passenger entry door and emergency exits;

(5) Location of survival equipment;

(6) Ditching procedures and the use of flotation equipment required under § 91.509 for a flight over water;

(7) The normal and emergency use of oxygen installed in the aircraft; and

(8) Location and operation of fire extinguishers.

(b) Prior to each takeoff, the pilot in command of an aircraft carrying passengers on a program flight must ensure that each person who may need the assistance of another person to move expeditiously to an exit if an emergency occurs and that person's attendant, if any, has received a briefing as to the procedures to be followed if an evacuation occurs. This paragraph does not apply to a person who has been given a briefing before a previous leg of that flight in the same aircraft.

(c) Prior to each takeoff, the pilot in command must advise the passengers of the name of the entity in operational control of the flight.

(d) The oral briefings required by paragraphs (a), (b), and (c) of this section must be given by the pilot in command or another crewmember.

(e) The oral briefing required by paragraph (a) of this section may be delivered by means of an approved recording playback device that is audible to each passenger under normal noise levels.

(f) The oral briefing required by paragraph (a) of this section must be supplemented by printed cards that must be carried in the aircraft in locations convenient for the use of each passenger. The cards must—

(1) Be appropriate for the aircraft on which they are to be used;

(2) Contain a diagram of, and method of operating, the emergency exits; and

(3) Contain other instructions necessary for the use of emergency equipment on board the aircraft.

§ 91.1037 Large transport category airplanes: Turbine engine powered; Limitations; Destination and alternate airports.

(a) No program manager or any other person may permit a turbine engine powered large transport category airplane on a program flight to take off that airplane at a weight that (allowing for normal consumption of fuel and oil in flight to the destination or alternate airport) the weight of the airplane on arrival would exceed the landing weight in the Airplane Flight Manual for the elevation of the destination or alternate airport and the ambient temperature expected at the time of landing.

(b) Except as provided in paragraph (c) of this section, no program manager or any other person may permit a turbine engine powered large transport category airplane on a program flight to take off that airplane unless its weight on arrival, allowing for normal consumption of fuel and oil in flight (in accordance with the landing distance in the Airplane Flight Manual for the elevation of the destination airport and the wind conditions expected there at the time of landing), would allow a full stop landing at the intended destination airport within 60 percent of the effective length of each runway described below from a point 50 feet above the intersection of the obstruction clearance plane and the runway. For the purpose of determining the allowable landing weight at the destination airport, the following is assumed:

(1) The airplane is landed on the most favorable runway and in the most favorable direction, in still air.

(2) The airplane is landed on the most suitable runway considering the probable wind velocity and direction and the ground handling characteristics of that airplane, and considering other conditions such as landing aids and terrain.

(c) A program manager or other person flying a turbine engine powered large transport category airplane on a program flight may permit that airplane to take off at a weight in excess of that allowed by paragraph (b) of this section if all of the following conditions exist:

(1) The operation is conducted in accordance with an approved Destination Airport Analysis in that person's program operating manual that contains the elements listed in § 91.1025(o).

(2) The airplane's weight on arrival, allowing for normal consumption of fuel and oil in flight (in accordance with the landing distance in the Airplane Flight Manual for the elevation of the destination airport and the wind conditions expected there at the time of landing), would allow a full stop landing at the intended destination airport within 80 percent of the effective length of each runway described below from a point 50 feet above the intersection of the obstruction clearance plane

and the runway. For the purpose of determining the allowable landing weight at the destination airport, the following is assumed:

(i) The airplane is landed on the most favorable runway and in the most favorable direction, in still air.

(ii) The airplane is landed on the most suitable runway considering the probable wind velocity and direction and the ground handling characteristics of that airplane, and considering other conditions such as landing aids and terrain.

(3) The operation is authorized by management specifications.

(d) No program manager or other person may select an airport as an alternate airport for a turbine engine powered large transport category airplane unless (based on the assumptions in paragraph (b) of this section) that airplane, at the weight expected at the time of arrival, can be brought to a full stop landing within 80 percent of the effective length of the runway from a point 50 feet above the intersection of the obstruction clearance plane and the runway.

(e) Unless, based on a showing of actual operating landing techniques on wet runways, a shorter landing distance (but never less than that required by paragraph (b) or (c) of this section) has been approved for a specific type and model airplane and included in the Airplane Flight Manual, no person may take off a turbojet airplane when the appropriate weather reports or forecasts, or any combination of them, indicate that the runways at the destination or alternate airport may be wet or slippery at the estimated time of arrival unless the effective runway length at the destination airport is at least 115 percent of the runway length required under paragraph (b) or (c) of this section.

§ 91.1039 IFR takeoff, approach and landing minimums.

(a) No pilot on a program aircraft operating a program flight may begin an instrument approach procedure to an airport unless—

(1) Either that airport or the alternate airport has a weather reporting facility operated by the U.S. National Weather Service, a source approved by the U.S. National Weather Service, or a source approved by the Administrator; and

(2) The latest weather report issued by the weather reporting facility includes a current local altimeter setting for the destination airport. If no local altimeter setting is available at the destination airport, the pilot must obtain the current local altimeter setting from a source provided by the facility designated on the approach chart for the destination airport.

(b) For flight planning purposes, if the destination airport does not have a weather reporting facility described in paragraph (a)(1) of this section, the pilot must designate as an alternate an airport that has a weather reporting facility meeting that criteria.

(c) The MDA or Decision Altitude and visibility landing minimums prescribed in part 97 of this chapter or in the program manager's management specifications are increased by 100 feet and 1/2 mile respectively, but not to exceed the ceiling and visibility minimums for that airport when used as an alternate airport, for each pilot in command of a turbine-powered aircraft who has not served at least 100 hours as pilot in command in that type of aircraft.

(d) No person may take off an aircraft under IFR from an airport where weather conditions are at or above takeoff minimums but are below authorized IFR landing minimums unless there is an alternate airport within one hour's flying time (at normal cruising speed, in still air) of the airport of departure.

(e) Each pilot making an IFR takeoff or approach and landing at an airport must comply with applicable instrument approach procedures and take off and landing weather minimums prescribed by the authority having jurisdiction over the airport. In addition, no pilot may, at that airport take off when the visibility is less than 600 feet.

§ 91.1041 Aircraft proving and validation tests.

(a) No program manager may permit the operation of an aircraft, other than a turbojet aircraft, for which two pilots are required by the type certification

requirements of this chapter for operations under VFR, if it has not previously proved such an aircraft in operations under this part in at least 25 hours of proving tests acceptable to the Administrator including—

(1) Five hours of night time, if night flights are to be authorized;

(2) Five instrument approach procedures under simulated or actual conditions, if IFR flights are to be authorized; and

(3) Entry into a representative number of en route airports as determined by the Administrator.

(b) No program manager may permit the operation of a turbojet airplane if it has not previously proved a turbojet airplane in operations under this part in at least 25 hours of proving tests acceptable to the Administrator including—

(1) Five hours of night time, if night flights are to be authorized;

(2) Five instrument approach procedures under simulated or actual conditions, if IFR flights are to be authorized; and

(3) Entry into a representative number of en route airports as determined by the Administrator.

(c) No program manager may carry passengers in an aircraft during proving tests, except those needed to make the tests and those designated by the Administrator to observe the tests. However, pilot flight training may be conducted during the proving tests.

(d) Validation testing is required to determine that a program manager is capable of conducting operations safely and in compliance with applicable regulatory standards. Validation tests are required for the following authorizations:

(1) The addition of an aircraft for which two pilots are required for operations under VFR or a turbojet airplane, if that aircraft or an aircraft of the same make or similar design has not been previously proved or validated in operations under this part.

(2) Operations outside U.S. airspace.

(3) Class II navigation authorizations.

(4) Special performance or operational authorizations.

(e) Validation tests must be accomplished by test methods acceptable to the Administrator. Actual flights may not be required when an applicant can demonstrate competence and compliance with appropriate regulations without conducting a flight.

(f) Proving tests and validation tests may be conducted simultaneously when appropriate.

(g) The Administrator may authorize deviations from this section if the Administrator finds that special circumstances make full compliance with this section unnecessary.

§ 91.1043 [Reserved]

§ 91.1045 Additional equipment requirements.

No person may operate a program aircraft on a program flight unless the aircraft is equipped with the following—

(a) Airplanes having a passenger-seat configuration of more than 30 seats or a payload capacity of more than 7,500 pounds:

(1) A cockpit voice recorder as required by § 121.359 of this chapter as applicable to the aircraft specified in that section.

(2) A flight recorder as required by § 121.343 or § 121.344 of this chapter as applicable to the aircraft specified in that section.

(3) A terrain awareness and warning system as required by § 121.354 of this chapter as applicable to the aircraft specified in that section.

(4) A traffic alert and collision avoidance system as required by § 121.356 of this chapter as applicable to the aircraft specified in that section.

(5) Airborne weather radar as required by § 121.357 of this chapter, as applicable to the aircraft specified in that section.

(b) Airplanes having a passenger-seat configuration of 30 seats or fewer, excluding each crewmember, and a payload capacity of 7,500 pounds or less, and any rotorcraft (as applicable):

(1) A cockpit voice recorder as required by § 135.151 of this chapter as applicable to the aircraft specified in that section.

(2) A flight recorder as required by § 135.152 of this chapter as applicable to the aircraft specified in that section.

(3) A terrain awareness and warning system as required by § 135.154 of this

chapter as applicable to the aircraft specified in that section.

(4) A traffic alert and collision avoidance system as required by § 135.180 of this chapter as applicable to the aircraft specified in that section.

(5) As applicable to the aircraft specified in that section, either:

(i) Airborne thunderstorm detection equipment as required by § 135.173 of this chapter; or

(ii) Airborne weather radar as required by § 135.175 of this chapter.

§ 91.1047 Drug and alcohol misuse education program.

(a) Each program manager must provide each direct employee performing flight crewmember, flight attendant, flight instructor, or aircraft maintenance duties with drug and alcohol misuse education.

(b) No program manager may use any contract employee to perform flight crewmember, flight attendant, flight instructor, or aircraft maintenance duties for the program manager unless that contract employee has been provided with drug and alcohol misuse education.

(c) Program managers must disclose to their owners and prospective owners the existence of a company drug and alcohol misuse testing program. If the program manager has implemented a company testing program, the program manager's disclosure must include the following:

(1) Information on the substances that they test for, for example, alcohol and a list of the drugs;

(2) The categories of employees tested, the types of tests, for example, preemployment, random, reasonable cause/suspicion, post accident, return to duty and follow-up; and

(3) The degree to which the program manager's company testing program is comparable to the federally mandated drug and alcohol misuse prevention program required under part 121, appendices I and J, of this chapter, regarding the information in paragraphs (c)(1) and (c)(2) of this section.

(d) If a program aircraft is operated on a program flight into an airport at which no maintenance personnel are available that are subject to the requirements of paragraphs (a) or (b) of this section and emergency maintenance is required, the program manager may use persons not meeting the requirements of paragraphs (a) or (b) of this section to provide such emergency maintenance under both of the following conditions:

(1) The program manager must notify the Drug Abatement Program Division, AAM–800, 800 Independence Avenue, SW., Washington, DC 20591 in writing within 10 days after being provided emergency maintenance in accordance with this paragraph. The program manager must retain copies of all such written notifications for two years.

(2) The aircraft must be reinspected by maintenance personnel who meet the requirements of paragraph (a) or (b) of this section when the aircraft is next at an airport where such maintenance personnel are available.

(e) For purposes of this section, emergency maintenance means maintenance that—

(1) Is not scheduled, and

(2) Is made necessary by an aircraft condition not discovered prior to the departure for that location.

(f) Notwithstanding paragraphs (a) and (b) of this section, drug and alcohol misuse education conducted under an FAA-approved drug and alcohol misuse prevention program may be used to satisfy these requirements.

§ 91.1049 Personnel.

(a) Each program manager and each fractional owner must use in program operations on program aircraft flight crews meeting § 91.1053 criteria and qualified under the appropriate regulations. The program manager must provide oversight of those crews.

(b) Each program manager must employ (either directly or by contract) an adequate number of pilots per program aircraft. Flight crew staffing must be determined based on the following factors, at a minimum:

(1) Number of program aircraft.

(2) Program manager flight, duty, and rest time considerations, and in all cases within the limits set forth in §§ 91.1057 through 91.1061.

(3) Vacations.

(4) Operational efficiencies.

(5) Training.

(6) Single pilot operations, if authorized by deviation under paragraph (d) of this section.

(c) Each program manager must publish pilot and flight attendant duty schedules sufficiently in advance to follow the flight, duty, and rest time limits in §§ 91.1057 through 91.1061 in program operations.

(d) Unless otherwise authorized by the Administrator, when any program aircraft is flown in program operations with passengers onboard, the crew must consist of at least two qualified pilots employed or contracted by the program manager or the fractional owner.

(e) The program manager must ensure that trained and qualified scheduling or flight release personnel are on duty to schedule and release program aircraft during all hours that such aircraft are available for program operations.

§ 91.1051 Pilot safety background check.

Within 90 days of an individual beginning service as a pilot, the program manager must request the following information:

(a) FAA records pertaining to—

(1) Current pilot certificates and associated type ratings.

(2) Current medical certificates.

(3) Summaries of legal enforcement actions resulting in a finding by the Administrator of a violation.

(b) Records from all previous employers during the five years preceding the date of the employment application where the applicant worked as a pilot. If any of these firms are in bankruptcy, the records must be requested from the trustees in bankruptcy for those employees. If the previous employer is no longer in business, a documented good faith effort must be made to obtain the records. Records from previous employers must include, as applicable—

(1) Crew member records.

(2) Drug testing—collection, testing, and rehabilitation records pertaining to the individual.

(3) Alcohol misuse prevention program records pertaining to the individual.

(4) The applicant's individual record that includes certifications, ratings, aeronautical experience, effective date and class of the medical certificate.

§ 91.1053 Crewmember experience.

(a) No program manager or owner may use any person, nor may any person serve, as a pilot in command or second in command of a program aircraft, or as a flight attendant on a program aircraft, in program operations under this subpart unless that person has met the applicable requirements of part 61 of this chapter and has the following experience and ratings:

(1) Total flight time for all pilots:

(i) Pilot in command—A minimum of 1,500 hours.

(ii) Second in command—A minimum of 500 hours.

(2) For multi-engine turbine-powered fixed-wing and powered-lift aircraft, the following FAA certification and ratings requirements:

(i) Pilot in command—Airline transport pilot and applicable type ratings.

(ii) Second in command—Commercial pilot and instrument ratings.

(iii) Flight attendant (if required or used)—Appropriately trained personnel.

(3) For all other aircraft, the following FAA certification and rating requirements:

(i) Pilot in command—Commercial pilot and instrument ratings.

(ii) Second in command—Commercial pilot and instrument ratings.

(iii) Flight attendant (if required or used)—Appropriately trained personnel.

(b) The Administrator may authorize deviations from paragraph (a)(1) of this section if the Flight Standards District Office that issued the program manager's management specifications finds that the crewmember has comparable experience, and can effectively perform the functions associated with the position in accordance with the requirements of this chapter. Grants of deviation under this paragraph may be granted after consideration of the size and scope of the operation, the qualifications of the intended personnel and the circumstances set forth in § 91.1055(b)(1) through (3). The Administrator may, at any time, terminate any grant of deviation authority issued under this paragraph.

§ 91.1055 Pilot operating limitations and pairing requirement.

(a) If the second in command of a fixed-wing program aircraft has fewer than 100 hours of flight time as second in command flying in the aircraft make and model and, if a type rating is required, in the type aircraft being flown, and the pilot in command is not an appropriately qualified check pilot, the pilot in command shall make all takeoffs and landings in any of the following situations:

(1) Landings at the destination airport when a Destination Airport Analysis is required by § 91.1037(c); and

(2) In any of the following conditions:

(i) The prevailing visibility for the airport is at or below 3/4 mile.

(ii) The runway visual range for the runway to be used is at or below 4,000 feet.

(iii) The runway to be used has water, snow, slush, ice or similar contamination that may adversely affect aircraft performance.

(iv) The braking action on the runway to be used is reported to be less than ''good.''

(v) The crosswind component for the runway to be used is in excess of 15 knots.

(vi) Windshear is reported in the vicinity of the airport.

(vii) Any other condition in which the pilot in command determines it to be prudent to exercise the pilot in command's authority.

(b) No program manager may release a program flight under this subpart unless, for that aircraft make or model and, if a type rating is required, for that type aircraft, either the pilot in command or the second in command has at least 75 hours of flight time, either as pilot in command or second in command. The Administrator may, upon application by the program manager, authorize deviations from the requirements of this paragraph by an appropriate amendment to the management specifications in any of the following circumstances:

(1) A newly authorized program manager does not employ any pilots who meet the minimum requirements of this paragraph.

(2) An existing program manager adds to its fleet a new category and class aircraft not used before in its operation.

(3) An existing program manager establishes a new base to which it assigns pilots who will be required to become qualified on the aircraft operated from that base.

(c) No person may be assigned in the capacity of pilot in command in a program operation to more than two aircraft types that require a separate type rating.

§ 91.1057 Flight, duty and rest time requirements: All crewmembers.

(a) For purposes of this subpart—

Augmented flight crew means at least three pilots.

Calendar day means the period of elapsed time, using Coordinated Universal Time or local time that begins at midnight and ends 24 hours later at the next midnight.

Duty period means the period of elapsed time between reporting for an assignment involving flight time and release from that assignment by the program manager. All time between these two points is part of the duty period, even if flight time is interrupted by nonflight-related duties. The time is calculated using either Coordinated Universal Time or local time to reflect the total elapsed time.

Extension of flight time means an increase in the flight time because of circumstances beyond the control of the program manager or flight crewmember (such as adverse weather) that are not known at the time of departure and that prevent the flightcrew from reaching the destination within the planned flight time.

Flight attendant means an individual, other than a flight crewmember, who is assigned by the program manager, in accordance with the required minimum crew complement under the program manager's management specifications or in addition to that minimum complement, to duty in an aircraft during flight time and whose duties include but are not necessarily limited to cabin-safety-related responsibilities.

Multi-time zone flight means an easterly or westerly flight or multiple flights in one direction in the same duty period that results in a time zone difference of 5 or more hours and is

conducted in a geographic area that is south of 60 degrees north latitude and north of 60 degrees south latitude.

Reserve status means that status in which a flight crewmember, by arrangement with the program manager: Holds himself or herself fit to fly to the extent that this is within the control of the flight crewmember; remains within a reasonable response time of the aircraft as agreed between the flight crewmember and the program manager; and maintains a ready means whereby the flight crewmember may be contacted by the program manager. Reserve status is not part of any duty period or rest period.

Rest period means a period of time required pursuant to this subpart that is free of all responsibility for work or duty prior to the commencement of, or following completion of, a duty period, and during which the flight crewmember or flight attendant cannot be required to receive contact from the program manager. A rest period does not include any time during which the program manager imposes on a flight crewmember or flight attendant any duty or restraint, including any actual work or present responsibility for work should the occasion arise.

Standby means that portion of a duty period during which a flight crewmember is subject to the control of the program manager and holds himself or herself in a condition of readiness to undertake a flight. Standby is not part of any rest period.

(b) A program manager may assign a crewmember and a crewmember may accept an assignment for flight time only when the applicable requirements of this section and §§ 91.1059–91.1062 are met.

(c) No program manager may assign any crewmember to any duty during any required rest period.

(d) Time spent in transportation, not local in character, that a program manager requires of a crewmember and provides to transport the crewmember to an airport at which he or she is to serve on a flight as a crewmember, or from an airport at which he or she was relieved from duty to return to his or her home station, is not considered part of a rest period.

(e) A flight crewmember may continue a flight assignment if the flight to which he or she is assigned would normally terminate within the flight time limitations, but because of circumstances beyond the control of the program manager or flight crewmember (such as adverse weather conditions), is not at the time of departure expected to reach its destination within the planned flight time. The extension of flight time under this paragraph may not exceed the maximum time limits set forth in § 91.1059.

(f) Each flight assignment must provide for at least 10 consecutive hours of rest during the 24-hour period that precedes the completion time of the assignment.

(g) The program manager must provide each crewmember at least 13 rest periods of at least 24 consecutive hours each in each calendar quarter.

(h) A flight crewmember may decline a flight assignment if, in the flight crewmember's determination, to do so would not be consistent with the standard of safe operation required under this subpart, this part, and applicable provisions of this title.

(i) Any rest period required by this subpart may occur concurrently with any other rest period.

(j) If authorized by the Administrator, a program manager may use the applicable unscheduled flight time limitations, duty period limitations, and rest requirements of part 121 or part 135 of this chapter instead of the flight time limitations, duty period limitations, and rest requirements of this subpart.

§ 91.1059 Flight time limitations and rest requirements: One or two pilot crews.

(a) No program manager may assign any flight crewmember, and no flight crewmember may accept an assignment, for flight time as a member of a one- or two-pilot crew if that crewmember's total flight time in all commercial flying will exceed—

(1) 500 hours in any calendar quarter;

(2) 800 hours in any two consecutive calendar quarters;

(3) 1,400 hours in any calendar year.

(b) Except as provided in paragraph (c) of this section, during any 24 consecutive hours the total flight time of the assigned flight, when added to any commercial flying by that flight crewmember, may not exceed—

(1) 8 hours for a flight crew consisting of one pilot; or

(2) 10 hours for a flight crew consisting of two pilots qualified under this subpart for the operation being conducted.

(c) No program manager may assign any flight crewmember, and no flight crewmember may accept an assignment, if that crewmember's flight time or duty period will exceed, or rest time will be less than—

	Normal duty	Extension of flight time
(1) Minimum Rest Immediately Before Duty	10 Hours	10 Hours.
(2) Duty Period	Up to 14 Hours	Up to 14 Hours.
(3) Flight Time For 1 Pilot	Up to 8 Hours	Exceeding 8 Hours up to 9 Hours.
(4) Flight Time For 2 Pilots	Up to 10 Hours	Exceeding 10 Hours up to 12 Hours.
(5) Minimum After Duty Rest	10 Hours	12 Hours.
(6) Minimum After Duty Rest Period for Multi-Time Zone Flights	14 Hours	18 Hours.

§ 91.1061 Augmented flight crews.

(a) No program manager may assign any flight crewmember, and no flight crewmember may accept an assignment, for flight time as a member of an augmented crew if that crewmember's total flight time in all commercial flying will exceed—

(1) 500 hours in any calendar quarter;

(2) 800 hours in any two consecutive calendar quarters;

(3) 1,400 hours in any calendar year.

(b) No program manager may assign any pilot to an augmented crew, unless the program manager ensures:

(1) Adequate sleeping facilities are installed on the aircraft for the pilots.

(2) No more than 8 hours of flight deck duty is accrued in any 24 consecutive hours.

(3) For a three-pilot crew, the crew must consist of at least the following:

(i) A pilot in command (PIC) who meets the applicable flight crewmember requirements of this subpart and § 61.57 of this chapter.

(ii) A PIC qualified pilot who meets the applicable flight crewmember requirements of this subpart and § 61.57(c) and (d) of this chapter.

(iii) A second in command (SIC) who meets the SIC qualifications of this subpart. For flight under IFR, that person must also meet the recent instrument experience requirements of part 61 of this chapter.

(4) For a four-pilot crew, at least three pilots who meet the conditions of paragraph (b)(3) of this section, plus a fourth pilot who meets the SIC qualifications of this subpart. For flight under IFR, that person must also meet the recent instrument experience requirements of part 61 of this chapter.

(c) No program manager may assign any flight crewmember, and no flight crewmember may accept an assignment, if that crewmember's flight time or duty period will exceed, or rest time will be less than—

	3-Pilot crew	4-Pilot crew
(1) Minimum Rest Immediately Before Duty	10 Hours	10 Hours
(2) Duty Period	Up to 16 Hours	Up to 18 Hours
(3) Flight Time	Up to 12 Hours	Up to 16 Hours
(4) Minimum After Duty Rest	12 Hours	18 Hours
(5) Minimum After Duty Rest Period for Multi-Time Zone Flights	18 hours	24 hours

§ 91.1062 Duty periods and rest requirements: Flight attendants.

(a) Except as provided in paragraph (b) of this section, a program manager may assign a duty period to a flight attendant only when the assignment meets the applicable duty period limitations and rest requirements of this paragraph.

(1) Except as provided in paragraphs (a)(4), (a)(5), and (a)(6) of this section, no program manager may assign a flight attendant to a scheduled duty period of more than 14 hours.

(2) Except as provided in paragraph (a)(3) of this section, a flight attendant scheduled to a duty period of 14 hours or less as provided under paragraph (a)(1) of this section must be given a scheduled rest period of at least 9 consecutive hours. This rest period must occur between the completion of the scheduled duty period and the commencement of the subsequent duty period.

(3) The rest period required under paragraph (a)(2) of this section may be scheduled or reduced to 8 consecutive hours if the flight attendant is provided a subsequent rest period of at least 10 consecutive hours; this subsequent rest period must be scheduled to begin no later than 24 hours after the beginning of the reduced rest period and must occur between the completion of the scheduled duty period and the commencement of the subsequent duty period.

(4) A program manager may assign a flight attendant to a scheduled duty period of more than 14 hours, but no more than 16 hours, if the program manager has assigned to the flight or flights in that duty period at least one flight attendant in addition to the minimum flight attendant complement required for the flight or flights in that duty period under the program manager's management specifications.

(5) A program manager may assign a flight attendant to a scheduled duty period of more than 16 hours, but no more than 18 hours, if the program manager has assigned to the flight or flights in that duty period at least two flight attendants in addition to the minimum flight attendant complement required for the flight or flights in that duty period under the program manager's management specifications.

(6) A program manager may assign a flight attendant to a scheduled duty period of more than 18 hours, but no more than 20 hours, if the scheduled duty period includes one or more flights that land or take off outside the 48 contiguous states and the District of Columbia, and if the program manager has assigned to the flight or flights in that duty period at least three flight attendants in addition to the minimum flight attendant complement required for the flight or flights in that duty period under the program manager's management specifications.

(7) Except as provided in paragraph (a)(8) of this section, a flight attendant scheduled to a duty period of more than 14 hours but no more than 20 hours, as provided in paragraphs (a)(4), (a)(5), and (a)(6) of this section, must be given a scheduled rest period of at least 12 consecutive hours. This rest period must occur between the completion of the scheduled duty period and the commencement of the subsequent duty period.

(8) The rest period required under paragraph (a)(7) of this section may be scheduled or reduced to 10 consecutive hours if the flight attendant is provided a subsequent rest period of at least 14 consecutive hours; this subsequent rest period must be scheduled to begin no later than 24 hours after the beginning of the reduced rest period and must occur between the completion of the scheduled duty period and the commencement of the subsequent duty period.

(9) Notwithstanding paragraphs (a)(4), (a)(5), and (a)(6) of this section, if a program manager elects to reduce the rest period to 10 hours as authorized by paragraph (a)(8) of this section, the program manager may not schedule a flight attendant for a duty period of more than 14 hours during the 24-hour period commencing after the beginning of the reduced rest period.

(b) Notwithstanding paragraph (a) of this section, a program manager may apply the flight crewmember flight time and duty limitations and rest requirements of this part to flight attendants for all operations conducted

under this part provided that the program manager establishes written procedures that—

(1) Apply to all flight attendants used in the program manager's operation;

(2) Include the flight crewmember rest and duty requirements of §§ 91.1057, 91.1059, and 91.1061, as appropriate to the operation being conducted, except that rest facilities on board the aircraft are not required;

(3) Include provisions to add one flight attendant to the minimum flight attendant complement for each flight crewmember who is in excess of the minimum number required in the aircraft type certificate data sheet and who is assigned to the aircraft under the provisions of § 91.1061; and

(4) Are approved by the Administrator and described or referenced in the program manager's management specifications.

§ 91.1063 Testing and training: Applicability and terms used.

(a) Sections 91.1065 through 91.1107:

(1) Prescribe the tests and checks required for pilots and flight attendant crewmembers and for the approval of check pilots in operations under this subpart;

(2) Prescribe the requirements for establishing and maintaining an approved training program for crewmembers, check pilots and instructors, and other operations personnel employed or used by the program manager in program operations;

(3) Prescribe the requirements for the qualification, approval and use of aircraft simulators and flight training devices in the conduct of an approved training program; and

(4) Permits training center personnel authorized under part 142 of this chapter who meet the requirements of § 91.1075 to conduct training, testing and checking under contract or other arrangements to those persons subject to the requirements of this subpart.

(b) If authorized by the Administrator, a program manager may comply with the applicable training and testing sections of subparts N and O of part 121 of this chapter instead of §§ 91.1065 through 91.1107, except for the operating experience requirements of § 121.434 of this chapter.

(c) If authorized by the Administrator, a program manager may comply with the applicable training and testing sections of subparts G and H of part 135 of this chapter instead of §§ 91.1065 through 91.1107, except for the operating experience requirements of § 135.244 of this chapter.

(d) For the purposes of this subpart, the following terms and definitions apply:

(1) *Initial training.* The training required for crewmembers who have not qualified and served in the same capacity on an aircraft.

(2) *Transition training.* The training required for crewmembers who have qualified and served in the same capacity on another aircraft.

(3) *Upgrade training.* The training required for crewmembers who have qualified and served as second in command on a particular aircraft type, before they serve as pilot in command on that aircraft.

(4) *Differences training.* The training required for crewmembers who have qualified and served on a particular type aircraft, when the Administrator finds differences training is necessary before a crewmember serves in the same capacity on a particular variation of that aircraft.

(5) *Recurrent training.* The training required for crewmembers to remain adequately trained and currently proficient for each aircraft crewmember position, and type of operation in which the crewmember serves.

(6) *In flight.* The maneuvers, procedures, or functions that will be conducted in the aircraft.

(7) *Training center.* An organization governed by the applicable requirements of part 142 of this chapter that conducts training, testing, and checking under contract or other arrangement to program managers subject to the requirements of this subpart.

(8) *Requalification training.* The training required for crewmembers previously trained and qualified, but who have become unqualified because of not having met within the required period any of the following:

(i) Recurrent crewmember training requirements of § 91.1107.

(ii) Instrument proficiency check requirements of § 91.1069.

(iii) Testing requirements of §91.1065.
(iv) Recurrent flight attendant testing requirements of §91.1067.

§91.1065 Initial and recurrent pilot testing requirements.

(a) No program manager or owner may use a pilot, nor may any person serve as a pilot, unless, since the beginning of the 12th month before that service, that pilot has passed either a written or oral test (or a combination), given by the Administrator or an authorized check pilot, on that pilot's knowledge in the following areas—

(1) The appropriate provisions of parts 61 and 91 of this chapter and the management specifications and the operating manual of the program manager;

(2) For each type of aircraft to be flown by the pilot, the aircraft powerplant, major components and systems, major appliances, performance and operating limitations, standard and emergency operating procedures, and the contents of the accepted operating manual or equivalent, as applicable;

(3) For each type of aircraft to be flown by the pilot, the method of determining compliance with weight and balance limitations for takeoff, landing and en route operations;

(4) Navigation and use of air navigation aids appropriate to the operation or pilot authorization, including, when applicable, instrument approach facilities and procedures;

(5) Air traffic control procedures, including IFR procedures when applicable;

(6) Meteorology in general, including the principles of frontal systems, icing, fog, thunderstorms, and windshear, and, if appropriate for the operation of the program manager, high altitude weather;

(7) Procedures for—

(i) Recognizing and avoiding severe weather situations;

(ii) Escaping from severe weather situations, in case of inadvertent encounters, including low-altitude windshear (except that rotorcraft aircraft pilots are not required to be tested on escaping from low-altitude windshear); and

(iii) Operating in or near thunderstorms (including best penetration altitudes), turbulent air (including clear air turbulence), icing, hail, and other potentially hazardous meteorological conditions; and

(8) New equipment, procedures, or techniques, as appropriate.

(b) No program manager or owner may use a pilot, nor may any person serve as a pilot, in any aircraft unless, since the beginning of the 12th month before that service, that pilot has passed a competency check given by the Administrator or an authorized check pilot in that class of aircraft, if single-engine aircraft other than turbojet, or that type of aircraft, if rotorcraft, multiengine aircraft, or turbojet airplane, to determine the pilot's competence in practical skills and techniques in that aircraft or class of aircraft. The extent of the competency check will be determined by the Administrator or authorized check pilot conducting the competency check. The competency check may include any of the maneuvers and procedures currently required for the original issuance of the particular pilot certificate required for the operations authorized and appropriate to the category, class and type of aircraft involved. For the purposes of this paragraph, type, as to an airplane, means any one of a group of airplanes determined by the Administrator to have a similar means of propulsion, the same manufacturer, and no significantly different handling or flight characteristics. For the purposes of this paragraph, type, as to a rotorcraft, means a basic make and model.

(c) The instrument proficiency check required by §91.1069 may be substituted for the competency check required by this section for the type of aircraft used in the check.

(d) For the purpose of this subpart, competent performance of a procedure or maneuver by a person to be used as a pilot requires that the pilot be the obvious master of the aircraft, with the successful outcome of the maneuver never in doubt.

(e) The Administrator or authorized check pilot certifies the competency of each pilot who passes the knowledge or flight check in the program manager's pilot records.

(f) All or portions of a required competency check may be given in an aircraft simulator or other appropriate training device, if approved by the Administrator.

§ 91.1067 Initial and recurrent flight attendant crewmember testing requirements.

No program manager or owner may use a flight attendant crewmember, nor may any person serve as a flight attendant crewmember unless, since the beginning of the 12th month before that service, the program manager has determined by appropriate initial and recurrent testing that the person is knowledgeable and competent in the following areas as appropriate to assigned duties and responsibilities—

(a) Authority of the pilot in command;

(b) Passenger handling, including procedures to be followed in handling deranged persons or other persons whose conduct might jeopardize safety;

(c) Crewmember assignments, functions, and responsibilities during ditching and evacuation of persons who may need the assistance of another person to move expeditiously to an exit in an emergency;

(d) Briefing of passengers;

(e) Location and operation of portable fire extinguishers and other items of emergency equipment;

(f) Proper use of cabin equipment and controls;

(g) Location and operation of passenger oxygen equipment;

(h) Location and operation of all normal and emergency exits, including evacuation slides and escape ropes; and

(i) Seating of persons who may need assistance of another person to move rapidly to an exit in an emergency as prescribed by the program manager's operations manual.

§ 91.1069 Flight crew: Instrument proficiency check requirements.

(a) No program manager or owner may use a pilot, nor may any person serve, as a pilot in command of an aircraft under IFR unless, since the beginning of the 6th month before that service, that pilot has passed an instrument proficiency check under this section administered by the Administrator or an authorized check pilot.

(b) No program manager or owner may use a pilot, nor may any person serve, as a second command pilot of an aircraft under IFR unless, since the beginning of the 12th month before that service, that pilot has passed an instrument proficiency check under this section administered by the Administrator or an authorized check pilot.

(c) No pilot may use any type of precision instrument approach procedure under IFR unless, since the beginning of the 6th month before that use, the pilot satisfactorily demonstrated that type of approach procedure. No pilot may use any type of nonprecision approach procedure under IFR unless, since the beginning of the 6th month before that use, the pilot has satisfactorily demonstrated either that type of approach procedure or any other two different types of nonprecision approach procedures. The instrument approach procedure or procedures must include at least one straight-in approach, one circling approach, and one missed approach. Each type of approach procedure demonstrated must be conducted to published minimums for that procedure.

(d) The instrument proficiency checks required by paragraphs (a) and (b) of this section consists of either an oral or written equipment test (or a combination) and a flight check under simulated or actual IFR conditions. The equipment test includes questions on emergency procedures, engine operation, fuel and lubrication systems, power settings, stall speeds, best engine-out speed, propeller and supercharger operations, and hydraulic, mechanical, and electrical systems, as appropriate. The flight check includes navigation by instruments, recovery from simulated emergencies, and standard instrument approaches involving navigational facilities which that pilot is to be authorized to use.

(e) Each pilot taking the instrument proficiency check must show that standard of competence required by § 91.1065(d).

(1) The instrument proficiency check must—

(i) For a pilot in command of an aircraft requiring that the PIC hold an

airline transport pilot certificate, include the procedures and maneuvers for an airline transport pilot certificate in the particular type of aircraft, if appropriate; and

(ii) For a pilot in command of a rotorcraft or a second in command of any aircraft requiring that the SIC hold a commercial pilot certificate include the procedures and maneuvers for a commercial pilot certificate with an instrument rating and, if required, for the appropriate type rating.

(2) The instrument proficiency check must be given by an authorized check pilot or by the Administrator.

(f) If the pilot is assigned to pilot only one type of aircraft, that pilot must take the instrument proficiency check required by paragraph (a) of this section in that type of aircraft.

(g) If the pilot in command is assigned to pilot more than one type of aircraft, that pilot must take the instrument proficiency check required by paragraph (a) of this section in each type of aircraft to which that pilot is assigned, in rotation, but not more than one flight check during each period described in paragraph (a) of this section.

(h) If the pilot in command is assigned to pilot both single-engine and multiengine aircraft, that pilot must initially take the instrument proficiency check required by paragraph (a) of this section in a multiengine aircraft, and each succeeding check alternately in single-engine and multiengine aircraft, but not more than one flight check during each period described in paragraph (a) of this section.

(i) All or portions of a required flight check may be given in an aircraft simulator or other appropriate training device, if approved by the Administrator.

§91.1071 Crewmember: Tests and checks, grace provisions, training to accepted standards.

(a) If a crewmember who is required to take a test or a flight check under this subpart, completes the test or flight check in the month before or after the month in which it is required, that crewmember is considered to have completed the test or check in the month in which it is required.

(b) If a pilot being checked under this subpart fails any of the required maneuvers, the person giving the check may give additional training to the pilot during the course of the check. In addition to repeating the maneuvers failed, the person giving the check may require the pilot being checked to repeat any other maneuvers that are necessary to determine the pilot's proficiency. If the pilot being checked is unable to demonstrate satisfactory performance to the person conducting the check, the program manager may not use the pilot, nor may the pilot serve, as a flight crewmember in operations under this subpart until the pilot has satisfactorily completed the check. If a pilot who demonstrates unsatisfactory performance is employed as a pilot for a certificate holder operating under part 121, 125, or 135 of this chapter, he or she must notify that certificate holder of the unsatisfactory performance.

§91.1073 Training program: General.

(a) Each program manager must have a training program and must:

(1) Establish, obtain the appropriate initial and final approval of, and provide a training program that meets this subpart and that ensures that each crewmember, including each flight attendant if the program manager uses a flight attendant crewmember, flight instructor, check pilot, and each person assigned duties for the carriage and handling of hazardous materials (as defined in 49 CFR 171.8) is adequately trained to perform these assigned duties.

(2) Provide adequate ground and flight training facilities and properly qualified ground instructors for the training required by this subpart.

(3) Provide and keep current for each aircraft type used and, if applicable, the particular variations within the aircraft type, appropriate training material, examinations, forms, instructions, and procedures for use in conducting the training and checks required by this subpart.

(4) Provide enough flight instructors, check pilots, and simulator instructors to conduct required flight training and flight checks, and simulator training courses allowed under this subpart.

(b) Whenever a crewmember who is required to take recurrent training under this subpart completes the training in the month before, or the month after, the month in which that training is required, the crewmember is considered to have completed it in the month in which it was required.

(c) Each instructor, supervisor, or check pilot who is responsible for a particular ground training subject, segment of flight training, course of training, flight check, or competence check under this subpart must certify as to the proficiency and knowledge of the crewmember, flight instructor, or check pilot concerned upon completion of that training or check. That certification must be made a part of the crewmember's record. When the certification required by this paragraph is made by an entry in a computerized recordkeeping system, the certifying instructor, supervisor, or check pilot, must be identified with that entry. However, the signature of the certifying instructor, supervisor, or check pilot is not required for computerized entries.

(d) Training subjects that apply to more than one aircraft or crewmember position and that have been satisfactorily completed during previous training while employed by the program manager for another aircraft or another crewmember position, need not be repeated during subsequent training other than recurrent training.

(e) Aircraft simulators and other training devices may be used in the program manager's training program if approved by the Administrator.

(f) Each program manager is responsible for establishing safe and efficient crew management practices for all phases of flight in program operations including crew resource management training for all crewmembers used in program operations.

(g) If an aircraft simulator has been approved by the Administrator for use in the program manager's training program, the program manager must ensure that each pilot annually completes at least one flight training session in an approved simulator for at least one program aircraft. The training session may be the flight training portion of any of the pilot training or check requirements of this subpart, including the initial, transition, upgrade, requalification, differences, or recurrent training, or the accomplishment of a competency check or instrument proficiency check. If there is no approved simulator for that aircraft type in operation, then all flight training and checking must be accomplished in the aircraft.

§ 91.1075 Training program: Special rules.

Other than the program manager, only the following are eligible under this subpart to conduct training, testing, and checking under contract or other arrangement to those persons subject to the requirements of this subpart.

(a) Another program manager operating under this subpart:

(b) A training center certificated under part 142 of this chapter to conduct training, testing, and checking required by this subpart if the training center—

(1) Holds applicable training specifications issued under part 142 of this chapter;

(2) Has facilities, training equipment, and courseware meeting the applicable requirements of part 142 of this chapter;

(3) Has approved curriculums, curriculum segments, and portions of curriculum segments applicable for use in training courses required by this subpart; and

(4) Has sufficient instructors and check pilots qualified under the applicable requirements of §§ 91.1089 through 91.1095 to conduct training, testing, and checking to persons subject to the requirements of this subpart.

(c) A part 119 certificate holder operating under part 121 or part 135 of this chapter.

(d) As authorized by the Administrator, a training center that is not certificated under part 142 of this chapter.

§ 91.1077 Training program and revision: Initial and final approval.

(a) To obtain initial and final approval of a training program, or a revision to an approved training program,

each program manager must submit to the Administrator—

(1) An outline of the proposed or revised curriculum, that provides enough information for a preliminary evaluation of the proposed training program or revision; and

(2) Additional relevant information that may be requested by the Administrator.

(b) If the proposed training program or revision complies with this subpart, the Administrator grants initial approval in writing after which the program manager may conduct the training under that program. The Administrator then evaluates the effectiveness of the training program and advises the program manager of deficiencies, if any, that must be corrected.

(c) The Administrator grants final approval of the proposed training program or revision if the program manager shows that the training conducted under the initial approval in paragraph (b) of this section ensures that each person who successfully completes the training is adequately trained to perform that person's assigned duties.

(d) Whenever the Administrator finds that revisions are necessary for the continued adequacy of a training program that has been granted final approval, the program manager must, after notification by the Administrator, make any changes in the program that are found necessary by the Administrator. Within 30 days after the program manager receives the notice, it may file a petition to reconsider the notice with the Administrator. The filing of a petition to reconsider stays the notice pending a decision by the Administrator. However, if the Administrator finds that there is an emergency that requires immediate action in the interest of safety, the Administrator may, upon a statement of the reasons, require a change effective without stay.

§ 91.1079 Training program: Curriculum.

(a) Each program manager must prepare and keep current a written training program curriculum for each type of aircraft for each crewmember required for that type aircraft. The curriculum must include ground and flight training required by this subpart.

(b) Each training program curriculum must include the following:

(1) A list of principal ground training subjects, including emergency training subjects, that are provided.

(2) A list of all the training devices, mock-ups, systems trainers, procedures trainers, or other training aids that the program manager will use.

(3) Detailed descriptions or pictorial displays of the approved normal, abnormal, and emergency maneuvers, procedures and functions that will be performed during each flight training phase or flight check, indicating those maneuvers, procedures and functions that are to be performed during the inflight portions of flight training and flight checks.

§ 91.1081 Crewmember training requirements.

(a) Each program manager must include in its training program the following initial and transition ground training as appropriate to the particular assignment of the crewmember:

(1) Basic indoctrination ground training for newly hired crewmembers including instruction in at least the—

(i) Duties and responsibilities of crewmembers as applicable;

(ii) Appropriate provisions of this chapter;

(iii) Contents of the program manager's management specifications (not required for flight attendants); and

(iv) Appropriate portions of the program manager's operating manual.

(2) The initial and transition ground training in §§ 91.1101 and 91.1105, as applicable.

(3) Emergency training in § 91.1083.

(b) Each training program must provide the initial and transition flight training in § 91.1103, as applicable.

(c) Each training program must provide recurrent ground and flight training as provided in § 91.1107.

(d) Upgrade training in §§ 91.1101 and 91.1103 for a particular type aircraft may be included in the training program for crewmembers who have qualified and served as second in command on that aircraft.

(e) In addition to initial, transition, upgrade and recurrent training, each

training program must provide ground and flight training, instruction, and practice necessary to ensure that each crewmember—

(1) Remains adequately trained and currently proficient for each aircraft, crewmember position, and type of operation in which the crewmember serves; and

(2) Qualifies in new equipment, facilities, procedures, and techniques, including modifications to aircraft.

§ 91.1083 Crewmember emergency training.

(a) Each training program must provide emergency training under this section for each aircraft type, model, and configuration, each crewmember, and each kind of operation conducted, as appropriate for each crewmember and the program manager.

(b) Emergency training must provide the following:

(1) Instruction in emergency assignments and procedures, including coordination among crewmembers.

(2) Individual instruction in the location, function, and operation of emergency equipment including—

(i) Equipment used in ditching and evacuation;

(ii) First aid equipment and its proper use; and

(iii) Portable fire extinguishers, with emphasis on the type of extinguisher to be used on different classes of fires.

(3) Instruction in the handling of emergency situations including—

(i) Rapid decompression;

(ii) Fire in flight or on the surface and smoke control procedures with emphasis on electrical equipment and related circuit breakers found in cabin areas;

(iii) Ditching and evacuation;

(iv) Illness, injury, or other abnormal situations involving passengers or crewmembers; and

(v) Hijacking and other unusual situations.

(4) Review and discussion of previous aircraft accidents and incidents involving actual emergency situations.

(c) Each crewmember must perform at least the following emergency drills, using the proper emergency equipment and procedures, unless the Administrator finds that, for a particular drill, the crewmember can be adequately trained by demonstration:

(1) Ditching, if applicable.

(2) Emergency evacuation.

(3) Fire extinguishing and smoke control.

(4) Operation and use of emergency exits, including deployment and use of evacuation slides, if applicable.

(5) Use of crew and passenger oxygen.

(6) Removal of life rafts from the aircraft, inflation of the life rafts, use of lifelines, and boarding of passengers and crew, if applicable.

(7) Donning and inflation of life vests and the use of other individual flotation devices, if applicable.

(d) Crewmembers who serve in operations above 25,000 feet must receive instruction in the following:

(1) Respiration.

(2) Hypoxia.

(3) Duration of consciousness without supplemental oxygen at altitude.

(4) Gas expansion.

(5) Gas bubble formation.

(6) Physical phenomena and incidents of decompression.

§ 91.1085 Hazardous materials recognition training.

No program manager may use any person to perform, and no person may perform, any assigned duties and responsibilities for the handling or carriage of hazardous materials (as defined in 49 CFR 171.8), unless that person has received training in the recognition of hazardous materials.

§ 91.1087 Approval of aircraft simulators and other training devices.

(a) Training courses using aircraft simulators and other training devices may be included in the program manager's training program if approved by the Administrator.

(b) Each aircraft simulator and other training device that is used in a training course or in checks required under this subpart must meet the following requirements:

(1) It must be specifically approved for—

(i) The program manager; and

(ii) The particular maneuver, procedure, or crewmember function involved.

(2) It must maintain the performance, functional, and other characteristics that are required for approval.

(3) Additionally, for aircraft simulators, it must be—

(i) Approved for the type aircraft and, if applicable, the particular variation within type for which the training or check is being conducted; and

(ii) Modified to conform with any modification to the aircraft being simulated that changes the performance, functional, or other characteristics required for approval.

(c) A particular aircraft simulator or other training device may be used by more than one program manager.

(d) In granting initial and final approval of training programs or revisions to them, the Administrator considers the training devices, methods, and procedures listed in the program manager's curriculum under § 91.1079.

§ 91.1089 Qualifications: Check pilots (aircraft) and check pilots (simulator).

(a) For the purposes of this section and § 91.1093:

(1) A check pilot (aircraft) is a person who is qualified to conduct flight checks in an aircraft, in a flight simulator, or in a flight training device for a particular type aircraft.

(2) A check pilot (simulator) is a person who is qualified to conduct flight checks, but only in a flight simulator, in a flight training device, or both, for a particular type aircraft.

(3) Check pilots (aircraft) and check pilots (simulator) are those check pilots who perform the functions described in § 91.1073(a)(4) and (c).

(b) No program manager may use a person, nor may any person serve as a check pilot (aircraft) in a training program established under this subpart unless, with respect to the aircraft type involved, that person—

(1) Holds the pilot certificates and ratings required to serve as a pilot in command in operations under this subpart;

(2) Has satisfactorily completed the training phases for the aircraft, including recurrent training, that are required to serve as a pilot in command in operations under this subpart;

(3) Has satisfactorily completed the proficiency or competency checks that are required to serve as a pilot in command in operations under this subpart;

(4) Has satisfactorily completed the applicable training requirements of § 91.1093;

(5) Holds at least a Class III medical certificate unless serving as a required crewmember, in which case holds a Class I or Class II medical certificate as appropriate; and

(6) Has been approved by the Administrator for the check pilot duties involved.

(c) No program manager may use a person, nor may any person serve as a check pilot (simulator) in a training program established under this subpart unless, with respect to the aircraft type involved, that person meets the provisions of paragraph (b) of this section, or—

(1) Holds the applicable pilot certificates and ratings, except medical certificate, required to serve as a pilot in command in operations under this subpart;

(2) Has satisfactorily completed the appropriate training phases for the aircraft, including recurrent training, that are required to serve as a pilot in command in operations under this subpart;

(3) Has satisfactorily completed the appropriate proficiency or competency checks that are required to serve as a pilot in command in operations under this subpart;

(4) Has satisfactorily completed the applicable training requirements of § 91.1093; and

(5) Has been approved by the Administrator for the check pilot (simulator) duties involved.

(d) Completion of the requirements in paragraphs (b)(2), (3), and (4) or (c)(2), (3), and (4) of this section, as applicable, must be entered in the individual's training record maintained by the program manager.

(e) A check pilot who does not hold an appropriate medical certificate may function as a check pilot (simulator), but may not serve as a flightcrew member in operations under this subpart.

(f) A check pilot (simulator) must accomplish the following—

(1) Fly at least two flight segments as a required crewmember for the type, class, or category aircraft involved within the 12-month period preceding the performance of any check pilot duty in a flight simulator; or

(2) Before performing any check pilot duty in a flight simulator, satisfactorily complete an approved line-observation program within the period prescribed by that program.

(g) The flight segments or line-observation program required in paragraph (f) of this section are considered to be completed in the month required if completed in the month before or the month after the month in which they are due.

§ 91.1091 Qualifications: Flight instructors (aircraft) and flight instructors (simulator).

(a) For the purposes of this section and § 91.1095:

(1) A flight instructor (aircraft) is a person who is qualified to instruct in an aircraft, in a flight simulator, or in a flight training device for a particular type, class, or category aircraft.

(2) A flight instructor (simulator) is a person who is qualified to instruct in a flight simulator, in a flight training device, or in both, for a particular type, class, or category aircraft.

(3) Flight instructors (aircraft) and flight instructors (simulator) are those instructors who perform the functions described in § 91.1073(a)(4) and (c).

(b) No program manager may use a person, nor may any person serve as a flight instructor (aircraft) in a training program established under this subpart unless, with respect to the type, class, or category aircraft involved, that person—

(1) Holds the pilot certificates and ratings required to serve as a pilot in command in operations under this subpart or part 121 or 135 of this chapter;

(2) Has satisfactorily completed the training phases for the aircraft, including recurrent training, that are required to serve as a pilot in command in operations under this subpart;

(3) Has satisfactorily completed the proficiency or competency checks that are required to serve as a pilot in command in operations under this subpart;

(4) Has satisfactorily completed the applicable training requirements of § 91.1095; and

(5) Holds at least a Class III medical certificate.

(c) No program manager may use a person, nor may any person serve as a flight instructor (simulator) in a training program established under this subpart, unless, with respect to the type, class, or category aircraft involved, that person meets the provisions of paragraph (b) of this section, or—

(1) Holds the pilot certificates and ratings, except medical certificate, required to serve as a pilot in command in operations under this subpart or part 121 or 135 of this chapter;

(2) Has satisfactorily completed the appropriate training phases for the aircraft, including recurrent training, that are required to serve as a pilot in command in operations under this subpart;

(3) Has satisfactorily completed the appropriate proficiency or competency checks that are required to serve as a pilot in command in operations under this subpart; and

(4) Has satisfactorily completed the applicable training requirements of § 91.1095.

(d) Completion of the requirements in paragraphs (b)(2), (3), and (4) or (c)(2), (3), and (4) of this section, as applicable, must be entered in the individual's training record maintained by the program manager.

(e) A pilot who does not hold a medical certificate may function as a flight instructor in an aircraft if functioning as a non-required crewmember, but may not serve as a flightcrew member in operations under this subpart.

(f) A flight instructor (simulator) must accomplish the following—

(1) Fly at least two flight segments as a required crewmember for the type, class, or category aircraft involved within the 12-month period preceding the performance of any flight instructor duty in a flight simulator; or

(2) Satisfactorily complete an approved line-observation program within the period prescribed by that program and that must precede the performance of any check pilot duty in a flight simulator.

(g) The flight segments or line-observation program required in paragraph (f) of this section are considered completed in the month required if completed in the month before, or in the month after, the month in which they are due.

§ 91.1093 Initial and transition training and checking: Check pilots (aircraft), check pilots (simulator).

(a) No program manager may use a person nor may any person serve as a check pilot unless—

(1) That person has satisfactorily completed initial or transition check pilot training; and

(2) Within the preceding 24 months, that person satisfactorily conducts a proficiency or competency check under the observation of an FAA inspector or an aircrew designated examiner employed by the program manager. The observation check may be accomplished in part or in full in an aircraft, in a flight simulator, or in a flight training device.

(b) The observation check required by paragraph (a)(2) of this section is considered to have been completed in the month required if completed in the month before or the month after the month in which it is due.

(c) The initial ground training for check pilots must include the following:

(1) Check pilot duties, functions, and responsibilities.

(2) The applicable provisions of the Code of Federal Regulations and the program manager's policies and procedures.

(3) The applicable methods, procedures, and techniques for conducting the required checks.

(4) Proper evaluation of student performance including the detection of—

(i) Improper and insufficient training; and

(ii) Personal characteristics of an applicant that could adversely affect safety.

(5) The corrective action in the case of unsatisfactory checks.

(6) The approved methods, procedures, and limitations for performing the required normal, abnormal, and emergency procedures in the aircraft.

(d) The transition ground training for a check pilot must include the approved methods, procedures, and limitations for performing the required normal, abnormal, and emergency procedures applicable to the aircraft to which the check pilot is in transition.

(e) The initial and transition flight training for a check pilot (aircraft) must include the following—

(1) The safety measures for emergency situations that are likely to develop during a check;

(2) The potential results of improper, untimely, or nonexecution of safety measures during a check;

(3) Training and practice in conducting flight checks from the left and right pilot seats in the required normal, abnormal, and emergency procedures to ensure competence to conduct the pilot flight checks required by this subpart; and

(4) The safety measures to be taken from either pilot seat for emergency situations that are likely to develop during checking.

(f) The requirements of paragraph (e) of this section may be accomplished in full or in part in flight, in a flight simulator, or in a flight training device, as appropriate.

(g) The initial and transition flight training for a check pilot (simulator) must include the following:

(1) Training and practice in conducting flight checks in the required normal, abnormal, and emergency procedures to ensure competence to conduct the flight checks required by this subpart. This training and practice must be accomplished in a flight simulator or in a flight training device.

(2) Training in the operation of flight simulators, flight training devices, or both, to ensure competence to conduct the flight checks required by this subpart.

§ 91.1095 Initial and transition training and checking: Flight instructors (aircraft), flight instructors (simulator).

(a) No program manager may use a person nor may any person serve as a flight instructor unless—

(1) That person has satisfactorily completed initial or transition flight instructor training; and

(2) Within the preceding 24 months, that person satisfactorily conducts instruction under the observation of an FAA inspector, a program manager check pilot, or an aircrew designated examiner employed by the program manager. The observation check may be accomplished in part or in full in an aircraft, in a flight simulator, or in a flight training device.

(b) The observation check required by paragraph (a)(2) of this section is considered to have been completed in the month required if completed in the month before, or the month after, the month in which it is due.

(c) The initial ground training for flight instructors must include the following:

(1) Flight instructor duties, functions, and responsibilities.

(2) The applicable Code of Federal Regulations and the program manager's policies and procedures.

(3) The applicable methods, procedures, and techniques for conducting flight instruction.

(4) Proper evaluation of student performance including the detection of—

(i) Improper and insufficient training; and

(ii) Personal characteristics of an applicant that could adversely affect safety.

(5) The corrective action in the case of unsatisfactory training progress.

(6) The approved methods, procedures, and limitations for performing the required normal, abnormal, and emergency procedures in the aircraft.

(7) Except for holders of a flight instructor certificate—

(i) The fundamental principles of the teaching-learning process;

(ii) Teaching methods and procedures; and

(iii) The instructor-student relationship.

(d) The transition ground training for flight instructors must include the approved methods, procedures, and limitations for performing the required normal, abnormal, and emergency procedures applicable to the type, class, or category aircraft to which the flight instructor is in transition.

(e) The initial and transition flight training for flight instructors (aircraft) must include the following—

(1) The safety measures for emergency situations that are likely to develop during instruction;

(2) The potential results of improper or untimely safety measures during instruction;

(3) Training and practice from the left and right pilot seats in the required normal, abnormal, and emergency maneuvers to ensure competence to conduct the flight instruction required by this subpart; and

(4) The safety measures to be taken from either the left or right pilot seat for emergency situations that are likely to develop during instruction.

(f) The requirements of paragraph (e) of this section may be accomplished in full or in part in flight, in a flight simulator, or in a flight training device, as appropriate.

(g) The initial and transition flight training for a flight instructor (simulator) must include the following:

(1) Training and practice in the required normal, abnormal, and emergency procedures to ensure competence to conduct the flight instruction required by this subpart. These maneuvers and procedures must be accomplished in full or in part in a flight simulator or in a flight training device.

(2) Training in the operation of flight simulators, flight training devices, or both, to ensure competence to conduct the flight instruction required by this subpart.

§ 91.1097 Pilot and flight attendant crewmember training programs.

(a) Each program manager must establish and maintain an approved pilot training program, and each program manager who uses a flight attendant crewmember must establish and maintain an approved flight attendant training program, that is appropriate to the operations to which each pilot and flight attendant is to be assigned, and will ensure that they are adequately trained to meet the applicable knowledge and practical testing requirements of §§ 91.1065 through 91.1071.

(b) Each program manager required to have a training program by paragraph (a) of this section must include in that program ground and flight training curriculums for—

(1) Initial training;

(2) Transition training;
(3) Upgrade training;
(4) Differences training;
(5) Recurrent training; and
(6) Requalification training.

(c) Each program manager must provide current and appropriate study materials for use by each required pilot and flight attendant.

(d) The program manager must furnish copies of the pilot and flight attendant crewmember training program, and all changes and additions, to the assigned representative of the Administrator. If the program manager uses training facilities of other persons, a copy of those training programs or appropriate portions used for those facilities must also be furnished. Curricula that follow FAA published curricula may be cited by reference in the copy of the training program furnished to the representative of the Administrator and need not be furnished with the program.

§91.1099 Crewmember initial and recurrent training requirements.

No program manager may use a person, nor may any person serve, as a crewmember in operations under this subpart unless that crewmember has completed the appropriate initial or recurrent training phase of the training program appropriate to the type of operation in which the crewmember is to serve since the beginning of the 12th month before that service.

§91.1101 Pilots: Initial, transition, and upgrade ground training.

Initial, transition, and upgrade ground training for pilots must include instruction in at least the following, as applicable to their duties:

(a) General subjects—

(1) The program manager's flight locating procedures;

(2) Principles and methods for determining weight and balance, and runway limitations for takeoff and landing;

(3) Enough meteorology to ensure a practical knowledge of weather phenomena, including the principles of frontal systems, icing, fog, thunderstorms, windshear and, if appropriate, high altitude weather situations;

(4) Air traffic control systems, procedures, and phraseology;

(5) Navigation and the use of navigational aids, including instrument approach procedures;

(6) Normal and emergency communication procedures;

(7) Visual cues before and during descent below Decision Altitude or MDA; and

(8) Other instructions necessary to ensure the pilot's competence.

(b) For each aircraft type—

(1) A general description;

(2) Performance characteristics;

(3) Engines and propellers;

(4) Major components;

(5) Major aircraft systems (that is, flight controls, electrical, and hydraulic), other systems, as appropriate, principles of normal, abnormal, and emergency operations, appropriate procedures and limitations;

(6) Knowledge and procedures for—

(i) Recognizing and avoiding severe weather situations;

(ii) Escaping from severe weather situations, in case of inadvertent encounters, including low-altitude windshear (except that rotorcraft pilots are not required to be trained in escaping from low-altitude windshear);

(iii) Operating in or near thunderstorms (including best penetration altitudes), turbulent air (including clear air turbulence), inflight icing, hail, and other potentially hazardous meteorological conditions; and

(iv) Operating airplanes during ground icing conditions, (that is, any time conditions are such that frost, ice, or snow may reasonably be expected to adhere to the aircraft), if the program manager expects to authorize takeoffs in ground icing conditions, including:

(A) The use of holdover times when using deicing/anti-icing fluids;

(B) Airplane deicing/anti-icing procedures, including inspection and check procedures and responsibilities;

(C) Communications;

(D) Airplane surface contamination (that is, adherence of frost, ice, or snow) and critical area identification, and knowledge of how contamination adversely affects airplane performance and flight characteristics;

(E) Types and characteristics of deicing/anti-icing fluids, if used by the program manager;

(F) Cold weather preflight inspection procedures;

(G) Techniques for recognizing contamination on the airplane;

(7) Operating limitations;

(8) Fuel consumption and cruise control;

(9) Flight planning;

(10) Each normal and emergency procedure; and

(11) The approved Aircraft Flight Manual or equivalent.

§ 91.1103 Pilots: Initial, transition, upgrade, requalification, and differences flight training.

(a) Initial, transition, upgrade, requalification, and differences training for pilots must include flight and practice in each of the maneuvers and procedures contained in each of the curriculums that are a part of the approved training program.

(b) The maneuvers and procedures required by paragraph (a) of this section must be performed in flight, except to the extent that certain maneuvers and procedures may be performed in an aircraft simulator, or an appropriate training device, as allowed by this subpart.

(c) If the program manager's approved training program includes a course of training using an aircraft simulator or other training device, each pilot must successfully complete—

(1) Training and practice in the simulator or training device in at least the maneuvers and procedures in this subpart that are capable of being performed in the aircraft simulator or training device; and

(2) A flight check in the aircraft or a check in the simulator or training device to the level of proficiency of a pilot in command or second in command, as applicable, in at least the maneuvers and procedures that are capable of being performed in an aircraft simulator or training device.

§ 91.1105 Flight attendants: Initial and transition ground training.

Initial and transition ground training for flight attendants must include instruction in at least the following—

(a) General subjects—

(1) The authority of the pilot in command; and

(2) Passenger handling, including procedures to be followed in handling deranged persons or other persons whose conduct might jeopardize safety.

(b) For each aircraft type—

(1) A general description of the aircraft emphasizing physical characteristics that may have a bearing on ditching, evacuation, and inflight emergency procedures and on other related duties;

(2) The use of both the public address system and the means of communicating with other flight crewmembers, including emergency means in the case of attempted hijacking or other unusual situations; and

(3) Proper use of electrical galley equipment and the controls for cabin heat and ventilation.

§ 91.1107 Recurrent training.

(a) Each program manager must ensure that each crewmember receives recurrent training and is adequately trained and currently proficient for the type aircraft and crewmember position involved.

(b) Recurrent ground training for crewmembers must include at least the following:

(1) A quiz or other review to determine the crewmember's knowledge of the aircraft and crewmember position involved.

(2) Instruction as necessary in the subjects required for initial ground training by this subpart, as appropriate, including low-altitude windshear training and training on operating during ground icing conditions, as prescribed in § 91.1097 and described in § 91.1101, and emergency training.

(c) Recurrent flight training for pilots must include, at least, flight training in the maneuvers or procedures in this subpart, except that satisfactory completion of the check required by § 91.1065 within the preceding 12 months may be substituted for recurrent flight training.

§91.1109 Aircraft maintenance: Inspection program.

Each program manager must establish an aircraft inspection program for each make and model program aircraft and ensure each aircraft is inspected in accordance with that inspection program.

(a) The inspection program must be in writing and include at least the following information:

(1) Instructions and procedures for the conduct of inspections for the particular make and model aircraft, including necessary tests and checks. The instructions and procedures must set forth in detail the parts and areas of the airframe, engines, propellers, rotors, and appliances, including survival and emergency equipment required to be inspected.

(2) A schedule for performing the inspections that must be accomplished under the inspection program expressed in terms of the time in service, calendar time, number of system operations, or any combination thereof.

(3) The name and address of the person responsible for scheduling the inspections required by the inspection program. A copy of the inspection program must be made available to the person performing inspections on the aircraft and, upon request, to the Administrator.

(b) Each person desiring to establish or change an approved inspection program under this section must submit the inspection program for approval to the Flight Standards District Office that issued the program manager's management specifications. The inspection program must be derived from one of the following programs:

(1) An inspection program currently recommended by the manufacturer of the aircraft, aircraft engines, propellers, appliances, and survival and emergency equipment;

(2) An inspection program that is part of a continuous airworthiness maintenance program currently in use by a person holding an air carrier or operating certificate issued under part 119 of this chapter and operating that make and model aircraft under part 121 or 135 of this chapter;

(3) An aircraft inspection program approved under §135.419 of this chapter and currently in use under part 135 of this chapter by a person holding a certificate issued under part 119 of this chapter; or

(4) An airplane inspection program approved under §125.247 of this chapter and currently in use under part 125 of this chapter.

(5) An inspection program that is part of the program manager's continuous airworthiness maintenance program under §§91.1411 through 91.1443.

(c) The Administrator may require revision of the inspection program approved under this section in accordance with the provisions of §91.415.

§91.1111 Maintenance training.

The program manager must ensure that all employees who are responsible for maintenance related to program aircraft undergo appropriate initial and annual recurrent training and are competent to perform those duties.

§91.1113 Maintenance recordkeeping.

Each fractional ownership program manager must keep (using the system specified in the manual required in §91.1025) the records specified in §91.417(a) for the periods specified in §91.417(b).

§91.1115 Inoperable instruments and equipment.

(a) No person may take off an aircraft with inoperable instruments or equipment installed unless the following conditions are met:

(1) An approved Minimum Equipment List exists for that aircraft.

(2) The program manager has been issued management specifications authorizing operations in accordance with an approved Minimum Equipment List. The flight crew must have direct access at all times prior to flight to all of the information contained in the approved Minimum Equipment List through printed or other means approved by the Administrator in the program manager's management specifications. An approved Minimum Equipment List, as authorized by the management specifications, constitutes an approved change to the type design without requiring recertification.

(3) The approved Minimum Equipment List must:

(i) Be prepared in accordance with the limitations specified in paragraph (b) of this section.

(ii) Provide for the operation of the aircraft with certain instruments and equipment in an inoperable condition.

(4) Records identifying the inoperable instruments and equipment and the information required by (a)(3)(ii) of this section must be available to the pilot.

(5) The aircraft is operated under all applicable conditions and limitations contained in the Minimum Equipment List and the management specifications authorizing use of the Minimum Equipment List.

(b) The following instruments and equipment may not be included in the Minimum Equipment List:

(1) Instruments and equipment that are either specifically or otherwise required by the airworthiness requirements under which the airplane is type certificated and that are essential for safe operations under all operating conditions.

(2) Instruments and equipment required by an airworthiness directive to be in operable condition unless the airworthiness directive provides otherwise.

(3) Instruments and equipment required for specific operations by this part.

(c) Notwithstanding paragraphs (b)(1) and (b)(3) of this section, an aircraft with inoperable instruments or equipment may be operated under a special flight permit under §§ 21.197 and 21.199 of this chapter.

(d) A person authorized to use an approved Minimum Equipment List issued for a specific aircraft under part 121, 125, or 135 of this chapter must use that Minimum Equipment List to comply with this section.

§ 91.1411 Continuous airworthiness maintenance program use by fractional ownership program manager.

Fractional ownership program aircraft may be maintained under a continuous airworthiness maintenance program (CAMP) under §§ 91.1413 through 91.1443. Any program manager who elects to maintain the program aircraft using a continuous airworthiness maintenance program must comply with §§ 91.1413 through 91.1443.

§ 91.1413 CAMP: Responsibility for airworthiness.

(a) For aircraft maintained in accordance with a Continuous Airworthiness Maintenance Program, each program manager is primarily responsible for the following:

(1) Maintaining the airworthiness of the program aircraft, including airframes, aircraft engines, propellers, rotors, appliances, and parts.

(2) Maintaining its aircraft in accordance with the requirements of this chapter.

(3) Repairing defects that occur between regularly scheduled maintenance required under part 43 of this chapter.

(b) Each program manager who maintains program aircraft under a CAMP must—

(1) Employ a Director of Maintenance or equivalent position. The Director of Maintenance must be a certificated mechanic with airframe and powerplant ratings who has responsibility for the maintenance program on all program aircraft maintained under a continuous airworthiness maintenance program. This person cannot also act as Chief Inspector.

(2) Employ a Chief Inspector or equivalent position. The Chief Inspector must be a certificated mechanic with airframe and powerplant ratings who has overall responsibility for inspection aspects of the CAMP. This person cannot also act as Director of Maintenance.

(3) Have the personnel to perform the maintenance of program aircraft, including airframes, aircraft engines, propellers, rotors, appliances, emergency equipment and parts, under its manual and this chapter; or make arrangements with another person for the performance of maintenance. However, the program manager must ensure that any maintenance, preventive maintenance, or alteration that is performed by another person is performed under the program manager's operating manual and this chapter.

§91.1415 CAMP: Mechanical reliability reports.

(a) Each program manager who maintains program aircraft under a CAMP must report the occurrence or detection of each failure, malfunction, or defect in an aircraft concerning—

(1) Fires during flight and whether the related fire-warning system functioned properly;

(2) Fires during flight not protected by related fire-warning system;

(3) False fire-warning during flight;

(4) An exhaust system that causes damage during flight to the engine, adjacent structure, equipment, or components;

(5) An aircraft component that causes accumulation or circulation of smoke, vapor, or toxic or noxious fumes in the crew compartment or passenger cabin during flight;

(6) Engine shutdown during flight because of flameout;

(7) Engine shutdown during flight when external damage to the engine or aircraft structure occurs;

(8) Engine shutdown during flight because of foreign object ingestion or icing;

(9) Shutdown of more than one engine during flight;

(10) A propeller feathering system or ability of the system to control overspeed during flight;

(11) A fuel or fuel-dumping system that affects fuel flow or causes hazardous leakage during flight;

(12) An unwanted landing gear extension or retraction or opening or closing of landing gear doors during flight;

(13) Brake system components that result in loss of brake actuating force when the aircraft is in motion on the ground;

(14) Aircraft structure that requires major repair;

(15) Cracks, permanent deformation, or corrosion of aircraft structures, if more than the maximum acceptable to the manufacturer or the FAA; and

(16) Aircraft components or systems that result in taking emergency actions during flight (except action to shut down an engine).

(b) For the purpose of this section, *during flight* means the period from the moment the aircraft leaves the surface of the earth on takeoff until it touches down on landing.

(c) In addition to the reports required by paragraph (a) of this section, each program manager must report any other failure, malfunction, or defect in an aircraft that occurs or is detected at any time if, in the manager's opinion, the failure, malfunction, or defect has endangered or may endanger the safe operation of the aircraft.

(d) Each program manager must send each report required by this section, in writing, covering each 24-hour period beginning at 0900 hours local time of each day and ending at 0900 hours local time on the next day to the Flight Standards District Office that issued the program manager's management specifications. Each report of occurrences during a 24-hour period must be mailed or transmitted to that office within the next 72 hours. However, a report that is due on Saturday or Sunday may be mailed or transmitted on the following Monday and one that is due on a holiday may be mailed or transmitted on the next workday. For aircraft operated in areas where mail is not collected, reports may be mailed or transmitted within 72 hours after the aircraft returns to a point where the mail is collected.

(e) The program manager must transmit the reports required by this section on a form and in a manner prescribed by the Administrator, and must include as much of the following as is available:

(1) The type and identification number of the aircraft.

(2) The name of the program manager.

(3) The date.

(4) The nature of the failure, malfunction, or defect.

(5) Identification of the part and system involved, including available information pertaining to type designation of the major component and time since last overhaul, if known.

(6) Apparent cause of the failure, malfunction or defect (for example, wear, crack, design deficiency, or personnel error).

(7) Other pertinent information necessary for more complete identification, determination of seriousness, or corrective action.

(f) A program manager that is also the holder of a type certificate (including a supplemental type certificate), a Parts Manufacturer Approval, or a Technical Standard Order Authorization, or that is the licensee of a type certificate need not report a failure, malfunction, or defect under this section if the failure, malfunction, or defect has been reported by it under § 21.3 of this chapter or under the accident reporting provisions of part 830 of the regulations of the National Transportation Safety Board.

(g) No person may withhold a report required by this section even when not all information required by this section is available.

(h) When the program manager receives additional information, including information from the manufacturer or other agency, concerning a report required by this section, the program manager must expeditiously submit it as a supplement to the first report and reference the date and place of submission of the first report.

§ 91.1417 CAMP: Mechanical interruption summary report.

Each program manager who maintains program aircraft under a CAMP must mail or deliver, before the end of the 10th day of the following month, a summary report of the following occurrences in multiengine aircraft for the preceding month to the Flight Standards District Office that issued the management specifications:

(a) Each interruption to a flight, unscheduled change of aircraft en route, or unscheduled stop or diversion from a route, caused by known or suspected mechanical difficulties or malfunctions that are not required to be reported under § 91.1415.

(b) The number of propeller featherings in flight, listed by type of propeller and engine and aircraft on which it was installed. Propeller featherings for training, demonstration, or flight check purposes need not be reported.

§ 91.1423 CAMP: Maintenance organization.

(a) Each program manager who maintains program aircraft under a CAMP that has its personnel perform any of its maintenance (other than required inspections), preventive maintenance, or alterations, and each person with whom it arranges for the performance of that work, must have an organization adequate to perform the work.

(b) Each program manager who has personnel perform any inspections required by the program manager's manual under § 91.1427(b) (2) or (3), (in this subpart referred to as required inspections), and each person with whom the program manager arranges for the performance of that work, must have an organization adequate to perform that work.

(c) Each person performing required inspections in addition to other maintenance, preventive maintenance, or alterations, must organize the performance of those functions so as to separate the required inspection functions from the other maintenance, preventive maintenance, or alteration functions. The separation must be below the level of administrative control at which overall responsibility for the required inspection functions and other maintenance, preventive maintenance, or alterations is exercised.

§ 91.1425 CAMP: Maintenance, preventive maintenance, and alteration programs.

Each program manager who maintains program aircraft under a CAMP must have an inspection program and a program covering other maintenance, preventive maintenance, or alterations that ensures that—

(a) Maintenance, preventive maintenance, or alterations performed by its personnel, or by other persons, are performed under the program manager's manual;

(b) Competent personnel and adequate facilities and equipment are provided for the proper performance of maintenance, preventive maintenance, or alterations; and

(c) Each aircraft released to service is airworthy and has been properly maintained for operation under this part.

§ 91.1427 CAMP: Manual requirements.

(a) Each program manager who maintains program aircraft under a CAMP must put in the operating manual the

chart or description of the program manager's organization required by §91.1423 and a list of persons with whom it has arranged for the performance of any of its required inspections, and other maintenance, preventive maintenance, or alterations, including a general description of that work.

(b) Each program manager must put in the operating manual the programs required by §91.1425 that must be followed in performing maintenance, preventive maintenance, or alterations of that program manager's aircraft, including airframes, aircraft engines, propellers, rotors, appliances, emergency equipment, and parts, and must include at least the following:

(1) The method of performing routine and nonroutine maintenance (other than required inspections), preventive maintenance, or alterations.

(2) A designation of the items of maintenance and alteration that must be inspected (required inspections) including at least those that could result in a failure, malfunction, or defect endangering the safe operation of the aircraft, if not performed properly or if improper parts or materials are used.

(3) The method of performing required inspections and a designation by occupational title of personnel authorized to perform each required inspection.

(4) Procedures for the reinspection of work performed under previous required inspection findings (buy-back procedures).

(5) Procedures, standards, and limits necessary for required inspections and acceptance or rejection of the items required to be inspected and for periodic inspection and calibration of precision tools, measuring devices, and test equipment.

(6) Procedures to ensure that all required inspections are performed.

(7) Instructions to prevent any person who performs any item of work from performing any required inspection of that work.

(8) Instructions and procedures to prevent any decision of an inspector regarding any required inspection from being countermanded by persons other than supervisory personnel of the inspection unit, or a person at the level of administrative control that has overall responsibility for the management of both the required inspection functions and the other maintenance, preventive maintenance, or alterations functions.

(9) Procedures to ensure that maintenance (including required inspections), preventive maintenance, or alterations that are not completed because of work interruptions are properly completed before the aircraft is released to service.

(c) Each program manager must put in the manual a suitable system (which may include an electronic or coded system) that provides for the retention of the following information—

(1) A description (or reference to data acceptable to the Administrator) of the work performed;

(2) The name of the person performing the work if the work is performed by a person outside the organization of the program manager; and

(3) The name or other positive identification of the individual approving the work.

(d) For the purposes of this part, the program manager must prepare that part of its manual containing maintenance information and instructions, in whole or in part, in a format acceptable to the Administrator, that is retrievable in the English language.

§91.1429 CAMP: Required inspection personnel.

(a) No person who maintains an aircraft under a CAMP may use any person to perform required inspections unless the person performing the inspection is appropriately certificated, properly trained, qualified, and authorized to do so.

(b) No person may allow any person to perform a required inspection unless, at the time the work was performed, the person performing that inspection is under the supervision and control of the chief inspector.

(c) No person may perform a required inspection if that person performed the item of work required to be inspected.

(d) Each program manager must maintain, or must ensure that each person with whom it arranges to perform required inspections maintains, a current listing of persons who have been trained, qualified, and authorized

to conduct required inspections. The persons must be identified by name, occupational title, and the inspections that they are authorized to perform. The program manager (or person with whom it arranges to perform its required inspections) must give written information to each person so authorized, describing the extent of that person's responsibilities, authorities, and inspectional limitations. The list must be made available for inspection by the Administrator upon request.

§ 91.1431 CAMP: Continuing analysis and surveillance.

(a) Each program manager who maintains program aircraft under a CAMP must establish and maintain a system for the continuing analysis and surveillance of the performance and effectiveness of its inspection program and the program covering other maintenance, preventive maintenance, and alterations and for the correction of any deficiency in those programs, regardless of whether those programs are carried out by employees of the program manager or by another person.

(b) Whenever the Administrator finds that the programs described in paragraph (a) of this section does not contain adequate procedures and standards to meet this part, the program manager must, after notification by the Administrator, make changes in those programs requested by the Administrator.

(c) A program manager may petition the Administrator to reconsider the notice to make a change in a program. The petition must be filed with the Director, Flight Standards Service, within 30 days after the program manager receives the notice. Except in the case of an emergency requiring immediate action in the interest of safety, the filing of the petition stays the notice pending a decision by the Administrator.

§ 91.1433 CAMP: Maintenance and preventive maintenance training program.

Each program manager who maintains program aircraft under a CAMP or a person performing maintenance or preventive maintenance functions for it must have a training program to ensure that each person (including inspection personnel) who determines the adequacy of work done is fully informed about procedures and techniques and new equipment in use and is competent to perform that person's duties.

§ 91.1435 CAMP: Certificate requirements.

(a) Except for maintenance, preventive maintenance, alterations, and required inspections performed by repair stations located outside the United States certificated under the provisions of part 145 of this chapter, each person who is directly in charge of maintenance, preventive maintenance, or alterations for a CAMP, and each person performing required inspections for a CAMP must hold an appropriate airman certificate.

(b) For the purpose of this section, a person ''directly in charge'' is each person assigned to a position in which that person is responsible for the work of a shop or station that performs maintenance, preventive maintenance, alterations, or other functions affecting airworthiness. A person who is directly in charge need not physically observe and direct each worker constantly but must be available for consultation and decision on matters requiring instruction or decision from higher authority than that of the person performing the work.

§ 91.1437 CAMP: Authority to perform and approve maintenance.

A program manager who maintains program aircraft under a CAMP may employ maintenance personnel, or make arrangements with other persons to perform maintenance and preventive maintenance as provided in its maintenance manual. Unless properly certificated, the program manager may not perform or approve maintenance for return to service.

§ 91.1439 CAMP: Maintenance recording requirements.

(a) Each program manager who maintains program aircraft under a CAMP must keep (using the system specified in the manual required in §91.1427) the following records for the periods specified in paragraph (b) of this section:

(1) All the records necessary to show that all requirements for the issuance of an airworthiness release under § 91.1443 have been met.

(2) Records containing the following information:

(i) The total time in service of the airframe, engine, propeller, and rotor.

(ii) The current status of life-limited parts of each airframe, engine, propeller, rotor, and appliance.

(iii) The time since last overhaul of each item installed on the aircraft that are required to be overhauled on a specified time basis.

(iv) The identification of the current inspection status of the aircraft, including the time since the last inspections required by the inspection program under which the aircraft and its appliances are maintained.

(v) The current status of applicable airworthiness directives, including the date and methods of compliance, and, if the airworthiness directive involves recurring action, the time and date when the next action is required.

(vi) A list of current major alterations and repairs to each airframe, engine, propeller, rotor, and appliance.

(b) Each program manager must retain the records required to be kept by this section for the following periods:

(1) Except for the records of the last complete overhaul of each airframe, engine, propeller, rotor, and appliance the records specified in paragraph (a)(1) of this section must be retained until the work is repeated or superseded by other work or for one year after the work is performed.

(2) The records of the last complete overhaul of each airframe, engine, propeller, rotor, and appliance must be retained until the work is superseded by work of equivalent scope and detail.

(3) The records specified in paragraph (a)(2) of this section must be retained as specified unless transferred with the aircraft at the time the aircraft is sold.

(c) The program manager must make all maintenance records required to be kept by this section available for inspection by the Administrator or any representative of the National Transportation Safety Board.

§ 91.1441 CAMP: Transfer of maintenance records.

When a U.S.-registered fractional ownership program aircraft maintained under a CAMP is removed from the list of program aircraft in the management specifications, the program manager must transfer to the purchaser, at the time of the sale, the following records of that aircraft, in plain language form or in coded form that provides for the preservation and retrieval of information in a manner acceptable to the Administrator:

(a) The records specified in § 91.1439(a)(2).

(b) The records specified in § 91.1439(a)(1) that are not included in the records covered by paragraph (a) of this section, except that the purchaser may allow the program manager to keep physical custody of such records. However, custody of records by the program manager does not relieve the purchaser of its responsibility under § 91.1439(c) to make the records available for inspection by the Administrator or any representative of the National Transportation Safety Board.

§ 91.1443 CAMP: Airworthiness release or aircraft maintenance log entry.

(a) No program aircraft maintained under a CAMP may be operated after maintenance, preventive maintenance, or alterations are performed unless qualified, certificated personnel employed by the program manager prepare, or cause the person with whom the program manager arranges for the performance of the maintenance, preventive maintenance, or alterations, to prepare—

(1) An airworthiness release; or

(2) An appropriate entry in the aircraft maintenance log.

(b) The airworthiness release or log entry required by paragraph (a) of this section must—

(1) Be prepared in accordance with the procedure in the program manager's manual;

(2) Include a certification that—

(i) The work was performed in accordance with the requirements of the program manager's manual;

(ii) All items required to be inspected were inspected by an authorized person

who determined that the work was satisfactorily completed;

(iii) No known condition exists that would make the aircraft unairworthy;

(iv) So far as the work performed is concerned, the aircraft is in condition for safe operation; and

(3) Be signed by an authorized certificated mechanic.

(c) Notwithstanding paragraph (b)(3) of this section, after maintenance, preventive maintenance, or alterations performed by a repair station certificated under the provisions of part 145 of this chapter, the approval for return to service or log entry required by paragraph (a) of this section may be signed by a person authorized by that repair station.

(d) Instead of restating each of the conditions of the certification required by paragraph (b) of this section, the program manager may state in its manual that the signature of an authorized certificated mechanic or repairman constitutes that certification.

Subpart L—Continued Airworthiness and Safety Improvements

SOURCE: Amdt. 91–297, 72 FR 63410, Nov. 8, 2007, unless otherwise noted.

§ 91.1501 Purpose and definition.

(a) This subpart requires operators to support the continued airworthiness of each airplane. These requirements may include, but are not limited to, revising the inspection program, incorporating design changes, and incorporating revisions to Instructions for Continued Airworthiness.

(b) For purposes of this subpart, the ''FAA Oversight Office'' is the aircraft certification office or office of the Transport Airplane Directorate with oversight responsibility for the relevant type certificate or supplemental type certificate, as determined by the Administrator.

§ 91.1503 [Reserved]

§ 91.1505 Repairs assessment for pressurized fuselages.

(a) No person may operate an Airbus Model A300 (excluding the –600 series), British Aerospace Model BAC 1–11, Boeing Model, 707, 720, 727, 737 or 747, McDonnell Douglas Model DC–8, DC–9/MD–80 or DC–10, Fokker Model F28, or Lockheed Model L–1011 airplane beyond applicable flight cycle implementation time specified below, or May 25, 2001, whichever occurs later, unless repair assessment guidelines applicable to the fuselage pressure boundary (fuselage skin, door skin, and bulkhead webs) that have been approved by the FAA Aircraft Certification Office (ACO), or office of the Transport Airplane Directorate, having cognizance over the type certificate for the affected airplane are incorporated within its inspection program:

(1) For the Airbus Model A300 (excluding the –600 series), the flight cycle implementation time is:

(i) Model B2: 36,000 flights.

(ii) Model B4–100 (including Model B4–2C): 30,000 flights above the window line, and 36,000 flights below the window line.

(iii) Model B4–200: 25,500 flights above the window line, and 34,000 flights below the window line.

(2) For all models of the British Aerospace BAC 1–11, the flight cycle implementation time is 60,000 flights.

(3) For all models of the Boeing 707, the flight cycle implementation time is 15,000 flights.

(4) For all models of the Boeing 720, the flight cycle implementation time is 23,000 flights.

(5) For all models of the Boeing 727, the flight cycle implementation time is 45,000 flights.

(6) For all models of the Boeing 737, the flight cycle implementation time is 60,000 flights.

(7) For all models of the Boeing 747, the flight cycle implementation time is 15,000 flights.

(8) For all models of the McDonnell Douglas DC–8, the flight cycle implementation time is 30,000 flights.

(9) For all models of the McDonnell Douglas DC–9/MD–80, the flight cycle implementation time is 60,000 flights.

(10) For all models of the McDonnell Douglas DC–10, the flight cycle implementation time is 30,000 flights.

(11) For all models of the Lockheed L–1011, the flight cycle implementation time is 27,000 flights.

(12) For the Fokker F–28 Mark 1000, 2000, 3000, and 4000, the flight cycle implementation time is 60,000 flights.

(b) [Reserved]

[Doc. No. 29104, 65 FR 24125, Apr. 25, 2000; 65 FR 35703, June 5, 2000; 65 FR 50744, Aug. 21, 2000, as amended by Amdt. 91–266, 66 FR 23130, May 7, 2001; Amdt. 91–277, 67 FR 72834, Dec. 9, 2002; Amdt. 91–283, 69 FR 45941, July 30, 2004. Redesignated and amended by Amdt. 91–297, 72 FR 63410, Nov. 8, 2007]

§ 91.1507 Fuel tank system inspection program.

(a) Except as provided in paragraph (g) of this section, this section applies to transport category, turbine-powered airplanes with a type certificate issued after January 1, 1958, that, as a result of original type certification or later increase in capacity, have—

(1) A maximum type-certificated passenger capacity of 30 or more, or

(2) A maximum payload capacity of 7,500 pounds or more.

(b) For each airplane on which an auxiliary fuel tank is installed under a field approval, before June 16, 2008, the operator must submit to the FAA Oversight Office proposed maintenance instructions for the tank that meet the requirements of Special Federal Aviation Regulation No. 88 (SFAR 88) of this chapter.

(c) After December 16, 2008, no operator may operate an airplane identified in paragraph (a) of this section unless the inspection program for that airplane has been revised to include applicable inspections, procedures, and limitations for fuel tank systems.

(d) The proposed fuel tank system inspection program revisions specified in paragraph (c) of this section must be based on fuel tank system Instructions for Continued Airworthiness (ICA) that have been developed in accordance with the applicable provisions of SFAR 88 of this chapter or § 25.1529 and part 25, Appendix H, of this chapter, in effect on June 6, 2001 (including those developed for auxiliary fuel tanks, if any, installed under supplemental type certificates or other design approval) and that have been approved by the FAA Oversight Office.

(e) After December 16, 2008, before returning an airplane to service after any alterations for which fuel tank ICA are developed under SFAR 88, or under § 25.1529 in effect on June 6, 2001, the operator must include in the inspection program for the airplane inspections and procedures for the fuel tank system based on those ICA.

(f) The fuel tank system inspection program changes identified in paragraphs (d) and (e) of this section and any later fuel tank system revisions must be submitted to the Flight Standards District Office (FSDO) responsible for review and approval.

(g) This section does not apply to the following airplane models:

(1) Bombardier CL–44
(2) Concorde
(3) deHavilland D.H. 106 Comet 4C
(4) VFW-Vereinigte Flugtechnische Werk VFW–614
(5) Illyushin Aviation IL 96T
(6) Bristol Aircraft Britannia 305
(7) Handley Page Herald Type 300
(8) Avions Marcel Dassault—Breguet Aviation Mercure 100C
(9) Airbus Caravelle
(10) Lockheed L–300

APPENDIX A TO PART 91—CATEGORY II OPERATIONS: MANUAL, INSTRUMENTS, EQUIPMENT, AND MAINTENANCE

1. Category II Manual

(a) *Application for approval.* An applicant for approval of a Category II manual or an amendment to an approved Category II manual must submit the proposed manual or amendment to the Flight Standards District Office having jurisdiction of the area in which the applicant is located. If the application requests an evaluation program, it must include the following:

(1) The location of the aircraft and the place where the demonstrations are to be conducted; and

(2) The date the demonstrations are to commence (at least 10 days after filing the application).

(b) *Contents.* Each Category II manual must contain:

(1) The registration number, make, and model of the aircraft to which it applies;

(2) A maintenance program as specified in section 4 of this appendix; and

(3) The procedures and instructions related to recognition of decision height, use of runway visual range information, approach monitoring, the decision region (the region between the middle marker and the decision height), the maximum permissible deviations of the basic ILS indicator within the decision region, a missed approach, use of

airborne low approach equipment, minimum altitude for the use of the autopilot, instrument and equipment failure warning systems, instrument failure, and other procedures, instructions, and limitations that may be found necessary by the Administrator.

2. Required Instruments and Equipment

The instruments and equipment listed in this section must be installed in each aircraft operated in a Category II operation. This section does not require duplication of instruments and equipment required by §91.205 or any other provisions of this chapter.

(a) *Group I.* (1) Two localizer and glide slope receiving systems. Each system must provide a basic ILS display and each side of the instrument panel must have a basic ILS display. However, a single localizer antenna and a single glide slope antenna may be used.

(2) A communications system that does not affect the operation of at least one of the ILS systems.

(3) A marker beacon receiver that provides distinctive aural and visual indications of the outer and the middle markers.

(4) Two gyroscopic pitch and bank indicating systems.

(5) Two gyroscopic direction indicating systems.

(6) Two airspeed indicators.

(7) Two sensitive altimeters adjustable for barometric pressure, each having a placarded correction for altimeter scale error and for the wheel height of the aircraft. After June 26, 1979, two sensitive altimeters adjustable for barometric pressure, having markings at 20-foot intervals and each having a placarded correction for altimeter scale error and for the wheel height of the aircraft.

(8) Two vertical speed indicators.

(9) A flight control guidance system that consists of either an automatic approach coupler or a flight director system. A flight director system must display computed information as steering command in relation to an ILS localizer and, on the same instrument, either computed information as pitch command in relation to an ILS glide slope or basic ILS glide slope information. An automatic approach coupler must provide at least automatic steering in relation to an ILS localizer. The flight control guidance system may be operated from one of the receiving systems required by subparagraph (1) of this paragraph.

(10) For Category II operations with decision heights below 150 feet either a marker beacon receiver providing aural and visual indications of the inner marker or a radio altimeter.

(b) *Group II.* (1) Warning systems for immediate detection by the pilot of system faults in items (1), (4), (5), and (9) of Group I and, if installed for use in Category III operations, the radio altimeter and autothrottle system.

(2) Dual controls.

(3) An externally vented static pressure system with an alternate static pressure source.

(4) A windshield wiper or equivalent means of providing adequate cockpit visibility for a safe visual transition by either pilot to touchdown and rollout.

(5) A heat source for each airspeed system pitot tube installed or an equivalent means of preventing malfunctioning due to icing of the pitot system.

3. Instruments and Equipment Approval

(a) *General.* The instruments and equipment required by section 2 of this appendix must be approved as provided in this section before being used in Category II operations. Before presenting an aircraft for approval of the instruments and equipment, it must be shown that since the beginning of the 12th calendar month before the date of submission—

(1) The ILS localizer and glide slope equipment were bench checked according to the manufacturer's instructions and found to meet those standards specified in RTCA Paper 23–63/DO–117 dated March 14, 1963, ''Standard Adjustment Criteria for Airborne Localizer and Glide Slope Receivers,'' which may be obtained from the RTCA Secretariat, 1425 K St., NW., Washington, DC 20005.

(2) The altimeters and the static pressure systems were tested and inspected in accordance with appendix E to part 43 of this chapter; and

(3) All other instruments and items of equipment specified in section 2(a) of this appendix that are listed in the proposed maintenance program were bench checked and found to meet the manufacturer's specifications.

(b) *Flight control guidance system.* All components of the flight control guidance system must be approved as installed by the evaluation program specified in paragraph (e) of this section if they have not been approved for Category III operations under applicable type or supplemental type certification procedures. In addition, subsequent changes to make, model, or design of the components must be approved under this paragraph. Related systems or devices, such as the autothrottle and computed missed approach guidance system, must be approved in the same manner if they are to be used for Category II operations.

(c) *Radio altimeter.* A radio altimeter must meet the performance criteria of this paragraph for original approval and after each subsequent alteration.

(1) It must display to the flight crew clearly and positively the wheel height of the main landing gear above the terrain.

(2) It must display wheel height above the terrain to an accuracy of plus or minus 5 feet or 5 percent, whichever is greater, under the following conditions:

(i) Pitch angles of zero to plus or minus 5 degrees about the mean approach attitude.

(ii) Roll angles of zero to 20 degrees in either direction.

(iii) Forward velocities from minimum approach speed up to 200 knots.

(iv) Sink rates from zero to 15 feet per second at altitudes from 100 to 200 feet.

(3) Over level ground, it must track the actual altitude of the aircraft without significant lag or oscillation.

(4) With the aircraft at an altitude of 200 feet or less, any abrupt change in terrain representing no more than 10 percent of the aircraft's altitude must not cause the altimeter to unlock, and indicator response to such changes must not exceed 0.1 seconds and, in addition, if the system unlocks for greater changes, it must reacquire the signal in less than 1 second.

(5) Systems that contain a push-to-test feature must test the entire system (with or without an antenna) at a simulated altitude of less than 500 feet.

(6) The system must provide to the flight crew a positive failure warning display any time there is a loss of power or an absence of ground return signals within the designed range of operating altitudes.

(d) *Other instruments and equipment.* All other instruments and items of equipment required by §2 of this appendix must be capable of performing as necessary for Category II operations. Approval is also required after each subsequent alteration to these instruments and items of equipment.

(e) *Evaluation program*—(1) *Application.* Approval by evaluation is requested as a part of the application for approval of the Category II manual.

(2) *Demonstrations.* Unless otherwise authorized by the Administrator, the evaluation program for each aircraft requires the demonstrations specified in this paragraph. At least 50 ILS approaches must be flown with at least five approaches on each of three different ILS facilities and no more than one half of the total approaches on any one ILS facility. All approaches shall be flown under simulated instrument conditions to a 100-foot decision height and 90 percent of the total approaches made must be successful. A successful approach is one in which—

(i) At the 100-foot decision height, the indicated airspeed and heading are satisfactory for a normal flare and landing (speed must be plus or minus 5 knots of programmed airspeed, but may not be less than computed threshold speed if autothrottles are used);

(ii) The aircraft at the 100-foot decision height, is positioned so that the cockpit is within, and tracking so as to remain within, the lateral confines of the runway extended;

(iii) Deviation from glide slope after leaving the outer marker does not exceed 50 percent of full-scale deflection as displayed on the ILS indicator;

(iv) No unusual roughness or excessive attitude changes occur after leaving the middle marker; and

(v) In the case of an aircraft equipped with an approach coupler, the aircraft is sufficiently in trim when the approach coupler is disconnected at the decision height to allow for the continuation of a normal approach and landing.

(3) *Records.* During the evaluation program the following information must be maintained by the applicant for the aircraft with respect to each approach and made available to the Administrator upon request:

(i) Each deficiency in airborne instruments and equipment that prevented the initiation of an approach.

(ii) The reasons for discontinuing an approach, including the altitude above the runway at which it was discontinued.

(iii) Speed control at the 100-foot decision height if auto throttles are used.

(iv) Trim condition of the aircraft upon disconnecting the auto coupler with respect to continuation to flare and landing.

(v) Position of the aircraft at the middle marker and at the decision height indicated both on a diagram of the basic ILS display and a diagram of the runway extended to the middle marker. Estimated touchdown point must be indicated on the runway diagram.

(vi) Compatibility of flight director with the auto coupler, if applicable.

(vii) Quality of overall system performance.

(4) *Evaluation.* A final evaluation of the flight control guidance system is made upon successful completion of the demonstrations. If no hazardous tendencies have been displayed or are otherwise known to exist, the system is approved as installed.

4. Maintenance program

(a) Each maintenance program must contain the following:

(1) A list of each instrument and item of equipment specified in §2 of this appendix that is installed in the aircraft and approved for Category II operations, including the make and model of those specified in §2(a).

(2) A schedule that provides for the performance of inspections under subparagraph (5) of this paragraph within 3 calendar months after the date of the previous inspection. The inspection must be performed by a person authorized by part 43 of this chapter, except that each alternate inspection may be replaced by a functional flight check. This functional flight check must be performed by a pilot holding a Category II pilot authorization for the type aircraft checked.

(3) A schedule that provides for the performance of bench checks for each listed instrument and item of equipment that is specified in section 2(a) within 12 calendar months after the date of the previous bench check.

(4) A schedule that provides for the performance of a test and inspection of each static pressure system in accordance with appendix E to part 43 of this chapter within 12 calendar months after the date of the previous test and inspection.

(5) The procedures for the performance of the periodic inspections and functional flight checks to determine the ability of each listed instrument and item of equipment specified in section 2(a) of this appendix to perform as approved for Category II operations including a procedure for recording functional flight checks.

(6) A procedure for assuring that the pilot is informed of all defects in listed instruments and items of equipment.

(7) A procedure for assuring that the condition of each listed instrument and item of equipment upon which maintenance is performed is at least equal to its Category II approval condition before it is returned to service for Category II operations.

(8) A procedure for an entry in the maintenance records required by §43.9 of this chapter that shows the date, airport, and reasons for each discontinued Category II operation because of a malfunction of a listed instrument or item of equipment.

(b) *Bench check.* A bench check required by this section must comply with this paragraph.

(1) It must be performed by a certificated repair station holding one of the following ratings as appropriate to the equipment checked:

(i) An instrument rating.

(ii) A radio rating.

(2) It must consist of removal of an instrument or item of equipment and performance of the following:

(i) A visual inspection for cleanliness, impending failure, and the need for lubrication, repair, or replacement of parts;

(ii) Correction of items found by that visual inspection; and

(iii) Calibration to at least the manufacturer's specifications unless otherwise specified in the approved Category II manual for the aircraft in which the instrument or item of equipment is installed.

(c) *Extensions.* After the completion of one maintenance cycle of 12 calendar months, a request to extend the period for checks, tests, and inspections is approved if it is shown that the performance of particular equipment justifies the requested extension.

[Doc. No. 18334, 54 FR 34325, Aug. 18, 1989, as amended by Amdt. 91–269, 66 FR 41116, Aug. 6, 2001]

APPENDIX B TO PART 91—AUTHORIZATIONS TO EXCEED MACH 1 (§91.817)

Section 1. Application

(a) An applicant for an authorization to exceed Mach 1 must apply in a form and manner prescribed by the Administrator and must comply with this appendix.

(b) In addition, each application for an authorization to exceed Mach 1 covered by section 2(a) of this appendix must contain all information requested by the Administrator necessary to assist him in determining whether the designation of a particular test area or issuance of a particular authorization is a ''major Federal action significantly affecting the quality of the human environment'' within the meaning of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*), and to assist him in complying with that act and with related Executive Orders, guidelines, and orders prior to such action.

(c) In addition, each application for an authorization to exceed Mach 1 covered by section 2(a) of this appendix must contain—

(1) Information showing that operation at a speed greater than Mach 1 is necessary to accomplish one or more of the purposes specified in section 2(a) of this appendix, including a showing that the purpose of the test cannot be safely or properly accomplished by overocean testing;

(2) A description of the test area proposed by the applicant, including an environmental analysis of that area meeting the requirements of paragraph (b) of this section; and

(3) Conditions and limitations that will ensure that no measurable sonic boom overpressure will reach the surface outside of the designated test area.

(d) An application is denied if the Administrator finds that such action is necessary to protect or enhance the environment.

Section 2. Issuance

(a) For a flight in a designated test area, an authorization to exceed Mach 1 may be issued when the Administrator has taken the environmental protective actions specified in section 1(b) of this appendix and the applicant shows one or more of the following:

(1) The flight is necessary to show compliance with airworthiness requirements.

(2) The flight is necessary to determine the sonic boom characteristics of the airplane or to establish means of reducing or eliminating the effects of sonic boom.

(3) The flight is necessary to demonstrate the conditions and limitations under which speeds greater than a true flight Mach number of 1 will not cause a measurable sonic boom overpressure to reach the surface.

(b) For a flight outside of a designated test area, an authorization to exceed Mach 1 may

be issued if the applicant shows conservatively under paragraph (a)(3) of this section that—

(1) The flight will not cause a measurable sonic boom overpressure to reach the surface when the aircraft is operated under conditions and limitations demonstrated under paragraph (a)(3) of this section; and

(2) Those conditions and limitations represent all foreseeable operating conditions.

Section 3. Duration

(a) An authorization to exceed Mach 1 is effective until it expires or is surrendered, or until it is suspended or terminated by the Administrator. Such an authorization may be amended or suspended by the Administrator at any time if the Administrator finds that such action is necessary to protect the environment. Within 30 days of notification of amendnent, the holder of the authorization must request reconsideration or the amendnent becomes final. Within 30 days of notification of suspension, the holder of the authorization must request reconsideration or the authorization is automatically terminated. If reconsideration is requested within the 30-day period, the amendment or suspension continues until the holder shows why the authorization should not be amended or terminated. Upon such showing, the Administrator may terminate or amend the authorization if the Administrator finds that such action is necessary to protect the environment, or he may reinstate the authorization without amendment if he finds that termination or amendnent is not necessary to protect the environment.

(b) Findings and actions by the Administrator under this section do not affect any certificate issued under title VI of the Federal Aviation Act of 1958.

[Doc. No. 18334, 54 FR 34327, Aug. 18, 1989]

APPENDIX C TO PART 91—OPERATIONS IN THE NORTH ATLANTIC (NAT) MINIMUM NAVIGATION PERFORMANCE SPECIFICATIONS (MNPS) AIRSPACE

Section 1

NAT MNPS airspace is that volume of airspace between FL 285 and FL 420 extending between latitude 27 degrees north and the North Pole, bounded in the east by the eastern boundaries of control areas Santa Maria Oceanic, Shanwick Oceanic, and Reykjavik Oceanic and in the west by the western boundary of Reykjavik Oceanic Control Area, the western boundary of Gander Oceanic Control Area, and the western boundary of New York Oceanic Control Area, excluding the areas west of 60 degrees west and south of 38 degrees 30 minutes north.

Section 2

The navigation performance capability required for aircraft to be operated in the airspace defined in section 1 of this appendix is as follows:

(a) The standard deviation of lateral track errors shall be less than 6.3 NM (11.7 Km). Standard deviation is a statistical measure of data about a mean value. The mean is zero nautical miles. The overall form of data is such that the plus and minus 1 standard deviation about the mean encompasses approximately 68 percent of the data and plus or minus 2 deviations encompasses approximately 95 percent.

(b) The proportion of the total flight time spent by aircraft 30 NM (55.6 Km) or more off the cleared track shall be less than 5.3×10^{-4} (less than 1 hour in 1,887 flight hours).

(c) The proportion of the total flight time spent by aircraft between 50 NM and 70 NM (92.6 Km and 129.6 Km) off the cleared track shall be less than 13×10^{-5} (less than 1 hour in 7,693 flight hours.)

Section 3

Air traffic control (ATC) may authorize an aircraft operator to deviate from the requirements of §91.705 for a specific flight if, at the time of flight plan filing for that flight, ATC determines that the aircraft may be provided appropriate separation and that the flight will not interfere with, or impose a burden upon, the operations of other aircraft which meet the requirements of §91.705.

[Doc. No. 18334, 54 FR 34327, Aug. 18, 1989, as amended by Amdt. 91–254, 62 FR 17487, Apr. 9, 1997]

APPENDIX D TO PART 91—AIRPORTS/LOCATIONS: SPECIAL OPERATING RESTRICTIONS

Section 1. Locations at which the requirements of §91.215(b)(2) apply.

The requirements of §91.215(b)(2) apply below 10,000 feet above the surface within a 30-nautical-mile radius of each location in the following list:

Atlanta, GA (The William B. Hartsfield Atlanta International Airport)
Baltimore, MD (Baltimore Washington International Airport)
Boston, MA (General Edward Lawrence Logan International Airport)
Chantilly, VA (Washington Dulles International Airport)
Charlotte, NC (Charlotte/Douglas International Airport)
Chicago, IL Chicago-O'Hare International Airport)
Cleveland, OH (Cleveland-Hopkins International Airport)
Covington, KY (Cincinnati Northern Kentucky International Airport)

Dallas, TX (Dallas/Fort Worth Regional Airport)
Denver, CO (Denver International Airport)
Detroit, MI (Metropolitan Wayne County Airport)
Honolulu, HI (Honolulu International Airport)
Houston, TX (George Bush Intercontinental Airport/Houston)
Kansas City, KS (Mid-Continent International Airport)
Las Vegas, NV (McCarran International Airport)
Los Angeles, CA (Los Angeles International Airport)
Memphis, TN (Memphis International Airport)
Miami, FL (Miami International Airport)
Minneapolis, MN (Minneapolis-St. Paul International Airport)
Newark, NJ (Newark International Airport)
New Orleans, LA (New Orleans International Airport-Moisant Field)
New York, NY (John F. Kennedy International Airport)
New York, NY (LaGuardia Airport)
Orlando, FL (Orlando International Airport)
Philadelphia, PA (Philadelphia International Airport)
Phoenix, AZ (Phoenix Sky Harbor International Airport)
Pittsburgh, PA (Greater Pittsburgh International Airport)
St. Louis, MO (Lambert-St. Louis International Airport)
Salt Lake City, UT (Salt Lake City International Airport)
San Diego, CA (San Diego International Airport)
San Francisco, CA (San Francisco International Airport)
Seattle, WA (Seattle-Tacoma International Airport)
Tampa, FL (Tampa International Airport)
Washington, DC (Ronald Reagan Washington National Airport and Andrews Air Force Base, MD)

Section 2. Airports at which the requirements of §91.215(b)(5)(ii) apply. [Reserved]

Section 3. Locations at which fixed-wing Special VFR operations are prohibited.

The Special VFR weather minimums of §91.157 do not apply to the following airports:

Atlanta, GA (The William B. Hartsfield Atlanta International Airport)
Baltimore, MD (Baltimore/Washington International Airport)
Boston, MA (General Edward Lawrence Logan International Airport)
Buffalo, NY (Greater Buffalo International Airport)
Chicago, IL (Chicago-O'Hare International Airport)
Cleveland, OH (Cleveland-Hopkins International Airport)
Columbus, OH (Port Columbus International Airport)
Covington, KY (Cincinnati Northern Kentucky International Airport)
Dallas, TX (Dallas/Fort Worth Regional Airport)
Dallas, TX (Love Field)
Denver, CO (Denver International Airport)
Detroit, MI (Metropolitan Wayne County Airport)
Honolulu, HI (Honolulu International Airport)
Houston, TX (George Bush Intercontinental Airport/Houston)
Indianapolis, IN (Indianapolis International Airport)
Los Angeles, CA (Los Angeles International Airport)
Louisville, KY (Standiford Field)
Memphis, TN (Memphis International Airport)
Miami, FL (Miami International Airport)
Minneapolis, MN (Minneapolis-St. Paul International Airport)
Newark, NJ (Newark International Airport)
New York, NY (John F. Kennedy International Airport)
New York, NY (LaGuardia Airport)
New Orleans, LA (New Orleans International Airport-Moisant Field)
Philadelphia, PA (Philadelphia International Airport)
Pittsburgh, PA (Greater Pittsburgh International Airport)
Portland, OR (Portland International Airport)
San Francisco, CA (San Francisco International Airport)
Seattle, WA (Seattle-Tacoma International Airport)
St. Louis, MO (Lambert-St. Louis International Airport)
Tampa, FL (Tampa International Airport)
Washington, DC (Ronald Reagan Washington National Airport and Andrews Air Force Base, MD)

Section 4. Locations at which solo student, sport, and recreational pilot activity is not permitted.

Pursuant to §91.131(b)(2), solo student, sport, and recreational pilot operations are not permitted at any of the following airports.

Atlanta, GA (The William B. Hartsfield Atlanta International Airport)
Boston, MA (General Edward Lawrence Logan International Airport)
Chicago, IL (Chicago-O'Hare International Airport)
Dallas, TX (Dallas/Fort Worth Regional Airport)
Los Angeles, CA (Los Angeles International Airport)
Miami, FL (Miami International Airport)
Newark, NJ (Newark International Airport)
New York, NY (John F. Kennedy International Airport)

New York, NY (LaGuardia Airport)
San Francisco, CA (San Francisco International Airport)
Washington, DC (Ronald Reagan Washington National Airport)
Andrews Air Force Base, MD

[Amdt. 91–227, 56 FR 65661, Dec. 17, 1991, as amended by Amdt. 91–235, 58 FR 51968, Oct. 5, 1993; Amdt. 91–236, 59 FR 2918, Jan. 19, 1994; Amdt. 91–237, 59 FR 6547, Feb. 11, 1994; 59 FR 37667, July 25, 1994; Amdt. 91–258, 64 FR 66769, Nov. 30, 1999; Amdt. 91–278, 68 FR 9795, Feb. 28, 2003; Amdt. 91–282, 69 FR 44882, July 27, 2004]

EFFECTIVE DATE NOTE: By Amdt. 91–236, 59 FR 2918, Jan. 19, 1994, as corrected by Amdt. 91–237, 59 FR 6547, Feb. 11, 1994, appendix D to part 91 was amended in sections 1 and 3 in the Denver, CO entry by revising ''Stapleton'' to read ''Denver'' effective March 9, 1994. By Amdt. 91–238, 59 FR 10958, Mar. 9, 1994, the effective date was delayed to May 15, 1994. By Amdt. 91–241, 59 FR 24916, May 13, 1994, the effective date was suspended indefinitely.

APPENDIX E TO PART 91—AIRPLANE FLIGHT RECORDER SPECIFICATIONS

Parameters	Range	Installed system [1] minimum accuracy (to recovered data)	Sampling interval (per second)	Resolution [4] read out
Relative Time (From Recorded on Prior to Takeoff).	8 hr minimum	±0.125% per hour	1	1 sec.
Indicated Airspeed	Vso to VD (KIAS)	±5% or ±10 kts., whichever is greater. Resolution 2 kts. below 175 KIAS.	1	1% [3]
Altitude	−1,000 ft. to max cert. alt. of A/C.	±100 to ±700 ft. (see Table 1, TSO C51-a).	11	25 to 150 ft.
Magnetic Heading	360°	±5°	1	1°
Vertical Acceleration	−3g to +6g	±0.2g in addition to ±0.3g maximum datum.	4 (or 1 per second where peaks, ref. to 1g are recorded).	0.03g.
Longitudinal Acceleration.	±1.0g	±1.5% max. range excluding datum error of ±5%.	2	0.01g.
Pitch Attitude	100% of usable	±2°	1	0.8°
Roll Attitude	±60° or 100% of usable range, whichever is greater.	±2°	1	0.8°
Stabilizer Trim Position, or. Pitch Control Position.	Full Range	±3% unless higher uniquely required.	1	1% [3]
Engine Power, Each Engine:	Full Range	±3% unless higher uniquely required.	1	1% [3]
Fan or N [1] Speed or EPR or Cockpit indications Used for Aircraft Certification OR.	Maximum Range	±5%	1	1% [3]
Prop. speed and Torque (Sample Once/Sec as Close together as Practicable).			1 (prop Speed) 1 (torque)	1% [3] 1% [3]
Altitude Rate [2] (need depends on altitude resolution).	±8,000 fpm	±10%. Resolution 250 fpm below 12,000 ft. indicated.	1	250 fpm. below 12,000
Angle of Attack [2] (need depends on altitude resolution).	−20° to 40° or 100% of usable range.	±2°	1	0.8% [3]
Radio Transmitter Keying (Discrete).	On/Off		1.	
TE Flaps (Discrete or Analog).	Each discrete position (U, D, T/O, AAP) OR.		1.	
LE Flaps (Discrete or Analog).	Analog 0–100% range	±3%	1	1% [3]
	Each discrete position (U, D, T/O, AAP) OR.		1.	

Parameters	Range	Installed system [1] minimum accuracy (to recovered data)	Sampling interval (per second)	Resolution [4] read out
Thrust Reverser, Each Engine (Discrete).	Analog 0–100% range ..... Stowed or full reverse.	±3°	1	1%[3]
Spoiler/Speedbrake (Discrete).	Stowed or out	.....	1.	
Autopilot Engaged (Discrete).	Engaged or Disengaged	.....	1.	

[1] When data sources are aircraft instruments (except altimeters) of acceptable quality to fly the aircraft the recording system excluding these sensors (but including all other characteristics of the recording system) shall contribute no more than half of the values in this column.
[2] If data from the altitude encoding altimeter (100 ft. resolution) is used, then either one of these parameters should also be recorded. If however, altitude is recorded at a minimum resolution of 25 feet, then these two parameters can be omitted.
[3] Per cent of full range.
[4] This column applies to aircraft manufactured after October 11, 1991.

[Doc. No. 18334, 54 FR 34327, Aug. 18, 1989]

APPENDIX F TO PART 91—HELICOPTER FLIGHT RECORDER SPECIFICATIONS

Parameters	Range	Installed system [1] minimum accuracy (to recovered data)	Sampling interval (per second)	Resolution 3 read out
Relative Time (From Recorded on Prior to Takeoff).	4 hr minimum	±0.125% per hour	1	1 sec.
Indicated Airspeed	VM in to VD (KIAS) (minimum airspeed signal attainable with installed pilot-static system).	±5% or ±10 kts., whichever is greater.	1	1 kt.
Altitude	−1,000 ft. to 20,000 ft. pressure altitude.	±100 to ±700 ft. (see Table 1, TSO C51–a).	1	25 to 150 ft.
Magnetic Heading	360°	±5°	1	1°
Vertical Acceleration ..	−3g to +6g	±0.2g in addition to ±0.3g maximum datum.	4 (or 1 per second where peaks, ref. to 1g are recorded).	0.05g.
Longitudinal Acceleration.	±1.0g	±1.5% max. range excluding datum error of ±5%.	2	0.03g.
Pitch Attitude	100% of usable range	±2°	1	0.8°
Roll Attitude	±60 or 100% of usable range, whichever is greater.	±2°	1	0.8°
Altitude Rate	±8,000 fpm	±10% Resolution 250 fpm below 12,000 ft. indicated.	1	250 fpm below 12,000.
Engine Power, Each Engine				
Main Rotor Speed	Maximum Range	±5%	1	1%2.
Free or Power Turbine.	Maximum Range	±5%	1	1%2.
Engine Torque	Maximum Range	±5%	1	1%2.
Flight Control Hydraulic Pressure				
Primary (Discrete)	High/Low	.....	1.	
Secondary—if applicable (Discrete).	High/Low	.....	1.	
Radio Transmitter Keying (Discrete).	On/Off	.....	1.	
Autopilot Engaged (Discrete).	Engaged or Disengaged	.....	1.	
SAS Status-Engaged (Discrete).	Engaged or Disengaged	.....	1.	
SAS Fault Status (Discrete).	Fault/OK	.....	1.	
Flight Controls				
Collective	Full range	±3%	2	1%2.
Pedal Position	Full range	±3%	2	1%2.
Lat. Cyclic	Full range	±3%	2	1%2.

Parameters	Range	Installed system [1] minimum accuracy (to recovered data)	Sampling interval (per second)	Resolution 3 read out
Long. Cyclic	Full range	±3%	2	1%2.
Controllable Stabilator Position.	Full range	±3%	2	1%2.

[1] When data sources are aircraft instruments (except altimeters) of acceptable quality to fly the aircraft the recording system excluding these sensors (but including all other characteristics of the recording system) shall contribute no more than half of the values in this column.
[2] Per cent of full range.
[3] This column applies to aircraft manufactured after October 11, 1991.

[Doc. No. 18334, 54 FR 34328, Aug. 18, 1989; 54 FR 41211, Oct. 5, 1989; 54 FR 53036, Dec. 26, 1989]

APPENDIX G TO PART 91—OPERATIONS IN REDUCED VERTICAL SEPARATION MINIMUM (RVSM) AIRSPACE

Section 1. Definitions

Reduced Vertical Separation Minimum (RVSM) Airspace. Within RVSM airspace, air traffic control (ATC) separates aircraft by a minimum of 1,000 feet vertically between flight level (FL) 290 and FL 410 inclusive. RVSM airspace is special qualification airspace; the operator and the aircraft used by the operator must be approved by the Administrator. Air-traffic control notifies operators of RVSM by providing route planning information. Section 8 of this appendix identifies airspace where RVSM may be applied.

RVSM Group Aircraft. Aircraft within a group of aircraft, approved as a group by the Administrator, in which each of the aircraft satisfy each of the following:

(a) The aircraft have been manufactured to the same design, and have been approved under the same type certificate, amended type certificate, or supplemental type certificate.

(b) The static system of each aircraft is installed in a manner and position that is the same as those of the other aircraft in the group. The same static source error correction is incorporated in each aircraft of the group.

(c) The avionics units installed in each aircraft to meet the minimum RVSM equipment requirements of this appendix are:

(1) Manufactured to the same manufacturer specification and have the same part number; or

(2) Of a different manufacturer or part number, if the applicant demonstrates that the equipment provides equivalent system performance.

RVSM Nongroup Aircraft. An aircraft that is approved for RVSM operations as an individual aircraft.

RVSM Flight envelope. An RVSM flight envelope includes the range of Mach number, weight divided by atmospheric pressure ratio, and altitudes over which an aircraft is approved to be operated in cruising flight within RVSM airspace. RVSM flight envelopes are defined as follows:

(a) The *full RVSM flight envelope* is bounded as follows:

(1) The altitude flight envelope extends from FL 290 upward to the lowest altitude of the following:

(i) FL 410 (the RVSM altitude limit);

(ii) The maximum certificated altitude for the aircraft; or

(iii) The altitude limited by cruise thrust, buffet, or other flight limitations.

(2) The airspeed flight envelope extends:

(i) From the airspeed of the slats/flaps-up maximum endurance (holding) airspeed, or the maneuvering airspeed, whichever is lower;

(ii) To the maximum operating airspeed (V_{mo}/M_{mo}), or airspeed limited by cruise thrust buffet, or other flight limitations, whichever is lower.

(3) All permissible gross weights within the flight envelopes defined in paragraphs (1) and (2) of this definition.

(b) The *basic RVSM flight envelope* is the same as the full RVSM flight envelope except that the airspeed flight envelope extends:

(1) From the airspeed of the slats/flaps-up maximum endurance (holding) airspeed, or the maneuver airspeed, whichever is lower;

(2) To the upper Mach/airspeed boundary defined for the full RVSM flight envelope, or a specified lower value not less than the long-range cruise Mach number plus .04 Mach, unless further limited by available cruise thrust, buffet, or other flight limitations.

Section 2. Aircraft Approval

(a) An operator may be authorized to conduct RVSM operations if the Administrator finds that its aircraft comply with this section.

(b) The applicant for authorization shall submit the appropriate data package for aircraft approval. The package must consist of at least the following:

(1) An identification of the RVSM aircraft group or the nongroup aircraft;

(2) A definition of the RVSM flight envelopes applicable to the subject aircraft;

(3) Documentation that establishes compliance with the applicable RVSM aircraft requirements of this section; and

(4) The conformity tests used to ensure that aircraft approved with the data package meet the RVSM aircraft requirements.

(c) *Altitude-keeping equipment: All aircraft.* To approve an aircraft group or a nongroup aircraft, the Administrator must find that the aircraft meets the following requirements:

(1) The aircraft must be equipped with two operational independent altitude measurement systems.

(2) The aircraft must be equipped with at least one automatic altitude control system that controls the aircraft altitude—

(i) Within a tolerance band of ±65 feet about an acquired altitude when the aircraft is operated in straight and level flight under nonturbulent, nongust conditions; or

(ii) Within a tolerance band of ±130 feet under nonturbulent, nongust conditions for aircraft for which application for type certification occurred on or before April 9, 1997 that are equipped with an automatic altitude control system with flight management/performance system inputs.

(3) The aircraft must be equipped with an altitude alert system that signals an alert when the altitude displayed to the flight crew deviates from the selected altitude by more than:

(i) ±300 feet for aircraft for which application for type certification was made on or before April 9, 1997; or

(ii) ±200 feet for aircraft for which application for type certification is made after April 9, 1997.

(d) *Altimetry system error containment: Group aircraft for which application for type certification was made on or before April 9, 1997.* To approve group aircraft for which application for type certification was made on or before April 9, 1997, the Administrator must find that the altimetry system error (ASE) is contained as follows:

(1) At the point in the basic RVSM flight envelope where mean ASE reaches its largest absolute value, the absolute value may not exceed 80 feet.

(2) At the point in the basic RVSM flight envelope where mean ASE plus three standard deviations reaches its largest absolute value, the absolute value may not exceed 200 feet.

(3) At the point in the full RVSM flight envelope where mean ASE reaches its largest absolute value, the absolute value may not exceed 120 feet.

(4) At the point in the full RVSM flight envelope where mean ASE plus three standard deviations reaches its largest absolute value, the absolute value may not exceed 245 feet.

(5) *Necessary operating restrictions.* If the applicant demonstrates that its aircraft otherwise comply with the ASE containment requirements, the Administrator may establish an operating restriction on that applicant's aircraft to restrict the aircraft from operating in areas of the basic RVSM flight envelope where the absolute value of mean ASE exceeds 80 feet, and/or the absolute value of mean ASE plus three standard deviations exceeds 200 feet; or from operating in areas of the full RVSM flight envelope where the absolute value of the mean ASE exceeds 120 feet and/or the absolute value of the mean ASE plus three standard deviations exceeds 245 feet.

(e) *Altimetry system error containment: Group aircraft for which application for type certification is made after April 9, 1997.* To approve group aircraft for which application for type certification is made after April 9, 1997, the Administrator must find that the altimetry system error (ASE) is contained as follows:

(1) At the point in the full RVSM flight envelope where mean ASE reaches its largest absolute value, the absolute value may not exceed 80 feet.

(2) At the point in the full RVSM flight envelope where mean ASE plus three standard deviations reaches its largest absolute value, the absolute value may not exceed 200 feet.

(f) *Altimetry system error containment: Nongroup aircraft.* To approve a nongroup aircraft, the Administrator must find that the altimetry system error (ASE) is contained as follows:

(1) For each condition in the basic RVSM flight envelope, the largest combined absolute value for residual static source error plus the avionics error may not exceed 160 feet.

(2) For each condition in the full RVSM flight envelope, the largest combined absolute value for residual static source error plus the avionics error may not exceed 200 feet.

(g) Traffic Alert and Collision Avoidance System (TCAS) Compatibility With RVSM Operations: All aircraft. After March 31, 2002, unless otherwise authorized by the Administrator, if you operate an aircraft that is equipped with TCAS II in RVSM airspace, it must be a TCAS II that meets TSO C–119b (Version 7.0), or a later version.

(h) If the Administrator finds that the applicant's aircraft comply with this section, the Administrator notifies the applicant in writing.

Section 3. Operator Authorization

(a) Authority for an operator to conduct flight in airspace where RVSM is applied is issued in operations specifications, a Letter of Authorization, or management specifications issued under subpart K of this part, as appropriate. To issue an RVSM authorization, the Administrator must find that the operator's aircraft have been approved in accordance with Section 2 of this appendix and the operator complies with this section.

(b) An applicant for authorization to operate within RVSM airspace shall apply in a form and manner prescribed by the Administrator. The application must include the following:

(1) An approved RVSM maintenance program outlining procedures to maintain RVSM aircraft in accordance with the requirements of this appendix. Each program must contain the following:

(i) Periodic inspections, functional flight tests, and maintenance and inspection procedures, with acceptable maintenance practices, for ensuring continued compliance with the RVSM aircraft requirements.

(ii) A quality assurance program for ensuring continuing accuracy and reliability of test equipment used for testing aircraft to determine compliance with the RVSM aircraft requirements.

(iii) Procedures for returning noncompliant aircraft to service.

(2) For an applicant who operates under part 121 or 135 of this chapter or under subpart K of this part, initial and recurring pilot training requirements.

(3) Policies and procedures: An applicant who operates under part 121 or 135 of this chapter or under subpart K of this part must submit RVSM policies and procedures that will enable it to conduct RVSM operations safely.

(c) Validation and Demonstration. In a manner prescribed by the Administrator, the operator must provide evidence that:

(1) It is capable to operate and maintain each aircraft or aircraft group for which it applies for approval to operate in RVSM airspace; and

(2) Each pilot has an adequate knowledge of RVSM requirements, policies, and procedures.

Section 4. RVSM Operations

(a) Each person requesting a clearance to operate within RVSM airspace shall correctly annotate the flight plan filed with air traffic control with the status of the operator and aircraft with regard to RVSM approval. Each operator shall verify RVSM applicability for the flight planned route through the appropriate flight planning information sources.

(b) No person may show, on the flight plan filed with air traffic control, an operator or aircraft as approved for RVSM operations, or operate on a route or in an area where RVSM approval is required, unless:

(1) The operator is authorized by the Administrator to perform such operations; and

(2) The aircraft has been approved and complies with the requirements of Section 2 of this appendix.

Section 5. Deviation Authority Approval

The Administrator may authorize an aircraft operator to deviate from the requirements of §91.180 or §91.706 for a specific flight in RVSM airspace if that operator has not been approved in accordance with section 3 of this appendix if:

(a) The operator submits a request in a time and manner acceptable to the Administrator; and

(b) At the time of filing the flight plan for that flight, ATC determines that the aircraft may be provided appropriate separation and that the flight will not interfere with, or impose a burden on, the operations of operators who have been approved for RVSM operations in accordance with Section 3 of this appendix.

Section 6. Reporting Altitude-Keeping Errors

Each operator shall report to the Administrator each event in which the operator's aircraft has exhibited the following altitude-keeping performance:

(a) Total vertical error of 300 feet or more;

(b) Altimetry system error of 245 feet or more; or

(c) Assigned altitude deviation of 300 feet or more.

Section 7. Removal or Amendment of Authority

The Administrator may amend operations specifications or management specifications issued under subpart K of this part to revoke or restrict an RVSM authorization, or may revoke or restrict an RVSM letter of authorization, if the Administrator determines that the operator is not complying, or is unable to comply, with this appendix or subpart H of this part. Examples of reasons for amendment, revocation, ore restriction include, but are not limited to, an operator's:

(a) Committing one or more altitude-keeping errors in RVSM airspace;

(b) Failing to make an effective and timely response to identify and correct an altitude-keeping error; or

(c) Failing to report an altitude-keeping error.

Section 8. Airspace Designation

(a) *RVSM in the North Atlantic.* (1) RVSM may be applied in the NAT in the following ICAO Flight Information Regions (FIRs): New York Oceanic, Gander Oceanic, Sondrestrom FIR, Reykjavik Oceanic, Shanwick Oceanic, and Santa Maria Oceanic.

(2) RVSM may be effective in the Minimum Navigation Performance Specification (MNPS) airspace within the NAT. The MNPS airspace within the NAT is defined by the volume of airspace between FL 285 and FL 420 (inclusive) extending between latitude 27 degrees north and the North Pole, bounded in the east by the eastern boundaries of control areas Santa Maria Oceanic, Shanwick

Oceanic, and Reykjavik Oceanic and in the west by the western boundaries of control areas Reykjavik Oceanic, Gander Oceanic, and New York Oceanic, excluding the areas west of 60 degrees west and south of 38 degrees 30 minutes north.

(b) *RVSM in the Pacific.* (1) RVSM may be applied in the Pacific in the following ICAO Flight Information Regions (FIRs): Anchorage Arctic, Anchorage Continental, Anchorage Oceanic, Auckland Oceanic, Brisbane, Edmonton, Honiara, Los Angeles, Melbourne, Nadi, Naha, Nauru, New Zealand, Oakland, Oakland Oceanic, Port Moresby, Seattle, Tahiti, Tokyo, Ujung Pandang and Vancouver.

(c) *RVSM in the West Atlantic Route System (WATRS).* RVSM may be applied in the New York FIR portion of the West Atlantic Route System (WATRS). The area is defined as beginning at a point 38°30′ N/60°00′W direct to 38°30′N/69°15′ W direct to 38°20′ N/69°57′ W direct to 37°31′ N/71°41′ W direct to 37°13′ N/72°40′ W direct to 35°05′ N/72°40′ W direct to 34°54′ N/72°57′ W direct to 34°29′ N/73°34′ W direct to 34°33′ N/73°41′ W direct to 34°19′ N/74°02′ W direct to 34°14′ N/73°57′ W direct to 32°12′ N/76°49′ W direct to 32°20′ N/77°00′ W direct to 28°08′ N/77°00′ W direct to 27°50′ N/76°32′ W direct to 27°50′ N/74°50′ W direct to 25°00′ N/73°21′ W direct to 25°00′05′ N/69°13′06′ W direct to 25°00′ N/69°07′ W direct to 23°30′ N/68°40′ W direct to 23°30′ N/60°00′ W to the point of beginning.

(d) *RVSM in the United States.* RVSM may be applied in the airspace of the 48 contiguous states, District of Columbia, and Alaska, including that airspace overlying the waters within 12 nautical miles of the coast.

(e) *RVSM in the gulf of Mexico.* RVSM may be applied in the Gulf of Mexico in the following areas: Gulf of Mexico High Offshore Airspace, Houston Oceanic ICAO FIR and Miami Oceanic ICAO FIR.

(f) *RVSM in Atlantic High Offshore Airspace and the San Juan FIR.* RVSM may be applied in Atlantic High Offshore Airspace and in the San Juan ICAO FIR.

[Doc. No. 28870, 62 FR 17487, Apr. 9, 1997, as amended by Amdt. 91–261, 65 FR 5942, Feb. 7, 2000; Amdt. 91–271, 66 FR 63895, Dec. 10, 2001; Amdt. 91–274, 68 FR 54584, Sept. 17, 2003; Amdt. 91–276, 68 FR 70133, Dec. 17, 2003]

PART 93—SPECIAL AIR TRAFFIC RULES

SPECIAL FEDERAL AVIATION REGULATION NO. 60 [NOTE]

SPECIAL FEDERAL AVIATION REGULATION NO. 105

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AUTHORITY: 49 U.S.C. 106(g), 40103, 40106, 40109, 40113, 44502, 44514, 44701, 44719, 46301.

SPECIAL FEDERAL AVIATION REGULATION NO. 60

EDITORIAL NOTE: For the text of SFAR No. 60, see part 91 of this chapter.

SPECIAL FEDERAL AVIATION REGULATION NO. 105—OPERATING LIMITATIONS FOR UNSCHEDULED OPERATIONS AT CHICAGO'S O'HARE INTERNATIONAL AIRPORT

Section 1. *Applicability*. This Special Federal Aviation Regulation (SFAR) No. 105 applies to persons conducting unscheduled arrivals under instrument flight rules (IFR) to Chicago's O'Hare International Airport (O'Hare) during the hours of 7 a.m. through 8:59 p.m., central time, Monday through Friday, and 12 p.m. through 8:59 p.m., central time on Sunday. This SFAR does not apply to helicopter operations, flights conducted under visual flight rules (VFR), or by foreign air carriers, except those flights conducted by Canadian air carriers or operators.

Section 2. *Terms*. For purposes of this SFAR:

''Additional Reservation'' is an approved reservation above the operational limit in section 3. Additional Reservations are available for unscheduled arrivals only, and are allocated in accordance with the procedures described in section 7 of this SFAR.

''Airport Reservation Office (ARO)'' is an operational unit of the FAA's David J. Hurley Air Traffic Control System Command Center. It is responsible for the administration of reservations for the ''other'' category of operations, i.e. unscheduled flights at High Density Traffic Airports (14 CFR, part 93, subpart k), unscheduled flights under Special Traffic Management Programs, and

the O'Hare Arrival Reservation Program (excluding public charter flights allocated in accordance with section 6).

''Enhanced Computer Voice Reservation System (e-CVRS)'' is the system used by the FAA to make arrival and/or departure reservations at designated airports requiring reservations. Reservations are made through a touch-tone telephone interface, an Internet Web interface, or directly through the ARO.

''Public Charter'' is defined in 14 CFR 380.2 as a one-way or roundtrip charter flight to be performed by one or more direct air carriers that is arranged and sponsored by a charter operator.

''Public Charter Operator'' is defined in 14 CFR 380.2 as a U.S. or foreign public charter operator.

''Reservation'' is an authorization received in compliance with applicable Notices to Airmen (NOTAMs) and procedures established by the FAA Administrator to operate an unscheduled arrival flight to O'Hare during peak hours.

''Unscheduled Arrival'' is an arrival other than one regularly conducted and scheduled by an air carrier or other operator between O'Hare and another service point. However, certain types of air carrier operations are also considered as unscheduled for the purposes of this rule, including public, on-demand, and other charter flights; hired aircraft service; ferry flights; and other nonpassenger flights.

Section 3. *Operational Limits.* Except as provided for in section 7 below, Unscheduled IFR Arrivals to O'Hare are limited to four Arrival Reservations per hour and no more than two Arrival Reservations during each half-hour, for the peak hours described in section 1.

Section 4. *Reservation Requirement.* Each person conducting an unscheduled IFR flight to O'Hare during the peak hours described in section 1 must obtain, for such flight operation, an Arrival Reservation allocated by the ARO or, in the case of public charters, in accordance with the procedures in section 6. An Arrival Reservation is not an air traffic control clearance. Additionally, it is the separate responsibility of the pilot/operator to comply with all NOTAMs, security or other regulatory requirements to operate at O'Hare.

Section 5. *Reservation Procedures.*

a. The FAA's ARO will receive and process all Reservation requests for Unscheduled Arrivals at O'Hare during the effective period, except for requests for public charter flights. Requests for Reservations for public charter flights are addressed in section 6. Reservations are allocated on a ''first-come, first-served'' basis determined by the time the request is received at the ARO. Standby lists are not maintained. The computer reservation system may be accessed using a touch-tone telephone, via the Internet, or by telephoning the ARO directly. Requests for Reservations will be accepted beginning 72 hours prior to the proposed time of arrival at O'Hare. For example, a request for an 11 a.m. Reservation on a Thursday will be accepted beginning at 11 a.m. on the previous Monday.

b. A maximum of two transactions per telephone call/Internet session will be accepted.

c. The ARO will allocate Reservations on a 30-minute basis. Reservation periods are half-hourly from the top and bottom of the hour (00 through 29 and 30 through 59) regardless of the arrival time within the period. For example, a 1920 arrival uses a 1900–1929 Reservation.

d. An Arrival Reservation does not ensure against traffic delays, nor does it guarantee arrival within the allocated time period. Aircraft specifically delayed by ATC traffic management initiatives are not required to obtain a new Reservation based on the revised arrival time.

e. Operators must check current NOTAMs in effect for the airport. A reservation from e-CVRS does not constitute permission to operate if additional operational limits or procedures are required by NOTAM and/or regulation.

f. The filing of a request for a Reservation does not constitute the filing of an IFR flight plan as required by regulation. The IFR flight plan must be filed only after the Reservation is obtained, and must be filed in accordance with FAA regulations and procedures. The ARO does not accept or process flight plans.

g. Operators may obtain Reservations by (1) accessing the Internet; (2) calling the ARO's interactive computer system via touch-tone telephone; or (3) calling the ARO directly. The telephone number for the e-CVRS computer is 1–800–875–9694. This toll free number is valid for calls originating within the United States, Canada, and the Caribbean. Operators outside those areas may access e-CVRS by calling the toll number of (703) 707–0568. The Internet Web address for accessing e-CVRS is *http://www.fly.faa.gov/ecvrs.* Operators may contact the ARO at (703) 904–4452 if they have a technical problem making a Reservation using the automated interfaces, if they have a question concerning the procedures, or if they wish to make a telephone Reservation from outside the United States, Canada, or the Caribbean.

h. When filing a request for an Arrival Reservation at O'Hare, the operator must provide the following information:

(1) Date(s) and hour(s) (UTC) of the proposed arrival(s).

(2) Aircraft call sign, flight identification, or tail/registration number. Operators using a 3-letter identifier and flight number for air traffic control (ATC) communication must

obtain a reservation using that same information. Operators communicating with ATC using an aircraft tail number or other flight identification must obtain a reservation using that information.

(3) Aircraft type identifier.

(4) Departure airport (3 or 4-letter identifier) immediately prior to arriving at O'Hare.

Should the requested time not be available, the closest available time before and after the requested time will be offered.

i. Changes must be made to an e-CVRS Reservation using the telephone interface, the Internet web interface, or by calling the ARO before the time of the allocated Arrival Reservation at O'Hare.

j. The operator must cancel the Reservation if it will not be used. Cancellations must be made through e-CVRS as soon as practical using the telephone interface, the Internet web interface, or by calling the ARO in order to release the Arrival Reservation for reallocation.

k. The following information is needed to change or cancel a Reservation:

(1) Aircraft 3-letter identifier and flight number or registration/tail number used to make the original reservation.

(2) Date and Time (UTC) of Reservation.

(3) Reservation number.

Section 6. *Special Procedures for Public Charter Arrivals.*

a. One Arrival Reservation in each hour will be available for allocation to Public Charter operations prior to the adopted 72-hour Reservation window in section 5.

b. The Public Charter Operator may request an Arrival Reservation up to six months from the date of the flight operation. Reservations should be submitted to Federal Aviation Administration, Slot Administration Office, AGC–220, 800 Independence Avenue, SW., Washington, DC 20591. Submissions may be made by facsimile to (202) 267–7277 or by e-mail to *7-AWA-slotadmin@faa.gov.*

c. The Public Charter Operator must certify that its prospectus has been accepted by the Department of Transportation in accordance with 14 CFR part 380.

d. The Public Charter Operator must identify the call sign/flight number or aircraft registration number of the direct air carrier, the date and time of the proposed arrival(s), origin airport immediately prior to O'Hare, and aircraft type. Any changes to an approved Reservation must be approved in advance by the Slot Administration Office.

e. If Arrival Reservations under paragraph (a) above have been allocated and are unavailable, the public charter operator may request Reservations under section 5.

Section. 7. *Additional Reservations.*

a. Notwithstanding the restrictions in section 1, if the Air Traffic Organization determines that ATC weather and capacity conditions are favorable and significant delay is not likely, the FAA may determine that additional Reservations may be accommodated for a specific time period. Generally, the availability of additional Reservations will not be determined more than 8 hours in advance. Unused Arrival Reservations allocated for scheduled operations may also be made available for Unscheduled Arrivals. If available, additional Reservations will be added to e-CVRS and granted on a first-come, first-served basis using the procedures described in section 5 of this SFAR. Reservations for additional arrival operations are not granted by the local ATC facility and must be obtained through e-CVRS or the ARO.

b. An operator who has been unable to obtain a Reservation at the beginning of the 72-hour window may find that a Reservation may be available on the scheduled date of operation due to additional Reservations or cancellations.

c. ATC will accommodate declared emergencies without regard to Reservations. Non-emergency flights in support of national security, law enforcement, military aircraft operations or public-use aircraft operations may be accommodated above the Reservation limits with the prior approval of the Vice President, System Operations Services, Air Traffic Organization. Procedures for obtaining the appropriate waiver will be included on the Internet at the e-CVS Web site at *http://www.fly.faa.gov/ecvrs.*

Section 8. *Making Arrival Reservations Using e-CVRS.*

a. Telephone users. When using a touch-tone telephone to make a Reservation, you are prompted for a response. All input is accomplished using the keypad on the telephone. One issue with a touch-tone telephone entry is that most keys have a letter and number associated with them. When the system asks for a date or time, it is expecting an input of numbers. A problem arises when entering a tail number, or 3-letter identifier. The system does not detect if you are entering a letter (alpha character) or a number. Therefore, when entering an aircraft identifier and flight number or aircraft registration/tail number, two keys are used to represent each letter or number. When entering a number, precede the number you wish by the number 0 (zero) i.e., 01, 02, 03, 04, * * * If you wish to enter a letter, first press the key on which the letter appears and then press 1, 2, or 3, depending upon whether the letter you desire is the first, second, or third letter on that key. For example to enter the letter ''N,'' first press the ''6'' key because ''N'' is on that key, then press the ''2'' key because the letter ''N'' is the second letter on the ''6'' key. Since there are no keys for the letters ''Q'' and ''Z,'' e-CVRS pretends they are on the number ''1'' key. Therefore, to enter the letter ''Q,'' press 11, and to enter the letter ''Z,'' press 12.

NOTE: *The ''N'' character must be entered along with an aircraft tail number (see Table 1). Operators using a 3-letter identifier and flight number to communicate with ATC facilities must enter that same information when making a Reservation.*

TABLE 1—CODES FOR CALL SIGN/TAIL NUMBER INPUT

Codes for Call Sign/Tail Number Input Only			
A–21	J–51	S–73	1–01
B–22	K–52	T–81	2–02
C–23	L–53	U–82	3–03
D–31	M–61	V–83	4–04
E–32	N–62	W–91	5–05
F–33	O–63	X–92	6–06
G–41	P–71	Y–93	7–07
H–42	Q–11	Z–12	8–08
I–43	R–72	0–00	9–09

b. Additional helpful key entries: (See Table 2).

TABLE 2—HELPFUL KEY ENTRIES

#	After entering a call sign/tail number, depressing the ''pound key'' (#) twice will indicate the end of the tail number.
*	Will return to the start of the process.
2	
*	Will repeat the call sign/tail number used
3	in a previous reservation.
*	Will repeat the previous question.
5	
*	Tutorial Mode: Each prompt for input in-
8	cludes a more detailed description of what is expected as input. *8 are a toggle on/off switch. Entering *8 in tutorial mode will return you to the normal mode.
*	Expert Mode: In the expert mode each
0	prompt for input is brief with little or no explanation. Expert mode is also on/off toggle.

c. Internet Web Based Interface. The e-CVRS reservation system includes a Web-based interface. The Internet option provides a fast, user-friendly environment for making Reservations. The Internet address is *http://www.fly.faa.gov/ecvrs*. Flight information may be added or edited using e-CVRS after the reservation is initially obtained.

All users of e-CVRS must complete a one-time registration form containing the following information: full name; e-mail address; a personal password; password confirmation; and company affiliation (optional). Your e-mail and password are required each time you login to use e-CVRS. Instructions are provided on each page to guide you through the reservation process. If you need help at any time, you can access page-specific help by clicking the question mark ''?'' located in the upper right corner of the page.

Section 9. *Expiration*. This Special Federal Aviation Regulation expires at 9 p.m., Central Time, on October 31, 2008, unless sooner terminated.

[70 FR 39620, July 8, 2005]

EFFECTIVE DATE NOTE: By Doc. No. FAA–2004–19411, 70 FR 39620, July 8, 2005, SFAR No. 105 was added, and amended by revising section 9 at 70 FR 66255, Nov. 2, 2005, effective Aug. 8, 2005 until Mar. 31, 2006. At 71 FR 16219, Mar. 31, 2006, section 9 was revised and the effective date was extended from Mar. 31, 2006, until Oct. 28, 2006. By Doc. No. FAA–2005–19411, 71 FR 64113, Nov. 1, 2006, filed in the Office of the Federal Register on Oct. 27, 2006, section 9 was revised and the effective date of SFAR No. 105 was extended through Oct. 31, 2008.

Subpart A—General

§ 93.1 Applicability.

This part prescribes special air traffic rules for operating aircraft in certain areas described in this part, unless otherwise authorized by air traffic control.

[Doc. No. FAA–2002–13235, 68 FR 9795, Feb. 28, 2003]

Subpart B—Congestion and Delay Reduction at Chicago O'Hare International Airport

SOURCE: Doc. No. FAA–2005–20704, 71 FR 51400, Aug. 29, 2006, unless otherwise noted.

§ 93.21 Applicability.

(a) This subpart prescribes the air traffic rules for the arrival of aircraft used for scheduled service, other than helicopters, at Chicago's O'Hare International Airport (O'Hare).

(b) This subpart also prescribes procedures for the assignment, transfer, sale, lease, and withdrawal of Arrival Authorizations issued by the FAA for scheduled operations by U.S. and foreign air carriers at O'Hare.

(c) The provisions of this subpart apply to O'Hare during the hours of 7 a.m. through 8:59 p.m. Central Time, Monday through Friday, and 12 p.m.

through 8:59 p.m. Central Time on Sunday. No person shall operate any scheduled arrival into O'Hare during such hours without first obtaining an Arrival Authorization in accordance with this subpart.

(d) Carriers that have Common Ownership shall be considered to be a single U.S. air carrier or foreign air carrier for purposes of this rule.

(e) The provisions of this subpart are applicable beginning October 29, 2006, and terminate at 9 p.m. on October 31, 2008.

§ 93.22 Definitions.

For the purposes of this subpart, the following definitions apply:

Arrival Authorization is the operational authority assigned by the FAA to a U.S. or foreign air carrier to conduct one scheduled arrival operation on a specific day of the week during a specific 30-minute period at O'Hare.

Carrier is a U.S. air carrier, Canadian air carrier or foreign air carrier with authority to conduct scheduled service at O'Hare under Parts 121, 129, 135 of the Chapter and the appropriate economic authority for scheduled service under Title 49 of the United States Code.

Common Ownership with respect to two or more carriers means having in common at least 50 percent beneficial ownership or control by the same entity or entities.

Incumbent is any U.S. or Canadian air carrier that is not a New Entrant or Limited Incumbent.

International Arrival Authorization is the operational authority assigned by the FAA to a Carrier to conduct one scheduled arrival operation at O'Hare from a foreign point or a continuation of a flight that began at a foreign point, except for arrivals at O'Hare from Canada by U.S. and Canadian air carriers.

Limited Incumbent is any U.S. or Canadian air carrier that holds or operates, on its own behalf, 8 or fewer Arrival Authorizations provided that it has not sold or otherwise transferred Arrival Authorizations, other than one-for-one transfers permitted in this subpart. Any Limited Incumbent that sells or otherwise transfers an Arrival Authorization shall thereafter be treated as an Incumbent for purposes of this rule.

New Entrant is any U.S. or Canadian air carrier that does not hold or operate, and has never held or operated any Arrival Authorization at O'Hare, on its own behalf.

Preferred Lottery is a lottery conducted by the FAA to assign Arrival Authorizations, with initial preference for New Entrants and Limited Incumbents.

Scheduled Arrival is the arrival segment of any operation regularly conducted by a carrier between O'Hare and another point regularly served by that carrier.

Summer Scheduling Season is the period of time from the first Sunday in April until the last Sunday in October. Beginning March 11, 2007, the summer scheduling season is the period of time from the second Sunday in March until the first Sunday in November.

Winter Scheduling Season is the period of time from the last Sunday in October until the first Sunday in April. Beginning March 11, 2007, the winter scheduling season is the first Sunday in November until the second Sunday in March.

§ 93.23 Arrival Authorizations.

(a) Except as otherwise established by the FAA under paragraph (d) of this section and § 93.29 of this subpart, the number of Arrival Authorizations shall be limited to:

(1) 88 per hour between the hours of 7 a.m. and 7:59 p.m. Monday through Friday and 12 p.m. and 7:59 p.m. Sunday,

(i) Not to exceed 50 during each half-hour beginning at 7 a.m. and ending at 7:59 p.m.

(ii) Not to exceed 88 within any two consecutive 30-minute periods.

(2) 98 between 8 p.m. and 8:59 p.m. Monday through Friday, and Sunday, not to exceed 50 between 8 p.m. and 8:29 p.m. and 50 between 8:30 p.m and 8:59 p.m.

(b) An Arrival Authorization is a temporary operating privilege subject to FAA control. Only Carriers may hold Arrival Authorizations. Arrival Authorizations may not be bought, sold, leased, or otherwise transferred to another Carrier, except as provided in §§ 93.27 and 93.28 of this subpart.

(c) Beginning six months from the effective date of this rule and on each six-month anniversary thereafter, the FAA shall conduct a review of existing capacity at O'Hare, to determine whether to increase the number of Arrival Authorizations. The FAA will consider the following factors:

(1) The number of delays;

(2) The length of delays;

(3) Weather conditions;

(4) On-time arrivals and departures;

(5) The number of actual arrival operations;

(6) Runway utilization and capacity plans; and

(7) Other factors relating to the efficient management of the national air space system.

(d) Notwithstanding paragraph (a), the Administrator may increase the number of Arrival Authorizations based on the review conducted in paragraph (c) of this section.

§ 93.24 [Reserved]

§ 93.25 Initial assignment of Arrival Authorizations to U.S. and Canadian air carriers for domestic and U.S./Canada transborder service.

(a) The FAA shall assign to each U.S. and Canadian air carrier, conducting scheduled service at O'Hare, as of the effective date of this rule, Arrival Authorizations for each scheduled arrival that it published for either domestic or U.S./Canada transborder service for any day during the 7-day period of November 1 through 7, 2004, as evidenced by the FAA's records, not to exceed the peak-day limits for each carrier established under the August 18, 2004, ''Order Limiting Scheduled Operations at O'Hare International Airport.'' A carrier's total assignment under this paragraph shall be reduced accordingly by (i) any international Arrival Authorizations assigned under § 93.29 (a), and (ii) if the carrier transferred or traded for consideration any arrival authorizations to another carrier under the October 2006 order amending the August 18, 2004 order and the transferee carrier meets the conditions of paragraph (b) of this section, the number of such traded or transferred authorizations.

(b) The FAA shall assign an Arrival Authorization to each U.S. and Canadian air carrier that did not publish a scheduled domestic or U.S./Canada transborder arrival during the period of time referenced in paragraph (a) of this section for arrivals for which the carrier:

(1) Was entitled to under the August 18, 2004, ''Order Limiting Scheduled Operations at O'Hare International Airport,'' as amended, and is conducting scheduled service at O'Hare as of the effective date of this rule; or

(2) Has initiated scheduled service or received FAA approval of a trade or transfer under the August 18, 2004, ''Order Limiting Scheduled Operations at O'Hare International Airport,'' as amended, as long as operations conducted under the Arrival Authorization begin no later than January 27, 2007.

(c) Arrival Authorizations will be assigned to the U.S. or Canadian air carrier that actually operated the flight regardless of any codeshare or marketing arrangement unless such carrier did not market the flight under its own code and the inventory of the flight was under the control of another Carrier. If the inventory was under the control of another Carrier, the FAA shall assign the Arrival Authorization to that Carrier. Carriers may subsequently transfer Arrival Authorizations for use by other Carriers under their marketing control in accordance with § 93.2(m).

(d) Any Arrival Authorization not assigned under paragraphs (a) or (b) of this section will be assigned to carriers conducting scheduled international service under § 93.29. Any remaining Arrival Authorizations will be assigned by preferred lottery under § 93.30.

(e) The FAA Vice President, System Operations Services, is the final decision-maker for determinations under this section.

[Doc. No. FAA–2005–20704, 71 FR 51400, Aug. 29, 2006, as amended by Amdt. 93–86, 71 FR 60426, Oct. 13, 2006]

§ 93.26 Reversion and withdrawal of Arrival Authorizations.

(a) A U.S. or Canadian air carrier's Arrival Authorizations assigned under §§ 93.25 or 93.27 revert automatically to the FAA 30 days after the Carrier has ceased all operations at O'Hare for any reason other than a strike.

(b) The FAA may withdraw or temporarily suspend Arrival Authorizations at any time as a result of reduced airport capacity or to fulfill operational needs. Whenever Arrival Authorizations must be withdrawn, they will be withdrawn in the required 30-minute Arrival Authorization time periods in accordance with the priority list established under § 93.32 of this subpart.

(c) Any Arrival Authorization that is withdrawn or temporarily suspended under paragraph (b) will, if reassigned, be reassigned to the Carrier from which it was taken, provided that the Carrier continues to conduct scheduled operations at O'Hare.

(d) The FAA shall not withdraw or temporarily suspend under paragraph (b) any Arrival Authorizations if the result would be to reduce a Carrier's total number of Arrival Authorizations below eight.

(e) Except as otherwise provided in paragraph (a) of this section, the FAA will notify the affected Carrier before withdrawing or temporarily suspending any Arrival Authorization and specify the date by which operations under the authorizations must cease. The FAA will provide at least 45 days' notice unless otherwise required by operational needs.

§ 93.27 Sale and lease of Arrival Authorizations.

(a) No U.S. or Canadian air carriers may sell or lease its Arrival Authorizations at O'Hare except in accordance with the procedures in this section and in the manner prescribed by the FAA. Carriers may not buy, sell, lease or otherwise transfer control of Arrival Authorizations assigned under § 93.29.

(b) Only monetary consideration may be provided in any transaction conducted under this section.

(c) New Entrants and Limited Incumbents may not sell, lease, or otherwise transfer control of any Arrival Authorizations assigned through a Preferred Lottery within 12 months of such assignment, except to another New Entrant or Limited Incumbent. One-for-one trades to other Carriers under § 93.28 are permitted.

(d) A U.S. or Canadian air carrier seeking to sell or lease an Arrival Authorization must provide the following information in writing to the FAA:

(1) Arrival Authorization number and time;

(2) Frequency;

(3) Planned effective date(s) of transfer;

(4) Minimum reserve price, if established by the offering carrier;

(5) Other pertinent information, if applicable; and

(6) Carrier's authorized representative.

(e) The FAA will post a notice of the available Arrival Authorization and specific information concerning the proposed sale or lease transaction on the FAA Web site at *http://www.fly.faa.gov*. The Web site will include information regarding registration to be advised of posted transactions, and other relevant information pertaining to this section. The FAA will post the notice within two business days after receipt of all required information from the U.S or Canadian air carrier offering the Arrival Authorization for sale or lease. The notice will provide ten business days for bids to be received and will specify a bid closing date and time. Only U.S. and Canadian air carriers may bid on Arrival Authorizations. Information identifying the Carrier providing the Arrival Authorization for sale or lease will not be posted or released by the FAA until after the FAA has approved the transfer.

(f) All bids must be sent to the FAA electronically, via the FAA Web site, by the closing date and time, and no extensions of time will be granted. Late bids will not be considered. All bids will be held confidential, with each bidder certifying in a form acceptable to the FAA that its bid has not been disclosed to any person not its agent.

(g) The FAA will forward the highest qualifying bid to the selling or leasing U.S. or Canadian air carrier without identifying the bidder. The selling or leasing Carrier will have up to three business days to accept or reject the bid. The selling or leasing Carrier must notify the FAA via the Web site or in writing of its acceptance no later than

5 p.m. Eastern Time on the third business day. If the selling or leasing Carrier does not notify the FAA of its acceptance within the allotted time, the transaction will terminate.

(h) Upon acceptance, the FAA will notify the U. S. or Canadian air carrier, who submitted the highest bid, and request that the buyer/lessee and the seller/lessor submit to the FAA the information (such as Arrival Authorization number, frequency and effective date(s) of transfer) required to transfer the Arrival Authorization.

(i) Each U.S. or Canadian air carrier must provide the FAA evidence of its consent and each Carrier must certify that only monetary consideration will be or has been exchanged.

(j) The FAA will approve requested transfers of Arrival Authorizations that comply with these regulations. The recipient U.S. or Canadian air carrier of the transfer may not use the Arrival Authorization until the conditions in paragraph (i) of this section have been met and the FAA has approved the transfer.

(k) The FAA will keep a record of all bids received and of each Arrival Authorization transfer, including the identity of both Carriers and the winning bid price, all of which will be made available to the public.

(l) U.S. or Canadian air carriers may request the FAA post notice that it is seeking to lease or purchase an Arrival Authorization at O'Hare. The Carrier may submit information in writing or via the FAA's Web site. This information may include the effective date, number or timing of Arrival Authorizations sought, whether a Carrier is seeking to purchase or lease, maximum price offered, or other pertinent information. The FAA may edit any submissions, or choose not to post certain information, in order to ensure the integrity of the solicitation process. Information identifying the Carrier seeking an Arrival Authorization for sale or lease will not be posted or released by the FAA. The FAA will post such requests within two business days of receipt for a period of at least 30 days. Any resulting offers to sell or lease Arrival Authorizations shall be conducted in accordance with this subsection.

(m) A U.S. or Canadian air carrier may transfer an Arrival Authorization to another U.S. or Canadian air carrier that conducts operations at O'Hare solely under the transferring Carrier's marketing control, including the entire inventory of the flight. Each Carrier must provide written evidence of its consent to the transfer. The FAA will approve requested transfers that comply with these regulations. The FAA Vice President, System Operations Services, is the final decision-maker for determinations under this subsection. The recipient Carrier of the transfer may not use the Arrival Authorization until the FAA has provided written confirmation. A record of each Arrival Authorization will be kept on file by the FAA and made available to the public on request.

§ 93.28 One-for-one trade of Arrival Authorizations.

(a) Except as otherwise provided in this subpart, any Carrier may exchange an Arrival Authorization it has been assigned with another Carrier on a one-for-one basis for the purpose of conducting that operation in a different half-hour time period.

(b) Written evidence of each Carrier's consent to the transfer must be provided to the FAA.

(c) The FAA will approve requested transfers of Arrival Authorizations that comply with these regulations. The recipient Carrier of the transfer may not use the Arrival Authorization until written confirmation has been received from the FAA.

(d) A U.S. or Canadian air carrier assigned Arrival Authorizations under § 93.29 may trade on a one-for-one basis within its own base of Arrival Authorizations subject to FAA approval, provided that the purpose is to operate the arrival flight from a foreign point outside Canada in a different half-hour time period than assigned. The FAA must confirm the transfer prior to operation.

(e) A record of each Arrival Authorization exchange will be kept on file by the FAA and made available to the public upon request.

(f) Carriers participating in a one-for-one transfer must certify to the FAA

that no other consideration will be or has been provided for the exchange.

§ 93.29 International Arrival Authorizations.

(a) Except as otherwise provided in paragraph (d) of this section, the FAA shall make an initial assignment of Arrival Authorizations to U.S. and Canadian carriers arriving from a foreign point, excluding Canada, or any other foreign carrier arriving from a foreign point or the continuation of a flight that begins at a foreign point for the winter and summer scheduling seasons as follows. This section does not apply to arrivals at O'Hare from Canada by U.S. or Canadian air carriers.

(1) *Winter Scheduling Season.* Upon request, the FAA shall assign to each Carrier that published a scheduled arrival during the Winter 2006 Scheduling Season, as evidenced by the FAA's records, a corresponding Arrival Authorization for the Winter 2007 Scheduling Season.

(2) *Summer Scheduling Season.* Upon request, the FAA shall assign to each Carrier that published a scheduled arrival for the Summer 2006 Scheduling Season, as evidenced by the FAA's records, a corresponding Arrival Authorization for the Summer 2007 Scheduling Season.

(3) Arrival Authorizations will be assigned to the Carrier that actually operated the flight regardless of any codeshare or marketing arrangement unless the flight was predominately marketed, by contract, under the control of another Carrier. If the flight was under the marketing control of another Carrier or the entire inventory was under the control of another Carrier, the FAA shall assign the Arrival Authorization to that Carrier.

(4) The FAA Vice President, System Operations Services, is the final decision-maker for determinations under this subsection.

(b) Notwithstanding the limit on Arrival Authorization in § 93.23(a), any U.S. or Canadian air carrier arriving at O'Hare from a foreign point, excluding Canada, shall be assigned an Arrival Authorization under this section for that flight.

(c) Notwithstanding the limit on Arrival Authorizations in § 93.23(a), any non-Canadian, foreign air carrier conducting scheduled service and arriving at O'Hare shall be assigned an Arrival Authorization under this section for that flight.

(d) The Department of Transportation reserves the right to withhold the assignment of an Arrival Authorization to any foreign air carrier of a country that does not provide equivalent rights of access to its airports for U.S. air carriers, as determined by the Secretary of Transportation.

(e) For each scheduling season, Carriers must request Arrival Authorizations under this section in accordance with the procedures announced by the FAA in the FEDERAL REGISTER. A Carrier may request to operate more flights from foreign points than the number for which it received Arrival Authorizations under § 93.29(a) or to operate historic arrivals in a different half-hour than initially assigned for the previous corresponding scheduling season. The Arrival Authorizations will be assigned at the time requested unless:

(1) An Arrival Authorization is available within one hour of the requested time, in which case, the unassigned Arrival Authorization will be used to satisfy the request; or

(2) Operational efficiencies support assignment within one hour of the requested period. The FAA Vice President, System Operations Services, is the final decision-maker for determinations under this subsection.

(f) Each request for Arrival Authorizations under this section shall specify the complete flight information including the carrier identifier, flight number, complete flight itinerary, frequency, scheduled arrival time, aircraft and service type, effective dates and whether the Arrival Authorization is for a new or historic flight.

(g) Arrival Authorizations assigned under this section cannot be bought, sold, leased or transferred under § 93.27 but subject to FAA approval may be traded on a one-for-one basis under § 93.28 to meet the Carrier's operational needs.

(h) Arrival Authorizations assigned under this section are not subject to minimum usage requirements of § 93.31 of this subpart but will revert to the

FAA if not used for 15 consecutive days. Arrival Authorizations assigned under this section may only be used for a flight arriving from a foreign point or for non-Canadian, foreign air carriers, the continuation of a flight that begins at a foreign point.

§ 93.30 Assignment provisions for domestic and U.S./Canada transborder service.

(a) Whenever the FAA has determined that sufficient Arrival Authorizations are available, they will be assigned by lottery in accordance with this section. Only U.S. and Canadian air carriers are eligible to participate in a lottery. U.S. and Canadian air carriers must hold appropriate economic authority for scheduled service under Title 49 of the U.S.C. and FAA operating authority under parts 121, 129, or 135 of this chapter to select Arrival Authorizations in a lottery.

(b) Arrival Authorizations not assigned under § 93.25, or returned to the FAA under §§ 93.26(a) or 93.31 for reassignment shall be assigned by a Preferred Lottery.

(c) Any Arrival Authorization available as the result of an increase in the hourly limits under § 93.23(a) of this part from 88 Arrival Authorizations to 89 or 90 shall be assigned by Preferred Lottery.

(d) Any Arrival Authorizations available as the result of an increase above 90 in the hourly limits specified in § 93.23(a) of this subpart shall be assigned by lottery that is open to all U.S. and Canadian air carriers eligible to participate.

(e) The FAA will publish a notice in the FEDERAL REGISTER announcing the lottery dates and any special procedures for the lotteries.

(f) Any U.S. or Canadian air carrier seeking to participate in any lottery must notify the FAA in writing, and such notification must be received by the FAA 15 days prior to the lottery date. The U.S. or Canadian air carrier must specify if it is requesting to participate in a lottery as a New Entrant or Limited Incumbent. The U.S. or Canadian air carrier must also disclose in its notification whether it has Common Ownership with any other Carrier and, if so, identify such Carrier.

(g) A random lottery shall be held to determine the order in which participating Carriers shall select an Arrival Authorization.

(h) In any Preferred Lottery, each New Entrant and Limited Incumbent will have the opportunity to select Arrival Authorizations, if available as provided in paragraph (i) of this section, until it holds a total of eight Arrival Authorizations. Arrival Authorizations remaining after all New Entrants and Limited Incumbents have been accommodated may be assigned to any other Carrier participating in the lottery. Arrival Authorizations remaining after all New Entrants and Limited Incumbents have been accommodated may be assigned to any U.S. or Canadian air carrier participating in the lottery for a minimum of 12 months, and then until the next lottery, when such Arrival Authorizations would again be available on a preferred basis to New Entrants and Limited Incumbents.

(i) At the lottery, each Carrier must make its selection within 5 minutes after being called or it shall lose its turn. If Arrival Authorizations still remain after each Carrier has had an opportunity to select Arrival Authorizations, the assignment sequence will be repeated in the same order. A Carrier may select one Arrival Authorization during each sequence, except that New Entrants may select two Arrival Authorizations, if available, in the first sequence of a Preferred Lottery.

(j) If there are available Arrival Authorizations for a temporary period, for example, Arrival Authorizations pending assignment in a lottery or international arrivals that are temporarily returned, the FAA may assign these Authorizations on a non-permanent, first-come, first-served basis.

§ 93.31 Minimum usage requirement.

(a) Except as provided in § 93.29 and paragraphs (b) and (c) of this section, any Arrival Authorizations not used at least 80 percent of the time over a two-month period shall be withdrawn by the FAA.

(b) Paragraph (a) of this section does not apply to Arrival Authorizations obtained under § 93.30 or bought under

§ 93.27 during the first 90 days after assignment.

(c) Paragraph (a) of this section does not apply to Arrival Authorizations of U.S. or Canadian air carrier forced by a strike to cease operations using those Arrival Authorizations.

(d) Every U.S. and Canadian air carrier holding Arrival Authorizations shall forward in writing to the FAA Slot Administration Office in a format specified by the FAA a list of all Arrival Authorizations held by the Carrier along with a listing of the Arrival Authorizations actually operated for each day of the 2-month reporting period within 14 days after the last day of the 2-month reporting period beginning January 1 and every 2 months thereafter. The report shall identify for each assigned Arrival Authorization the withdrawal priority number and half-hour period, the flight number, 3-letter identifier of the operating Carrier used for air traffic control communications, scheduled time of operation, origin airport, and whether a scheduled arrival was actually operated by the Carrier on a specified day. The report shall identify any Common Ownership or control of, by, or with any other carrier. A senior official of the Carrier shall sign the report.

(e) The Administrator may waive the requirements of paragraph (a) of this section in the event of a highly unusual and unpredictable condition which is beyond the control of the Carrier and which exists for a period of 5 consecutive days or more. Examples of conditions that could justify waiver under this paragraph are weather conditions that result in the restricted operation of an airport for an extended period of time or the grounding of any aircraft type.

(f) The FAA will treat as used any Arrival Authorization held by a carrier on Thanksgiving Day, the Friday following Thanksgiving Day, and the period from December 24 through the first Sunday in January.

§ 93.32 Administrative provisions.

(a) The FAA will assign, by random lottery, withdrawal priority numbers for the recall priority of Arrival Authorizations at O'Hare. The lowest numbered Arrival Authorization will be the last withdrawn. Newly created Arrival Authorizations will be assigned a priority withdrawal number and that number will be higher than any other Arrival Authorization withdrawal number previously assigned. Each Arrival Authorization will be assigned a designation consisting of the applicable withdrawal priority number, and the 30-minute time period for the Arrival Authorization. The designation will also indicate, as appropriate, if the Arrival Authorization is daily or for certain days of the week only; and is a summer or winter Arrival Authorization.

(b) All transactions regarding Arrival Authorizations under this subpart must be in a written or electronic format approved by the FAA.

§ 93.33 [Reserved]

Subpart C [Reserved]

Subpart D—Anchorage, Alaska, Terminal Area

SOURCE: Docket No. 29029, 64 FR 14976, Mar. 29, 1999, unless otherwise noted.

§ 93.51 Applicability.

This subpart prescribes special air traffic rules for aircraft operating in the Anchorage, Alaska, Terminal Area.

[Doc. No. FAA–2002–13235, 68 FR 9795, Feb. 28, 2003]

§ 93.53 Description of area.

The Anchorage, Alaska, Terminal Area is designated as that airspace extending upward from the surface to the upper limit of each of the segments described in § 93.55. It is bounded by a line beginning at Point MacKenzie, extending westerly along the bank of Knik Arm to a point intersecting the 350° bearing from the Anchorage International ATCT; thence north to intercept the 5.2-mile arc centered on the geographical center of Anchorage, Alaska, ATCT; thence counterclockwise along that arc to its intersection with a line bearing 180° from the intersection of the new Seward Highway and International Airport Road; thence due north to O'Malley Road; thence east along O'Malley Road

to its intersection with Lake Otis Parkway; thence northerly along Lake Otis Parkway to its intersection with Abbott Road; thence east along Abbott Road to its intersection with Abbott Loop Road; thence north to its intersection with Tudor Road; thence easterly along Tudor Road to its intersection with Muldoon Road; thence northerly along Muldoon Road to the intersection of the Glenn Highway; thence north and east along the Glenn Highway to Ski Bowl Road; thence southeast along the Ski Bowl Road to a point one-half mile south of the Glenn Highway; thence north and east one-half mile south of and parallel to the Glenn Highway to its intersection with a line one-half mile east of and parallel to the Bryant Airport Runway 16/34 extended centerline; thence northeast along a line one-half mile east of and parallel to Bryant Airport Runway 16/34 extended centerline to lat. 61°17′13″N., long. 149°37′35″W.; thence west along lat. 61°17′13″N., to long. 149°43′08″W.; thence north along long. 149°43′08″W., to lat. 61°17′30″N.; thence to lat. 61°17′58″N., long 149°44′08″W.; thence to lat. 61°19′10″N., long. 149°46′44″W.; thence north along long. 149°46′44″W., to intercept the 4.7-mile radius arc centered on Elmendorf Air Force Base (AFB), Alaska; thence counterclockwise along the 4.7-mile radius arc to its intersection with the west bank of Knik Arm; thence southerly along the west bank of Knik Arm to the point of beginning.

[Doc. No. 29029, 64 FR 14976, Mar. 29, 1999; Amdt. 93–77, 64 FR 17439, Apr. 9, 1999]

§ 93.55 Subdivision of Terminal Area.

The Anchorage, Alaska, Terminal Area is subdivided as follows:

(a) *International segment.* That area from the surface to and including 4,100 feet MSL, within a 5.2-mile radius of the Anchorage International ATCT; excluding that airspace east of the 350° bearing from the Anchorage International ATCT and north of the 090° bearing from the Anchorage International ATCT and east of a line bearing 180° and 360° from the intersection of the new Seward Highway and International Airport Road and the airspace extending upward from the surface to but not including 600 feet MSL, south of lat. 61°08′28″N.

(b) *Merrill segment.* That area from the surface to and including 2,500 feet MSL, within a line beginning at Point Noname; thence direct to the mouth of Ship Creek; thence direct to the intersection of the Glenn Highway and Muldoon Road; thence south along Muldoon Road to Tudor Road; thence west along Tudor Road to the new Seward Highway; thence direct to West Anchorage High School; thence direct to Point MacKenzie; thence via the north bank of Knik Arm to the point of beginning.

(c) *Lake Hood segment.* That area from the surface to and including 2,500 feet MSL, within a line beginning at Point MacKenzie; thence direct to West Anchorage High School; thence direct to the intersection of Tudor Road and the new Seward Highway; thence south along the new Seward Highway to the 090° bearing from the Anchorage International ATCT; thence west direct to the Anchorage International ATCT; thence north along the 350° bearing from the Anchorage International ATCT to the north bank of Knik arm; thence via the north bank of Knik Arm to the point of beginning.

(d) *Elmendorf segment.* That area from the surface to and including 3,000 feet MSL, within a line beginning at Point Noname; thence via the north bank of Knik Arm to the intersection of the 4.7-mile radius of Elmendorf AFB; thence clockwise along the 4.7-mile radius of Elmendorf AFB to long. 149°46′44″W.; thence south along long. 149°46′44″W. to lat. 61°19′10″N.; thence to lat. 61°17′58″N., long. 149°44′08″W.; thence to lat. 61°17′30″N., long. 149°43′08″W.; thence south along long. 149°43′08″W. to the Glenn Highway; thence south and west along the Glenn Highway to Muldoon Road; thence direct to the mouth of Ship Creek; thence direct to the point of beginning.

(e) *Bryant segment.* That area from the surface to and including 2,000 feet MSL, within a line beginning at lat. 61°17′13″N., long. 149°37′35″W.; thence west along lat. 61°17′13″N., to long. 149°43′08″W.; thence south along long. 149°43′08″W., to the Glenn Highway; thence north and east along the Glenn Highway to Ski Bowl Road; thence

southeast along the Ski Bowl Road to a point one-half mile south of the Glenn Highway; thence north and east one-half mile south of and parallel to the Glenn Highway to its intersection with a line one-half mile east of and parallel to the Bryant Airport Runway 16/34 extended centerline; thence northeast along a line one-half mile east of and parallel to Bryant Airport runway 16/34 extended centerline to the point of beginning.

(f) *Seward Highway segment.* That area from the surface to and including 4,100 feet MSL, within a line beginning at the intersection of a line bearing 180° from the intersection of the new Seward Highway and International Airport Road, and O'Malley Road; thence east along O'Malley Road to its intersection with Lake Otis Park Way, lat. 61°07′23″N., long 149°50′03″W.; thence northerly along Lake Otis Park Way to its intersection with Abbott Road, lat. 61°08′14″N., long. 149°50′03″W.; thence east along Abbott Road to its intersection with Abbott Loop Road, lat. 61°08′14″N., long. 149°48′16″W.; thence due north to intersect with Tudor Road, lat. 61°10′51″N., long. 149°48′16″W.; thence west along Tudor Road to its intersection with the new Seward Highway, lat. 61°10′51″N., long. 149°51′38″W.; thence south along the new Seward Highway to its intersection with a line bearing 180° and 360° from the intersection of the new Seward Highway and International Airport Road; thence south to the point of beginning.

[Doc. No. 29029, 64 FR 14976, Mar. 29, 1999; Amdt. 93–77, 64 FR 17439, Apr. 9, 1999]

§ 93.57 General rules: All segments.

(a) Each person operating an aircraft to, from, or on an airport within the Anchorage, Alaska, Terminal Area shall operate that aircraft according to the rules set forth in this section and §§ 93.59, 93.61, 93.63, 93.65, 93.67, or 93.68 as applicable, unless otherwise authorized or required by ATC.

(b) Each person operating an airplane within the Anchorage, Alaska Terminal Area shall conform to the flow of traffic depicted on the appropriate aeronautical charts.

(c) Each person operating a helicopter shall operate it in a manner so as to avoid the flow of airplanes.

(d) Except as provided in § 93.65 (d) and (e), and § 93.67(b), each person operating an aircraft in the Anchorage, Alaska, Terminal Area shall operate that aircraft only within the designated segment containing the arrival or departure airport.

(e) Except as provided in §§ 93.63(d) and 93.67(b), each person operating an aircraft in the Anchorage, Alaska, Terminal Area shall maintain two-way radio communications with the ATCT serving the segment containing the arrival or departure airport.

§ 93.59 General rules: International segment.

(a) No person may operate an aircraft at an altitude between 1,200 feet MSL and 2,000 feet MSL in that portion of this segment lying north of the midchannel of Knik Arm.

(b) Each person operating an airplane at a speed of more than 105 knots within this segment (except that part described in paragraph (a) of this section) shall operate that airplane at an altitude of at least 1,600 feet MSL until maneuvering for a safe landing requires further descent.

(c) Each person operating an airplane at a speed of 105 knots or less within this segment (except that part described in paragraph (a) of this section) shall operate that airplane at an altitude of at least 900 feet MSL until maneuvering for a safe landing requires further descent.

§ 93.61 General rules: Lake Hood segment.

(a) No person may operate an aircraft at an altitude between 1,200 feet MSL and 2,000 feet MSL in that portion of this segment lying north of the midchannel of Knik Arm.

(b) Each person operating an airplane within this segment (except that part described in paragraph (a) of this section) shall operate that airplane at an altitude of at least 600 feet MSL until maneuvering for a safe landing requires further descent.

§ 93.63 General rules: Merrill segment.

(a) No person may operate an aircraft at an altitude between 600 feet MSL and 2,000 feet MSL in that portion of this segment lying north of the midchannel of Knik Arm.

(b) Each person operating an airplane at a speed of more than 105 knots within this segment (except for that part described in paragraph (a) of this section) shall operate that airplane at an altitude of at least 1,200 feet MSL until maneuvering for a safe landing requires further descent.

(c) Each person operating an airplane at a speed of 105 knots or less within this segment (except for that part described in paragraph (a) of this section) shall operate that airplane at an altitude of at least 900 feet MSL until maneuvering for a safe landing requires further descent.

(d) Whenever the Merrill ATCT is not operating, each person operating an aircraft either in that portion of the Merrill segment north of midchannel of Knik Arm, or in the Seward Highway segment at or below 1200 feet MSL, shall contact Anchorage Approach Control for wake turbulence and other advisories. Aircraft operating within the remainder of the segment should self-announce intentions on the Merrill Field CTAF.

§ 93.65 General rules: Elmendorf segment.

(a) Each person operating a turbine-powered aircraft within this segment shall operate that aircraft at an altitude of at least 1,700 feet MSL until maneuvering for a safe landing requires further descent.

(b) Each person operating an airplane (other than turbine-powered aircraft) at a speed of more than 105 knots within this segment shall operate that airplane at an altitude of at least 1,200 feet MSL until maneuvering for a safe landing requires further descent.

(c) Each person operating an airplane (other than turbine-powered aircraft) at a speed of 105 knots or less within the segment shall operate that airplane at an altitude of at least 800 feet MSL until maneuvering for a safe landing requires further descent.

(d) A person landing or departing from Elmendorf AFB, may operate that aircraft at an altitude between 1,500 feet MSL and 1,700 feet MSL within that portion of the International and Lake Hood segments lying north of the midchannel of Knik Arm.

(e) A person landing or departing from Elmendorf AFB, may operate that aircraft at an altitude between 900 feet MSL and 1,700 feet MSL within that portion of the Merrill segment lying north of the midchannel of Knik Arm.

(f) A person operating in VFR conditions, at or below 600 feet MSL, north of a line beginning at the intersection of Farrell Road and the long. 149°43′08″W.; thence west along Farrell Road to the east end of Sixmile Lake; thence west along a line bearing on the middle of Lake Lorraine to the northwest bank of Knik Arm; is not required to establish two-way radio communications with ATC.

[Doc. No. 29029, 64 FR 14977, Mar. 29, 1999; Amdt. 93–77, 64 FR 17439, Apr. 9, 1999]

§ 93.67 General rules: Bryant segment.

(a) Each person operating an airplane to or from the Bryant Airport shall conform to the flow of traffic shown on the appropriate aeronautical charts, and while in the traffic pattern, shall operate that airplane at an altitude of at least 1,000 feet MSL until maneuvering for a safe landing requires further descent.

(b) Each person operating an aircraft within the Bryant segment should self-announce intentions on the Bryant Airport CTAF.

§ 93.68 General rules: Seward Highway segment.

(a) Each person operating an airplane in the Seward Highway segment shall operate that airplane at an altitude of at least 1,000 feet MSL unless maneuvering for a safe landing requires further descent.

(b) Each person operating an aircraft at or below 1,200 feet MSL that will transition to or from the Lake Hood or Merrill segment shall contact the appropriate ATCT prior to entering the Seward Highway segment. All other persons operating an airplane at or below 1,200 feet MSL in this segment shall contact Anchorage Approach Control.

(c) At all times, each person operating an aircraft above 1,200 MSL shall contact Anchorage Approach Control prior to entering the Seward Highway segment.

§ 93.69 Special requirements, Lake Campbell and Sixmile Lake Airports.

Each person operating an aircraft to or from Lake Campbell or Sixmile Lake Airport shall conform to the flow of traffic for the Lake operations that are depicted on the appropriate aeronautical charts.

Subpart E—Flight Restrictions in the Vicinity of Niagara Falls, New York

§ 93.71 General operating procedures.

(a) Flight restrictions are in effect below 3,500 feet MSL in the airspace above Niagara Falls, New York, west of a line from latitude 43°06′33″ N., longitude 79°03′30″ W. (the Whirlpool Rapids Bridge) to latitude 43°04′47″ N., longitude 79°02′44″ W. (the Niagara River Inlet) to latitude 43°04′29″ N., longitude 79°03′30″ W. (the International Control Dam) to the United States/Canadian Border and thence along the border to the point of origin.

(b) No flight is authorized below 3,500 feet MSL in the area described in paragraph (a) of this section, except for aircraft operations conducted directly to or from an airport/heliport within the area, aircraft operating on an ATC-approved IFR flight plan, aircraft operating the Scenic Falls Route pursuant to approval of Transport Canada, aircraft carrying law enforcement officials, or aircraft carrying properly accredited news representatives for which a flight plan has been filed with Buffalo NY (BUF) Automated Flight Service Station (AFSS).

(c) Check with Transport Canada for flight restrictions in Canadian airspace. Commercial air tour operations approved by Transport Canada will be conducting a north/south orbit of the Niagara Falls area below 3,500 feet MSL over the Niagara River.

(d) The minimum altitude for VFR flight over the Scenic Falls area is 3,500 feet MSL.

(e) Comply with the following procedures when conducting flight over the area described in paragraph (a) of this section:

(1) Fly a clockwise pattern;

(2) Do not proceed north of the Rainbow Bridge;

(3) Prior to joining the pattern, broadcast flight intentions on frequency 122.05 Mhz, giving altitude and position, and monitor the frequency while in the pattern;

(4) Use the Niagara Falls airport altimeter setting. Contact Niagara Falls Airport Traffic Control Tower to obtain the current altimeter setting, to facilitate the exchange of traffic advisories/restrictions, and to reduce the risk of midair collisions between aircraft operating in the vicinity of the Falls. If the Control Tower is closed, use the appropriate Automatic Terminal Information Service (ATIS) Frequency;

(5) Do not exceed 130 knots;

(6) Anticipate heavy congestion of VFR traffic at or above 3,500 feet MSL; and

(7) Use caution to avoid high-speed civil and military aircraft transiting the area to or from Niagara Falls Airport.

(f) These procedures do not relieve pilots from the requirements of § 91.113 of this chapter to see and avoid other aircraft.

(g) Flight following, to and from the area, is available through Buffalo Approach.

[Doc. No. FAA–2002–13235, 68 FR 9795, Feb. 28, 2003]

Subpart F—Valparaiso, Florida, Terminal Area

§ 93.80 Applicability.

This subpart prescribes special air traffic rules for aircraft operating in the Valparaiso, Florida, Terminal Area.

[Doc. No. FAA–2002–13235, 68 FR 9795, Feb. 28, 2003]

§ 93.81 Applicability and description of area.

The Valparaiso, Florida Terminal Area is designated as follows:

(a) North-South Corridor. The North-South Corridor includes the airspace extending upward from the surface up to, but not including, 18,000 feet MSL, bounded by a line beginning at:

Latitude 30°42′51″ N., Longitude 86°38′02″ W.;
to
Latitude 30°43′18″ N., Longitude 86°27′37″ W.;
to
Latitude 30°37′01″ N., Longitude 86°27′37″ W.;
to
Latitude 30°37′01″ N., Longitude 86°25′30″ W.;
to
Latitude 30°33′01″ N., Longitude 86°25′30″ W.;
to
Latitude 30°33′01″ N., Longitude 86°25′00″ W.;
to
Latitude 30°25′01″ N., Longitude 86°25′00″ W.;
to
Latitude 30°25′01″ N., Longitude 86°38′12″ W.;
to
Latitude 30°29′02″ N., Longitude 86°38′02″ W.;
to point of beginning.

(b) East-West Corridor—The East-West Corridor is divided into three sections to accommodate the different altitudes as portions of the corridor underlie restricted areas R–2915C, R–2919B, and R–2914B.

(1) The west section would include that airspace extending upward from the surface to but not including 8,500 feet MSL, bounded by a line beginning at: Latitude 30°22′47″ N., Longitude 86°51′30″ W.: then along the shoreline to Latitude 30°23′46″ N., Longitude 86°38′15″ W.; to Latitude 30°20′51″ N., Longitude 86°38′50″ W.; then 3 NM from and parallel to the shoreline to Latitude 30°19′31″ N., Longitude 86°51′30″ W.; to the beginning.

(2) The center section would include that airspace extending upward from the surface to but not including 18,000 feet MSL, bounded by a line beginning at:

Latitude 30°25′01″ N., Longitude 86°38′12″ W.;
to
Latitude 30°25′01″ N., Longitude 86°25′00″ W.;
to
Latitude 30°25′01″ N., Longitude 86°22′26″ W.;
to
Latitude 30°19′46″ N., Longitude 86°23′45″ W.;
then 3 NM from and parallel to the shoreline to Latitude 30°20′51″ N.,
Longitude 86°38′50″ W.; to Latitude 30°23′46″ N.,
Longitude 86°38′15″ W.; to the beginning.

(3) The east section would include that airspace extending upward from the surface to but not including 8,500 feet MSL, bounded by a line beginning at:

Latitude 30°25′01″ N., Longitude 86°22′26″ W.;
to
Latitude 30°22′01″ N., Longitude 86°08′00″ W.;
to
Latitude 30°19′16″ N., Longitude 85°56′00″ W.;
to
Latitude 30°11′01″ N., Longitude 85°56′00″ W.;
then 3 NM from and parallel to the shoreline to Latitude 30°19′46″ N., Longitude 86°23′45″ W.; to the beginning.

[Amdt. 93–70, 59 FR 46154, Sept. 6, 1994 as amended by Amdt. 93–82, 68 FR 9795, Feb. 28, 2003]

§ 93.83 Aircraft operations.

(a) *North-South Corridor.* Unless otherwise authorized by ATC (including the Eglin Radar Control Facility), no person may operate an aircraft in flight within the North-South Corridor designated in § 93.81(b)(1) unless—

(1) Before operating within the corridor, that person obtains a clearance from the Eglin Radar Control Facility or an appropriate FAA ATC facility; and

(2) That person maintains two-way radio communication with the Eglin Radar Control Facility or an appropriate FAA ATC facility while within the corridor.

(b) *East-West Corridor.* Unless otherwise authorized by ATC (including the Eglin Radar Control Facility), no person may operate an aircraft in flight within the East-West Corridor designated in § 93.81(b)(2) unless—

(1) Before operating within the corridor, that person establishes two-way radio communications with Eglin Radar Control Facility or an appropriate FAA ATC facility and receives an ATC advisory concerning operations being conducted therein; and

(2) That person maintains two-way radio communications with the Eglin Radar Control Facility or an appropriate FAA ATC facility while within the corridor.

[Amdt. 93–70, 59 FR 46155, Sept. 6, 1994]

Subpart G—Special Flight Rules in the Vicinity of Los Angeles International Airport

SOURCE: Doc. No. FAA–2002–14149, 68 FR 41214, July 10, 2003, unless otherwise noted.

§ 93.91 Applicability.

This subpart prescribes special air traffic rules for aircraft conducting VFR operations in the Los Angeles, California Special Flight Rules Area.

§ 93.93 Description of area.

The Los Angeles Special Flight Rules Area is designated as that part of Area A of the Los Angeles Class B airspace area at 3,500 feet above mean sea level (MSL) and at 4,500 feet MSL, beginning at Ballona Creek/Pacific Ocean (lat. 33°57′42″ N, long. 118°27′23″ W), then eastbound along Manchester Blvd. to the intersection of Manchester/405 Freeway (lat. 33°57′42″ N, long. 118°22′10″ W), then southbound along the 405 Freeway to the intersection of the 405 Freeway/lmperial Highway (lat. 33°55′51″ N, long. 118° 22′06″ W), then westbound along Imperial Highway to the intersection of Imperial Highway/ Pacific Ocean (lat. 33°55′51″ N, long. 118°26′05″ W), then northbound along the shoreline to the point of beginning.

§ 93.95 General operating procedures.

Unless otherwise authorized by the Administrator, no person may operate an aircraft in the airspace described in § 93.93 unless the operation is conducted in accordance with the following procedures:

(a) The flight must be conducted under VFR and only when operation may be conducted in compliance with § 91.155(a) of this chapter.

(b) The aircraft must be equipped as specified in § 91.215(b) of this chapter replying on code 1201 prior to entering and while operating in this area.

(c) The pilot shall have a current Los Angeles Terminal Area Chart in the aircraft.

(d) The pilot shall operate on the Santa Monica very high frequency omni-directional radio range (VOR) 132° radial.

(e) Aircraft navigating in a southeasterly direction shall be in level flight at 3,500 feet MSL.

(f) Aircraft navigating in a northwesterly direction shall be in level flight at 4,500 feet MSL.

(g) Indicated airspeed shall not exceed 140 knots.

(h) Anti-collision lights and aircraft position/navigation lights shall be on. Use of landing lights is recommended.

(i) Turbojet aircraft are prohibited from VFR operations in this area.

§ 93.97 Operations in the SFRA.

Notwithstanding the provisions of § 91.131(a) of this chapter, an air traffic control authorization is not required in the Los Angeles Special Flight Rules Area for operations in compliance with § 93.95. All other provisions of § 91.131 of this chapter apply to operations in the Los Angeles Special Flight Rules Area.

Subparts H–I [Reserved]

Subpart J—Lorain County Regional Airport Traffic Rule

§ 93.117 Applicability.

This subpart prescribes a special air traffic rule for aircraft operating at the Lorain County Regional Airport, Lorain County, Ohio.

[Doc. No. FAA–2002–13235, 68 FR 9795, Feb. 28, 2003]

§ 93.119 Aircraft operations.

Each person piloting an airplane landing at the Lorain County Regional Airport shall enter the traffic pattern north of the airport and shall execute a right traffic pattern for a landing to the southwest or a left traffic pattern for a landing to the northeast. Each person taking off from the airport shall execute a departure turn to the north as soon as practicable after takeoff.

[Doc. No. 8669, 33 FR 11749, Aug. 20, 1968]

Subpart K—High Density Traffic Airports

§ 93.121 Applicability.

This subpart designates high density traffic airports and prescribes air traffic rules for operating aircraft, other than helicopters, to or from those airports.

[Doc. No. 9974, 35 FR 16592, Oct. 24, 1970, as amended by Amdt. 93–27, 38 FR 29464, Oct. 25, 1973]

§ 93.123 High density traffic airports.

(a) Each of the following airports is designated as a high density traffic airport and, except as provided in § 93.129 and paragraph (b) of this section, or unless otherwise authorized by ATC, is limited to the hourly number of allocated IFR operations (takeoffs and landings) that may be reserved for the specified classes of users for that airport:

IFR OPERATIONS PER HOUR

AIRPORT

Class of user	LaGuardia [4, 5]	Newark	O'Hare [2, 3, 5]	Ronald Reagan National [1]
Air carriers ..	48	40	120	37
Commuters	14	10	25	11
Other	6	10	10	12

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	Air carriers	Commuters	Other
1500	69	15	2
1600	74	12	2
1700	80	13	0
1800	75	10	2
1900	63	12	2

[1] Washington National Airport operations are subject to modifications per Section 93.124.

[2] The hour period in effect at O'Hare begins at 6:45 a.m. and continues in 30-minute increments until 9:15 p.m.

[3] Operations at O'Hare International Airport shall not—

(a) Except as provided in paragraph (c) of the note, exceed 62 for air carriers and 13 for commuters and 5 for "other" during any 30-minute period beginning at 6:45 a.m. and continuing every 30 minutes thereafter.

(b) Except as provided in paragraph (c) of the note, exceed more than 120 for air carriers, 25 for commuters, and 10 for "other" in any two consecutive 30-minute periods.

(c) For the hours beginning at 6:45 a.m., 7:45 a.m., 11:45 a.m., 7:45 p.m. and 8:45 p.m., the hourly limitations shall be 105 for air carriers, 40 for commuters and 10 for "other," and the 30-minute limitations shall be 55 for air carriers, 20 for commuters and 5 for "other." For the hour beginning at 3:45 p.m., the hourly limitations shall be 115 for air carriers, 30 for commuters and 10 for "others", and the 30-minute limitations shall be 60 for air carriers, 15 for commuters and 5 for "other."

[4] Operations at LaGuardia Airport shall not—

(a) Exceed 26 for air carriers, 7 for commuters and 3 for "other" during any 30-minute period.

(b) Exceed 48 for air carriers, 14 for commuters, and 6 for "other" in any two consecutive 30-minute periods.

[5] Pursuant to bilateral agreement, 14 slots at LaGuardia and 24 slots at O'Hare are allocated to the Canadian carriers. These slots are excluded from the hourly quotas set forth in § 93.123 above.

(b) The following exceptions apply to the allocations of reservations prescribed in paragraph (a) Of this section.

(1) The allocations of reservations among the several classes of users do not apply from 12 midnight to 6 a.m. local time, but the total hourly limitation remains applicable.

(2) [Reserved]

(3) The allocation of 37 IFR reservations per hour for air carriers except commuters at Washington National Airport does not include charter flights, or other nonscheduled flights of scheduled or supplemental air carriers. These flights may be conducted without regard to the limitation of 37 IFR reservations per hour.

(4) The allocation of IFR reservations for air carriers except commuters at LaGuardia, Newark, O'Hare, and Washington National Airports does not include extra sections of scheduled flights. The allocation of IFR reservations for scheduled commuters at Washington National Airport does not include extra sections of scheduled flights. These flights may be conducted without regard to the limitation upon the hourly IFR reservations at those airports.

(5) Any reservation allocated to, but not taken by, air carrier operations (except commuters) is available for a scheduled commuter operation.

(6) Any reservation allocated to, but not taken by, air carrier operations (except commuters) or scheduled commuter operations is available for other operations.

(c) For purposes of this subpart—

(1) The number of operations allocated to *air carriers except commuters*, as used in paragraph (a) of this section refers to the number of operations conducted by air carriers with turboprop and reciprocating engine aircraft having a certificated maximum passenger seating capacity of 75 or more or with turbojet powered aircraft having a certificated maximum passenger seating capacity of 56 or more, or, if used for cargo service in air transportation, with any aircraft having a maximum payload capacity of 18,000 pounds or more.

(2) The number of operations allocated to scheduled commuters, as used in paragraph (a) of this section, refers to the number of operations conducted by air carriers with turboprop and reciprocating engine aircraft having a certificated maximum passenger seating capacity of less than 75 or by turbojet aircraft having a certificated maximum passenger seating capacity

of less than 56, or if used for cargo service in air transportation, with any aircraft having a maximum payload capacity of less than 18,000 pounds. For purposes of aircraft operations at Ronald Reagan Washington National Airport, the term ''commuters'' means aircraft operations using aircraft having a certificated maximum seating capacity of 76 or less.

(3) Notwithstanding the provisions of paragraph (c)(2) of this section, a limited number of operations allocated for ''scheduled commuters'' under paragraph (a) of this section may be conducted with aircraft described in § 93.221(e) of this part pursuant to the requirements of § 93.221(e).

[Doc. No. 9113, 34 FR 2603, Feb. 26, 1969, as amended by Amdt. 93–37, 45 FR 62408, Sept. 18, 1980; Amdt. 93–44, 46 FR 58048, Nov. 27, 1981; Amdt. 93–46, 49 FR 8244, Mar. 6, 1984; Amdt. 93–57, 54 FR 34906, Aug. 22, 1989; 54 FR 37303, Sept. 8, 1989; Amdt. 93–59, 54 FR 39843, Sept. 28, 1989; Amdt. 93–62, 56 FR 41207, Aug. 19, 1991; Amdt. 93–78, 64 FR 53564, Oct. 1, 1999; Amdt. 93–84, 70 FR 29063, May 19, 2005]

§ 93.125 Arrival or departure reservation.

Except between 12 Midnight and 6 a.m. local time, no person may operate an aircraft to or from an airport designated as a high density traffic airport unless he has received, for that operation, an arrival or departure reservation from ATC.

[Doc. No. 9974, 37 FR 22794, Oct. 25, 1972]

§ 93.129 Additional operations.

(a) *IFR.* The operator of an aircraft may take off or land the aircraft under IFR at a designated high density traffic airport without regard to the maximum number of operations allocated for that airport if the operation is not a scheduled operation to or from a high density airport and he obtains a departure or arrival reservation, as appropriate, from ATC. The reservation is granted by ATC whenever the aircraft may be accommodated without significant additional delay to the operations allocated for the airport for which the reservations is requested.

(b) *VFR.* The operator of an aircraft may take off and land the aircraft under VFR at a designated high density traffic airport without regard to the maximum number of operations allocated for that airport if the operation is not a scheduled operation to or from a high density airport and he obtains a departure or arrival reservation, as appropriate, from ATC. The reservation is granted by ATC whenever the aircraft may be accommodated without significant additional delay to the operations allocated for the airport for which the reservation is requested and the ceiling reported at the airport is at least 1,000 feet and the ground visibility reported at the airport is at least 3 miles.

(c) For the purpose of this section a *scheduled operation to or from the high* density airport is any operation regularly conducted by an air carrier or commuter between a high density airport and another point regularly served by that operator unless the service is conducted pursuant to irregular charter or hiring of aircraft or is a nonpassenger flight.

(d) An aircraft operator must obtain an IFR reservation in accordance with procedures established by the Administrator. For IFR flights to or from a high density airport, reservations for takeoff and arrival shall be obtained prior to takeoff.

[Doc. No. 9113, 34 FR 2603, Feb. 26, 1969, as amended by Amdt. 93–25, 37 FR 22794, Oct. 25, 1972; Amdt. 93–44, 46 FR 58049, Nov. 27, 1981; Amdt. 93–46, 49 FR 8244, Mar. 6, 1984]

§ 93.130 Suspension of allocations.

The Administrator may suspend the effectiveness of any allocation prescribed in § 93.123 and the reservation requirements prescribed in § 93.125 if he finds such action to be consistent with the efficient use of the airspace. Such suspension may be terminated whenever the Administrator determines that such action is necessary for the efficient use of the airspace.

[Doc. No. 9974, 35 FR 16592, Oct. 24, 1970, as amended by Amdt. 93–21, 35 FR 16636, Oct. 27, 1970; Amdt. 93–27, 38 FR 29464, Oct. 25, 1973]

§ 93.133 Exceptions.

Except as provided in § 93.130, the provisions of §§ 93.123 and 93.125 do not apply to—

(a) The Newark Airport, Newark, NJ;

(b) The Kennedy International Airport, New York, NY, except during the

hours from 3 p.m. through 7:59 p.m., local time; and

(c) O'Hare International Airport from 9:15 p.m. to 6:44 a.m., local time.

[Doc. No. 24471, 49 FR 8244, Mar. 6, 1984]

Subpart L [Reserved]

Subpart M—Ketchikan International Airport Traffic Rule

SOURCE: Docket No. 14687, 41 FR 14879, Apr. 8, 1976, unless otherwise noted.

§ 93.151 Applicability.

This subpart prescribes a special air traffic rule for aircraft conducting VFR operations in the vicinity of the Ketchikan International Airport or Ketchikan Harbor, Alaska.

[Doc. No. FAA–2002–13235, 68 FR 9795, Feb. 28, 2003]

§ 93.152 Description of area.

Within that airspace below 3,000 feet MSL within the lateral boundary of the surface area of the Ketchikan Class E airspace regardless of whether that airspace is in effect.

[Doc. No. FAA–2002–13235, 68 FR 9795, Feb. 28, 2003]

§ 93.153 Communications.

(a) When the Ketchikan Flight Service Station is in operation, no person may operate an aircraft within the airspace specified in § 93.151, or taxi onto the runway at Ketchikan International Airport, unless that person has established two-way radio communications with the Ketchikan Flight Service Station for the purpose of receiving traffic advisories and continues to monitor the advisory frequency at all times while operating within the specified airspace.

(b) When the Ketchikan Flight Service Station is not in operation, no person may operate an aircraft within the airspace specified in § 93.151, or taxi onto the runway at Ketchikan International Airport, unless that person continuously monitors and communicates, as appropriate, on the designated common traffic advisory frequency as follows:

(1) *For inbound flights.* Announces position and intentions when no less than 10 miles from Ketchikan International Airport, and monitors the designated frequency until clear of the movement area on the airport or Ketchikan Harbor.

(2) *For departing flights.* Announces position and intentions prior to taxiing onto the active runway on the airport or onto the movement area of Ketchikan Harbor and monitors the designated frequency until outside the airspace described in § 93.151 and announces position and intentions upon departing that airspace.

(c) Notwithstanding the provisions of paragraphs (a) and (b) of this section, if two-way radio communications failure occurs in flight, a person may operate an aircraft within the airspace specified in § 93.151, and land, if weather conditions are at or above basic VFR weather minimums.

[Doc. No. 26653, 56 FR 48094, Sept. 23, 1991]

§ 93.155 Aircraft operations.

(a) When an advisory is received from the Ketchikan Flight Service Station stating that an aircraft is on final approach to the Ketchikan International Airport, no person may taxi onto the runway of that airport until the approaching aircraft has landed and has cleared the runway.

(b) Unless otherwise authorized by ATC, each person operating a large airplane or a turbine engine powered airplane shall—

(1) When approaching to land at the Ketchikan International Airport, maintain an altitude of at least 900 feet MSL until within three miles of the airport; and

(2) After takeoff from the Ketchikan International Airport, maintain runway heading until reaching an altitude of 900 feet MSL.

Subparts N–R [Reserved]

Subpart S—Allocation of Commuter and Air Carrier IFR Operations at High Density Traffic Airports

SOURCE: Docket No. 24105, 50 FR 52195, Dec. 20, 1985, unless otherwise noted.

§ 93.211 Applicability.

(a) This subpart prescribes rules applicable to the allocation and withdrawal of IFR operational authority (takeoffs and landings) to individual air carriers and commuter operators at the High Density Traffic Airports identified in subpart K of this part except for Newark Airport.

(b) This subpart also prescribes rules concerning the transfer of allocated IFR operational authority and the use of that authority once allocated.

§ 93.213 Definitions and general provisions.

(a) For purposes of this subpart—

(1) *New entrant carrier* means a commuter operator or air carrier which does not hold a slot at a particular airport and has never sold or given up a slot at that airport after December 16, 1985.

(2) *Slot* means the operational authority to conduct one IFR landing or takeoff operation each day during a specific hour or 30 minute period at one of the High Density Traffic Airports, as specified in subpart K of this part.

(3) *Summer season* means the period of time from the first Sunday in April until the last Sunday in October.

(4) *Winter season* means the period of time from the last Sunday in October until the first Sunday in April.

(5) *Limited incumbent carrier* means an air carrier or commuter operator that holds or operates fewer than 12 air carrier or commuter slots, in any combination, at a particular airport, not including international slots, Essential Air Service Program slots, or slots between the hours of 2200 and 0659 at Washington National Airport or LaGuardia Airport. However, for the purposes of this paragraph (a)(5), the carrier is considered to hold the number of slots at that airport that the carrier has, since December 16, 1985:

(i) Returned to the FAA;

(ii) Had recalled by the FAA under § 93.227(a); or

(iii) Transferred to another party other than by trade for one or more slots at the same airport.

(b) The definitions specified in subpart K of this part also apply to this subpart.

(c) For purposes of this subpart, if an air carrier, commuter operator, or other person has more than a 50-percent ownership or control of one or more other air carriers, commuter operators, or other persons, they shall be considered to be a single air carrier, commuter operator, or person. In addition, if a single company has more than a 50-percent ownership or control of two or more air carriers and/or commuter operators or any combination thereof, those air carriers and/or commuter operators shall be considered to be a single operator. A single operator may be considered to be both an air carrier and commuter operator for purposes of this subpart.

[Doc. No. 24105, 50 FR 52195, Dec. 20, 1985, as amended by Amdt. 93–52, 51 FR 21717, June 13, 1986; Amdt. 93–57, 54 FR 34906, Aug. 22, 1989; 54 FR 37303, Sept. 8, 1989; Amdt. 93–65, 57 FR 37314, Aug. 18, 1992]

§ 93.215 Initial allocation of slots.

(a) Each air carrier and commuter operator holding a permanent slot on December 16, 1985, as evidenced by the records of the air carrier and commuter operator scheduling committees, shall be allocated those slots subject to withdrawal under the provisions of this subpart. The Chief Counsel of the FAA shall be the final decisionmaker for initial allocation determinations.

(b) Any permanent slot whose use on December 16, 1985 is divided among different operators, by day of the week, or otherwise, as evidenced by records of the scheduling committees, shall be allocated in conformity with those records. The Chief Counsel of the FAA shall be the final decisionmaker for these determinations.

(c) A carrier may permanently designate a slot it holds at Kennedy International Airport as a seasonal slot, to be held by the carrier only during the corresponding season in future years, if it notifies the FAA (at the address specified in § 93.225(e)), in writing, the preceding winter seasons or by October 15 of the preceding year for summer seasons.

(d) Within 30 days after December 16, 1985, each U.S. air carrier and commuter operator must notify the office specified in § 93.221(a)(1), in writing, of

those slots used for operations described in § 93.217(a)(1) on December 16, 1985.

(e) Any slot not held by an operator on December 16, 1985 shall be allocated in accordance with the provisions of §§ 93.217, 93.219 or 93.225 of this subpart.

[Doc. No. 24105, 50 FR 52195, Dec. 20, 1985, as amended by Amdt. 93–52, 51 FR 21717, June 13, 1986]

§ 93.217 Allocation of slots for international operations and applicable limitations.

(a) Any air carrier of commuter operator having the authority to conduct international operations shall be provided slots for those operations, excluding transborder service solely between HDR airports and Canada, subject to the following conditions and the other provisions of this section:

(1) The slot may be used only for a flight segment in which either the takeoff or landing is at a foreign point or, for foreign operators, the flight segment is a continuation of a flight that begins or ends at a foreign point. Slots may be obtained and used under this section only for operations at Kennedy and O'Hare airports unless otherwise required by bilateral agreement and only for scheduled service unless the requesting carrier qualifies for the slot on the basis of historic seasonal operations, under § 93.217(a)(5).

(2) Slots used for an operation described in paragraph (a)(1) of this section may not be bought, sold, leased, or otherwise transferred, except that such a slot may be traded to another slotholder on a one-for-one basis for a slot at the same airport in a different hour or half-hour period if the trade is for the purpose of conducting such an operation in a different hour or half-hour period.

(3) Slots used for operations described in paragraph (a)(1) of this section must be returned to the FAA if the slot will not be used for such operations for more than a 2-week period.

(4) Each air carrier or commuter operator having a slot that is used for operations described in paragraph (a)(1) of this section but is not used every day of the week shall notify the office specified in § 93.221(a)(1) in writing of those days on which the slots will not be used.

(5) Except as provided in paragraph (a)(10) of this section, at Kennedy and O'Hare Airports, a slot shall be allocated, upon request, for seasonal international operations, including charter operations, if the Chief Counsel of the FAA determines that the slot had been permanently allocated to and used by the requesting carrier in the same hour and for the same time period during the corresponding season of the preceding year. Requests for such slots must be submitted to the office specified in § 93.221(a)(1), by the deadline published in a FEDERAL REGISTER notice for each season. For operations during the 1986 summer season, requests under this paragraph must have been submitted to the FAA on or before February 1, 1986. Each carrier requesting a slot under this paragraph must submit its entire international schedule at the relevant airport for the particular season, noting which requests are in addition to or changes from the previous year.

(6) Except as provided in paragraph (a)(10) of this section, additional slots shall be allocated at O'Hare Airport for international scheduled air carrier and commuter operations (beyond those slots allocated under §§ 93.215 and 93.217(a)(5) if a request is submitted to the office specified in § 93.221(a)(1) and filed by the deadline published in a FEDERAL REGISTER notice for each season. These slots will be allocated at the time requested unless a slot is available within one hour of the requested time, in which case the unallocated slots will be used to satisfy the request.

(7) If required by bilateral agreement, additional slots shall be allocated at LaGuardia Airport for international scheduled passenger operations within the hour requested.

(8) To the extent vacant slots are available, additional slots during the high density hours shall be allocated at Kennedy Airport for new international scheduled air carrier and commuter operations (beyond those operations for which slots have been allocated under §§ 93.215 and 93.217(a)(5)), if a request is submitted to the office specified in § 93.221(a)(1) by the deadline published

in a FEDERAL REGISTER notice for each season. In addition, slots may be withdrawn from domestic operations for operations at Kennedy Airport under this paragraph if required by international obligations.

(9) In determining the hour in which a slot request under §§ 93.217(a)(6) and 93.217(a)(8) will be granted, the following will be taken into consideration, among other things:

(i) The availability of vacant slot times;

(ii) International obligations;

(iii) Airport terminal capacity, including facilities and personnel of the U.S. Customs Service and the U.S. Immigration and Naturalization Service;

(iv) The extent and regularity of intended use of a slot; and

(v) Schedule constraints of carriers requesting slots.

(10) At O'Hare Airport, a slot will not be allocated under this section to a carrier holding or operating 100 or more permanent slots on the previous May 15 for a winter season or October 15 for a summer season unless:

(i) Allocation of the slot does not result in a total allocation to that carrier under this section that exceeds the number of slots allocated to and scheduled by that carrier under this section on February 23, 1990, and as reduced by the number of slots reclassified under § 93.218, and does not exceed by more than 2 the number of slots allocated to and scheduled by that carrier during any half hour of that day, or

(ii) Notwithstanding the number of slots allocated under paragraph (a)(10)(i) of this section, a slot is available for allocation without withdrawal of a permanent slot from any carrier.

(b) If a slot allocated under § 93.215 was scheduled for an operation described in paragraph (a)(1) of this section on December 16, 1985, its use shall be subject to the requirements of paragraphs (a)(1) through (a)(4) of this section. The requirements also apply to slots used for international operations at LaGuardia Airport.

(c) If a slot is offered to a carrier in other than the hour requested, the carrier shall have 14 days after the date of the offer to accept the newly offered slot. Acceptance must be in writing and sent to the office specified in § 93.221(a)(1) and must repeat the certified statements required by paragraph (e) of this section.

(d) The Office of the Secretary of Transportation reserves the right not to apply the provisions of this section, concerning the allocation of slots, to any foreign air carrier or commuter operator of a country that provides slots to U.S. air carriers and commuter operators on a basis more restrictive than provided by this subpart. Decisions not to apply the provisions of this section will be made by the Office of the Secretary of Transportation.

(e) Each request for slots under this section shall state the airport, days of the week and time of the day of the desired slots and the period of time the slots are to be used. Each request shall identify whether the slot is requested under paragraph (a)(5), (6), or (8) and identify any changes from the previous year if requested under both paragraphs. The request must be accompanied by a certified statement signed by an officer of the operator indicating that the operator has or has contracted for aircraft capable of being utilized in using the slots requested and that the operator has bona fide plans to use the requested slots for operations described in paragraph (a).

[Doc. No. 24105, 51 FR 21717, June 13, 1986, as amended by Amdt. 93–61, 55 FR 53243, Dec. 27, 1990; 56 FR 1059, Jan. 10, 1991; Amdt. 93–78, 64 FR 53565, Oct. 1, 1999]

§ 93.218 Slots for transborder service to and from Canada.

(a) Except as otherwise provided in this subpart, international slots identified by U.S. carriers for international operations in December 1985 and the equivalent number of international slots held as of February 24, 1998, will be domestic slots. The Chief Counsel of the FAA shall be the final decisionmaker for these determinations.

(b) Canadian carriers shall have a guaranteed base level of slots of 42 slots at LaGuardia, 36 slots at O'Hare for the Sumner season, and 32 slots at O'Hare in the Winter season.

(c) Any modification to the slot base by the Government of Canada or the

Canadian carriers that results in a decrease of the guaranteed base in paragraph (b) of this section shall permanently modify the base number of slots.

[Doc. No. FAA–1999–4971, 64 FR 53565, Oct. 1, 1999]

§ 93.219 Allocation of slots for essential air service operations and applicable limitations.

Whenever the Office of the Secretary of Transportation determines that slots are needed for operations to or from a High Density Traffic Airport under the Department of Transportation's Essential Air Service (EAS) Program, those slots shall be provided to the designated air carrier or commuter operator subject to the following limitations:

(a) Slots obtained under this section may not be bought, sold, leased or otherwise transferred, except that such slots may be traded for other slots on a one-for-one basis at the same airport.

(b) Any slot obtained under this section must be returned to the FAA if it will not be used for EAS purposes for more than a 2-week period. A slot returned under this paragraph may be reallocated to the operator which returned it upon request to the FAA office specified in § 93.221(a)(1) if that slot has not been reallocated to an operator to provide substitute essential air service.

(c) Slots shall be allocated for EAS purposes in a time period within 90 minutes of the time period requested.

(d) The Department will not honor requests for slots for EAS purposes to a point if the requesting carrier has previously traded away or sold slots it had used or obtained for use in providing essential air service to that point.

(e) Slots obtained under Civil Aeronautics Board Order No. 84–11–40 shall be considered to have been obtained under this section.

§ 93.221 Transfer of slots.

(a) Except as otherwise provided in this subpart, effective April 1, 1986, slots may be bought, sold or leased for any consideration and any time period and they may be traded in any combination for slots at the same airport or any other high density traffic airport. Transfers, including leases, shall comply with the following conditions:

(1) Requests for confirmation must be submitted in writing to Slot Administration Office, AGC–230, Office of the Chief Counsel, Federal Aviation Administration, 800 Independence Ave., SW., Washington, DC 20591, in a format to be prescribed by the Administrator. Requests will provide the names of the transferor and recipient; business address and telephone number of the persons representing the transferor and recipient; whether the slot is to be used for an arrival or departure; the date the slot was acquired by the transferor; the section of this subpart under which the slot was allocated to the transferor; whether the slot has been used by the transferor for international or essential air service operations; and whether the slot will be used by the recipient for international or essential air service operations. After withdrawal priorities have been established under § 93.223 of this part, the requests must include the slot designations of the transferred slots as described in § 93.223(b)(5).

(2) The slot transferred must come from the transferor's then-current FAA-approved base.

(3) Written evidence of each transferor's consent to the transfer must be provided to the FAA.

(4) The recipient of a transferred slot may not use the slot until written confirmation has been received from the FAA.

(5)(i) Until a slot obtained by a new entrant or limited incumbent carrier in a lottery held under § 93.225 after June 1, 1991, has been used by the carrier that obtained it for a continuous 24-month period after the lottery in accordance with § 93.227(a), that slot may be transferred only by trade for one or more slots at the same airport or to other new entrant or limited incumbent carriers under § 93.221(a)(5)(iii). This transfer restriction shall apply to the same extent to any slot or slots acquired by trading the slot obtained in a lottery. To remove the transfer restriction, documentation of 24 months' continuous use must be submitted to the FAA Office of the Chief Counsel.

(ii) Failure to use a slot acquired by trading a slot obtained in a lottery for

a continuous 24-month period after the lottery, shall void all trades involving the lottery slot, which shall be returned to the FAA. All use of the lottery slot shall be counted toward fulfilling the minimum use requirements under § 93.227(a) applicable to the slot or slots for which the lottery slot was traded, including subsequent trades.

(iii) Slots obtained by new entrant or limited incumbent carriers in a lottery may be sold, leased, or otherwise transferred to another entrant or limited incumbent carrier after a minimum of 60 days of use by the obtaining carrier. The transfer restrictions of § 93.221(a)(5)(i) shall continue to apply to the slot until documentation of 24 months' continuous use has been submitted and the transfer restriction removed.

(6) The Office of the Secretary of Transportation must determine that the transfer will not be injurious to the essential air service program.

(b) A record of each slot transfer shall be kept on file by the office specified in paragraph (a)(1) of this section and will be made available to the public upon request.

(c) Any person may buy or sell slots and any air carrier or commuter may use them. Notwithstanding § 93.123, air carrier slots may be used with aircraft of the kind described in § 93.123 (c)(1) or (c)(2) but commuter slots may only be used with aircraft of the kind described in § 93.0123(c)(2).

(d) Air carriers and commuter operators considered to be a single operator under the provisions of § 93.213(c) of this subpart but operating under separate names shall report transfers of slots between them.

(e) Notwithstanding § 93.123(c)(2) of this part, a commuter slot at O'Hare International Airport may be used with an aircraft described in § 93.123(c)(1) of this part on the following conditions:

(1) Air carrier aircraft that may be operated under this paragraph are limited to aircraft:

(i) Having an actual seating configuration of 110 or fewer passengers; and

(ii) Having a maximum certificated takeoff weight of less than 126,000 pounds.

(2) No more than 50 percent of the total number of commuter slots held by a slot holder at O'Hare International Airport may be used with aircraft described in paragraph (e)(1) of this section.

(3) An air carrier or commuter operator planning to operate an aircraft described in paragraph (e)(1) of this section in a commuter slot shall notify ATC at least 75 days in advance of the planned start date of such operation. The notice shall include the slot number, proposed time of operation, aircraft type, aircraft series, actual aircraft seating configuration, and planned start date. ATC will approve or disapprove the proposed operation no later than 45 days prior to the planned start date. If an operator does not initiate operation of a commuter slot under this section within 30 days of the planned start date first submitted to the FAA, the ATC approval for that operation will expire. That operator may file a new or revised notice for the same half-hour slot time.

(4) An operation may not be conducted under paragraph (e)(1) of this section unless a gate is available for that operation without planned waiting time.

(5) For the purposes of this paragraph (e), notice to ATC shall be submitted in writing to: Director, Air Traffic System Management, ATM–1, Federal Aviation Administration, 800 Independence Avenue SW., Washington, DC 20591.

[Doc. No. 24105, 50 FR 52195, Dec. 20, 1985, as amended by Amdt. 93–52, 51 FR 21717, June 13, 1986; Amdt. 93–58, 54 FR 39293, Sept. 25, 1989; Amdt. 93–62, 56 FR 41208, Aug. 19, 1991; Amdt. 93–65, 57 FR 37314, Aug. 18, 1992; Amdt. 93–68, 58 FR 39616, July 23, 1993]

§ 93.223 Slot withdrawal.

(a) Slots do not represent a property right but represent an operating privilege subject to absolute FAA control. Slots may be withdrawn at any time to fulfill the Department's operational needs, such as providing slots for international or essential air service operations or eliminating slots. Before withdrawing any slots under this section to provide them for international operations, essential air services or other operational needs, those slots returned under § 93.224 of this part and

those recalled by the agency under § 93.227 will be allocated.

(b) Separate slot pools shall be established for air carriers and commuter operators at each airport. The FAA shall assign, by random lottery, withdrawal priority numbers for the recall priority of slots at each airport. Each additional permanent slot, if any, will be assigned the next higher number for air carrier or commuter slots, as appropriate, at each airport. Each slot shall be assigned a designation consisting of the applicable withdrawal priority number; the airport code; a code indicating whether the slot is an air carrier or commuter operator slot; and the time period of the slot. The designation shall also indicate, as appropriate, if the slot is daily or for certain days of the week only; is limited to arrivals or departures; is allocated for international operations or for EAS purposes; and, at Kennedy International Airport, is a summer or winter slot.

(c) Whenever slots must be withdrawn, they will be withdrawn in accordance with the priority list established under paragraph (b) of this section, except:

(1) Slots obtained in a lottery held pursuant to § 93.225 of this part shall be subject to withdrawal pursuant to paragraph (i) of that section, and

(2) Slots necessary for international and essential air service operations shall be exempt from withdrawal for use for other international or essential air service operations.

(3) Except as provided in § 93.227(a), the FAA shall not withdraw slots held at an airport by an air carrier or commuter operator holding and operating 12 or fewer slots at that airport (excluding slots used for operations described in § 93.212(a)(1)), if withdrawal would reduce the number of slots held below the number of slots operated.

(4) No slot comprising the guaranteed base of slots, as defined in section 93.318(b), shall be withdrawn for use for international operations or for new entrants.

(d) The following withdrawal priority rule shall be used to permit application of the one-for-one trade provisions for international and essential air service slots and the slot withdrawal provisions where the slots are needed for other than international or essential air service operations. If an operator has more than one slot in a specific time period in which it also has a slot being used for international or essential air service operations, the international and essential air service slots will be considered to be those with the lowest withdrawal priority.

(e) The operator(s) using each slot to be withdrawn shall be notified by the FAA of the withdrawal and shall cease operations using that slot on the date indicated in the notice. Generally, the FAA will provide at least 30 days after notification for the operator to cease operations unless exigencies require a shorter time period.

(f) For 24 months following a lottery held after June 1, 1991, a slot acquired in that lottery shall be withdrawn by the FAA upon the sale, merger, or acquisition of more than 50 percent ownership or control of the carrier using that slot or one acquired by trade of that slot, if the resulting total of slots held or operated at the airport by the surviving entity would exceed 12 slots.

[Doc. No. 24105, 50 FR 52195, Dec. 20, 1985, as amended by Amdt. 93–52, 51 FR 21718, June 13, 1986; Amdt. 93–57, 54 FR 34906, Aug. 22, 1989; Amdt. 93–65, 57 FR 37314, Aug. 18, 1992; Amdt. 93–78, 64 FR 53565, Oct. 1, 1999]

§ 93.224 Return of slots.

(a) Whenever a slot is required to be returned under this subpart, the holder must notify the office specified in § 93.221(a)(1) in writing of the date after which the slot will not be used.

(b) Slots may be voluntarily returned for use by other operators by notifying the office specified in § 93.221(a)(1) in writing.

§ 93.225 Lottery of available slots.

(a) Whenever the FAA determines that sufficient slots have become available for distribution for purposes other than international or essential air service operations, but generally not more than twice a year, they shall be allocated in accordance with the provisions of this section.

(b) A random lottery shall be held to determine the order of slot selection.

(c) Slot allocation lotteries shall be held on an airport-by-airport basis with separate lotteries for air carrier

and commuter operator slots. The slots to be allocated in each lottery will be each unallocated slot not necessary for international or Essential Air Service Program operations, including any slot created by an increase in the operating limits set forth in § 93.123(a).

(d) The FAA shall publish a notice in the FEDERAL REGISTER announcing any lottery dates. The notice may include special procedures to be in effect for the lotteries.

(e) Participation in a lottery is open to each U.S. air carrier or commuter operator operating at the airport and providing scheduled passenger service at the airport, as well as where provided for by bilateral agreement. Any U.S. carrier, or foreign air carrier where provided for by bilateral agreement, that is not operating scheduled service at the airport and has not failed to operate slots obtained in the previous lottery, or slots traded for those obtained by lottery, but wishes to initiate scheduled passenger service at the airport, shall be included in the lottery if that operator notifies, in writing, the Slot Administration Office, AGC–230, Office of the Chief Counsel, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591. The notification must be received 15 days prior to the lottery date and state whether there is any common ownership or control of, by, or with any other air carrier or commuter operator as defined in § 93.213(c). New entrant and limited incumbent carriers will be permitted to complete their selections before participation by other incumbent carriers is initiated.

(f) At the lottery, each operator must make its selection within 5 minutes after being called or it shall lose its turn. If capacity still remains after each operator has had an opportunity to select slots, the allocation sequence will be repeated in the same order. An operator may select any two slots available at the airport during each sequence, except that new entrant carriers may select four slots, if available, in the first sequence.

(g) To select slots during a slot lottery session, a carrier must have appropriate economic authority for scheduled passenger service under Title IV of the Federal Aviation Act of 1958, as amended (49 U.S.C. App. 1371 et seq.), and must hold FAA operating authority under part 121 or part 135 of this chapter as appropriate for the slots the operator seeks to select.

(h) During the first selection sequence, 25 percent of the slots available but no less than two slots shall be reserved for selection by new entrant carriers. If new entrant carriers do not select all of the slots set aside for new entrant carriers, limited incumbent carriers may select the remaining slots. If every participating new entrant carrier and limited incumbent carrier has ceased selection of available slots or has obtained 12 slots at that airport, other incumbent carriers may participate in selecting the remaining slots; however, slots selected by non-limited incumbent carriers will be allocated only until the date of the next lottery.

(i) Slots obtained under this section shall retain their withdrawal priority as established under § 93.223. If the slot is newly created, a withdrawal priority shall be assigned. That priority number shall be higher than any other slot assigned a withdrawal number previously.

[Doc. No. 24105, 50 FR 52195, Dec. 20, 1985, as amended by Amdt. 93–52, 51 FR 21718, June 13, 1986; Amdt. 93–58, 54 FR 39293, Sept. 25, 1989; Amdt. 93–65, 57 FR 37314, Aug. 18, 1992; 57 FR 47993, Oct. 21, 1992; Amdt. 93–78, 64 FR 53565, Oct. 1, 1999]

§ 93.226 Allocation of slots in low-demand periods.

(a) If there are available slots in the following time periods and there are no pending requests for international or EAS operations at these times, FAA will allocate slots upon request on a first-come, first-served basis, as set forth in this section:

(1) Any period for which a slot is available less than 5 days per week.

(2) Any time period for which a slot is available for less than a full season.

(3) For LaGuardia and Washington National Airports:

(i) 6:00 a.m.–6:59 a.m.

(ii) 10:00 p.m.–midnight.

(b) Slots will be allocated only to operators with the economic and operating authority and aircraft required to use the slots.

(c) Requests for allocations under this section shall be submitted in writing to the address listed in § 93.221(a)(1) and shall identify the request as made under this section.

(d) The FAA may deny requests made under this section after a determination that all remaining slots in a particular category should be distributed by lottery.

(e) Slots may be allocated on a seasonal or temporary basis under this provision.

[Doc. No. 24105, 51 FR 21718, June 13, 1986]

§ 93.227 Slot use and loss.

(a) Except as provided in paragraphs (b), (c), (d), (g), and (l) of this section, any slot not utilized 80 percent of the time over a 2-month period shall be recalled by the FAA.

(b) Paragraph (a) of this section does not apply to slots obtained under § 93.225 of this part during:

(1) The first 90 days after they are allocated to a new entrant carrier; or

(2) The first 60 days after they are allocated to a limited incumbent or other incumbent carrier.

(c) Paragraph (a) of this section does not apply to slots of an operator forced by a strike to cease operations using those slots.

(d) In the case of a carrier that files for protection under the Federal bankruptcy laws and has not received a Notice of Withdrawal from the FAA for the subject slot or slots, paragraph (a) of this section does not apply:

(1) During a period after the initial petition in bankruptcy, to any slot held or operated by that carrier, for:

(i) 60 days after the carrier files the initial petition in bankruptcy; and

(ii) 30 days after the carrier, in anticipation of transferring slots, submits information to a Federal government agency in connection with a statutory antitrust, economic impact, or similar review of the transfer, provided that the information is submitted more than 30 days after filing the initial petition in bankruptcy, and provided further that any slot to be transferred has not become subject to withdrawal under any other provision of this § 93.227; and

(2) During a period after a carrier ceases operations at an airport, to any slot held or operated by that carrier at that airport, for:

(i) 30 days after the carrier ceases operations at that airport, provided that the slot has not become subject to withdrawal under any other provision of this § 93.227; and

(ii) 30 days after the parties to a proposed transfer of any such slot comply with requests for additional information by a Federal government agency in connection with an antitrust, economic impact, or similar investigation of the transfer, provided that—

(A) The original notice of the transfer is filed with the Federal agency within 30 days after the carrier ceases operation at the airport;

(B) The request for additional information is made within 10 days of the filing of the notice by the carrier;

(C) The carrier submits the additional information to the Federal agency within 15 days of the request by such agency; and

(D) Any slot to be transferred has not become subject to withdrawal under any other provision of this § 93.227.

(e) Persons having slots withdrawn pursuant to paragraph (a) of this section must cease all use of those slots upon receipt of notice from the FAA.

(f) Persons holding slots but not using them pursuant to the provisions of paragraphs (b), (c) and (d) may lease those slots for use by others. A slot obtained in a lottery may not be leased after the expiration of the applicable time period specified in paragraph (b) of this section unless it has been operated for a 2-month period at least 65 percent of the time by the operator which obtained it in the lottery.

(g) This section does not apply to slots used for the operations described in § 93.217(a)(1) except that a U.S. air carrier or commuter operator required to file a report under paragraph (i) of this section shall include all slots operated at the airport, including slots described in § 93.217(a)(1).

(h) Within 30 days after an operator files for protection under the Federal bankruptcy laws, the FAA shall recall any slots of that operator, if—(1) the slots were formerly used for essential air service and (2) the Office of the Secretary of Transportation determines

those slots are required to provide substitute essential air service to or from the same points.

(i) Every air carrier and commuter operator or other person holding a slot at a high density airport shall, within 14 days after the last day of the 2-month period beginning January 1, 1986, and every 2 months thereafter, forward, in writing, to the address identified in §93.221(a)(1), a list of all slots held by the air carrier, commuter operator or other person along with a listing of which air carrier or commuter operator actually operated the slot for each day of the 2-month period. The report shall identify the flight number for which the slot was used and the equipment used, and shall identify the flight as an arrival or departure. The report shall identify any common ownership or control of, by, or with any other carrier as defined in §93.213(c) of this subpart. The report shall be signed by a senior official of the air carrier or commuter operator. If the slot is held by an ''other person,'' the report must be signed by an official representative.

(j) The Chief Counsel of the FAA may waive the requirements of paragraph (a) of this section in the event of a highly unusual and unpredictable condition which is beyond the control of the slot-holder and which exists for a period of 9 or more days. Examples of conditions which could justify waiver under this paragraph are weather conditions which result in the restricted operation of an airport for an extended period of time or the grounding of an aircraft type.

(k) The Chief Counsel of the FAA may, upon request, grant a waiver from the requirements of paragraph (a) of this section for a slot used for the domestic segment of an intercontinental all-cargo flight. To qualify for a waiver, a carrier must operate the slot a substantial percentage of the time and must return the slot to the FAA in advance for the time periods it will not be used.

(l) The FAA will treat as used any slot held by a carrier at a High Density Traffic Airport on Thanksgiving Day, the Friday following Thanksgiving Day, and the period from December 24 through the first Saturday in January.

[Doc. No. 24105, 50 FR 52195, Dec. 20, 1985, as amended by Amdt. 93–52, 51 FR 21718, June 13, 1986; Amdt. 93–65, 57 FR 37315, Aug. 18, 1992; Amdt. 93–71, 59 FR 58771, Nov. 15, 1994]

Subpart T—Ronald Reagan Washington National Airport Traffic Rules

SOURCE: Docket No. 25143, 51 FR 43587, Dec. 3, 1986; Admt. 93–82, 68 FR 9795, Feb. 28, 2003, unless otherwise noted.

§ 93.251 Applicability.

This subpart prescribes rules applicable to the operation of aircraft to or from Ronald Reagan Washington National Airport.

§ 93.253 Nonstop operations.

No person may operate an aircraft nonstop in air transportation between Ronald Reagan Washington National Airport and another airport that is more than 1,250 miles away from Ronald Reagan Washington National Airport.

Subpart U—Special Flight Rules in the Vicinity of Grand Canyon National Park, AZ

SOURCE: Doc. No. 28537, 61 FR 69330, Dec. 31, 1996, unless otherwise noted.

§ 93.301 Applicability.

This subpart prescribes special operating rules for all persons operating aircraft in the following airspace, designated as the Grand Canyon National Park Special Flight Rules Area: That airspace extending from the surface up to but not including 18,000 feet MSL within an area bounded by a line beginning at Lat. 35°55′12″ N., Long. 112°04′05″ W.; east to Lat. 35°55′30″ N., Long. 111°45′00″ W.; to Lat. 35°59′02″ N., Long. 111°36′03″ W.; north to Lat. 36°15′30″ N., Long. 111°36′06″ W.; to Lat. 36°24′49″ N., Long. 111°47′45″ W.; to Lat. 36°52′23″ N., Long. 111°33′10″ W.; west-northwest to Lat. 36°53′37″ N., Long. 111°38′29″ W.; southwest to Lat. 36°35′02″ N., Long. 111°53′28″ W.; to Lat. 36°21′30″ N., Long. 112°00′03″ W.; west-northwest to Lat.

36°30′30″ N., Long. 112°35′59″ W.; southwest to Lat. 36°24′46″ N., Long. 112°51′10″ W., thence west along the boundary of Grand Canyon National Park (GCNP) to Lat. 36°14′08″ N., Long. 113°10′07″ W.; west-southwest to Lat. 36°09′30″ N., Long. 114°03′03″ W.; southeast to Lat. 36°05′11″ N., Long. 113°58′46″ W.; thence south along the boundary of GCNP to Lat. 35°58′23″ N., Long. 113°54′14″ W.; north to Lat. 36°00′10″ N., Long. 113°53′48″ W.; northeast to Lat. 36°02′14″ N., Long. 113°50′16″ W.; to Lat. 36°02′17″ N., Long. 113°53′48″ W.; northeast to Lat. 36°02′14″ N., Long. 113°50′16″ W.; to Lat. 36°02′17″ N., Long. 113°49′11″ W.; southeast to Lat. 36°01′22″ N., Long. 113°48′21″ W.; to Lat. 35°59′15″ N., Long. 113°47′13″ W.; to Lat. 35°57′51″ N., Long. 113°46′01″ W.; to Lat. 35°57′45″ N., Long. 113°45′23″ W.; southwest to Lat. 35°54′48″ N., Long. 113°50′24″ W.; southeast to Lat. 35°41′01″ N., Long. 113°35′27″ W.; thence clockwise via the 4.2-nautical mile radius of the Peach Springs VORTAC to Lat. 36°38′53″ N., Long. 113°27′49″ W.; northeast to Lat. 35°42′58″ N., Long. 113°10′57″ W.; north to Lat. 35°57′51″ N., Long. 113°11′06″ W.; east to Lat. 35°57′44″ N., Long. 112°14′04″ W.; thence clockwise via the 4.3-nautical mile radius of the Grand Canyon National Park Airport reference point (Lat. 35°57′08″ N., Long. 112°08′49″ W.) to the point of origin.

[Doc. No. 5926, 65 FR 17742, Apr. 4, 2000]

§ 93.303 Definitions.

For the purposes of this subpart:

Allocation means authorization to conduct a commercial air tour in the Grand Canyon National Park (GCNP) Special Flight Rules Area (SFRA).

Commercial air tour means any flight conducted for compensation or hire in a powered aircraft where a purpose of the flight is sightseeing. If the operator of a flight asserts that the flight is not a commercial air tour, factors that can be considered by the Administrator in making a determination of whether the flight is a commercial air tour include, but are not limited to—

(1) Whether there was a holding out to the public of willingness to conduct a sightseeing flight for compensation or hire;

(2) Whether a narrative was provided that referred to areas or points of interest on the surface;

(3) The area of operation;

(4) The frequency of flights;

(5) The route of flight;

(6) The inclusion of sightseeing flights as part of any travel arrangement package; or

(7) Whether the flight in question would or would not have been canceled based on poor visibility of the surface.

Commercial Special Flight Rules Area Operation means any portion of any flight within the Grand Canyon National Park Special Flight Rules Area that is conducted by a certificate holder that has operations specifications authorizing flights within the Grand Canyon National Park Special Flight Rules Area. This term does not include operations conducted under an FAA Form 7711–1, Certificate of Waiver or Authorization. The types of flights covered by this definition are set forth in the ''Las Vegas Flight Standards District Office Grand Canyon National Park Special Flight Rules Area Procedures Manual'' which is available from the Las Vegas Flight Standards District Office.

Flight Standards District Office means the FAA Flight Standards District Office with jurisdiction for the geographical area containing the Grand Canyon.

GCNP quiet aircraft technology designation means an aircraft that is subject to § 93.301 and has been shown to comply with the noise limit specified in appendix A of this part.

Number of passenger seats means the number of passenger seats for which an individual aircraft is configured.

Park means Grand Canyon National Park.

Special Flight Rules Area means the Grand Canyon National Park Special Flight Rules Area.

[65 FR 17732, Apr. 4, 2000, as amended at 70 FR 16092, Mar. 29, 2005]

§ 93.305 Flight-free zones and flight corridors.

Except in an emergency or if otherwise necessary for safety of flight, or unless otherwise authorized by the Flight Standards District Office for a purpose listed in 93.309, no person may

operate an aircraft in the Special Flight Rules Area within the following flight-free zones:

(a) *Desert View Flight-free Zone.* That airspace extending from the surface up to but not including 14,500 feet MSL within an area bounded by a line beginning at Lat. 35°59′58″ N., Long. 111°52′47″ W.; thence east to Lat. 36°00′00″ N., Long. 111°51′04″ W.; thence north to 36°00′24″ N., Long. 111°51′04″ W.; thence east to 36°00′24″ N., Long. 111°45′44″ W.; thence north along the GCNP boundary to Lat. 36°14′05″ N., Long. 111°48′34″ W.; thence southwest to Lat. 36°12′06″ N., Long. 111°51′14″ W.; to the point of origin; but not including the airspace at and above 10,500 feet MSL within 1 nautical mile of the western boundary of the zone. The corridor to the west between the Desert View and Bright Angel Flight-free Zones, is designated the ''Zuni Point Corridor.'' This corridor is 2 nautical miles wide for commercial air tour flights and 4 nautical miles wide for transient and general aviation operations.

(b) *Bright Angel Flight-free Zone.* That airspace extending from the surface up to but not including 14,500 feet MSL within an area bounded by a line beginning at Lat. 35°58′39″ N., Long. 111°55′43″ W.; north to Lat. 36°12′41″ N., Long. 111°53′54″ W.; northwest to Lat. 36°18′18″ N., Long. 111°58′15″ W.; thence west along the GCNP boundary to Lat. 36°20′11″ N., Long. 112°06′25″ W.; south-southwest to Lat. 36°09′31″ N., Long. 112°11′15″ W.; to Lat. 36°04′16″ N., Long. 112°17′20″ W.; thence southeast along the GCNP boundary to Lat. 36°01′54″ N., Long. 112°11′24″ W.; thence clockwise via the 4.3-nautical mile radius of the Grand Canyon National Park Airport reference point (Lat. 35°57′08″ N., Long. 112°08′49″ W.) to Lat. 35°59′37″ N., Long. 112°04′29″ W.; thence east along the GCNP boundary to the point of origin; but not including the airspace at and above 10,500 feet MSL within 1 nautical mile of the eastern boundary or the airspace at and above 10,500 feet MSL within 2 nautical miles of the northwestern boundary. The corridor to the east, between this flight-free zone and the Desert View Flight-free Zone, is designated the ''Zuni Point Corridor.'' The corridor to the west, between the Bright Angel and Toroweap/Shinumo Flight-free Zones, is designated the ''Dragon Corridor.'' This corridor is 2 nautical miles wide for commercial air tour flights and 4 nautical miles wide for transient and general aviation operations. The Bright Angel Flight-free Zone does not include the following airspace designated as the Bright Angel Corridor: That airspace one-half nautical mile on either side of a line extending from Lat. 36°14′57″ N., Long. 112°08′45″ W. and Lat. 36°15′01″ N., Long. 111°55′39″ W.

(c) *Toroweap/Shinumo Flight-free Zone.* That airspace extending from the surface up to but not including 14,500 feet MSL within an area bounded by a line beginning at Lat. 36°05′44″ N., Long. 112°19′27″ W.; north-northeast to Lat. 36°10′49″ N., Long. 112°13′19″ W.; to Lat. 36°21′02″ N., Long. 112°08′47″ W.; thence west and south along the GCNP boundary to Lat 36°10′58″ N., Long. 113°08′35″ W.; south to Lat. 36°10′12″ N., Long. 113°08′34″ W.; thence in an easterly direction along the park boundary to the point of origin; but not including the following airspace designated as the ''Tuckup Corridor'': at or above 10,500 feet MSL within 2 nautical miles either side of a line extending between Lat. 36°24′42″ N., Long. 112°48′47″ W. and Lat. 36°14′17″ N., Long. 112°48′31″ W. The airspace designated as the ''Fossil Canyon Corridor'' is also excluded from the Toroweap/Shinumo Flight-free Zone at or above 10,500 feet MSL within 2 nautical miles either side of a line extending between Lat. 36°16′26″ N., Long. 112°34′35″ W. and Lat. 36°22′51″ N., Long. 112°18′18″ W. The Fossil Canyon Corridor is to be used for transient and general aviation operations only.

(d) *Sanup Flight-free Zone.* That airspace extending from the surface up to but not including 8,000 feet MSL within an area bounded by a line beginning at Lat. 35°59′32″ N., Long. 113°20′28″ W.; west to Lat. 36°00′55″ N., Long. 113°42′09″ W.; southeast to Lat. 35°59′57″ N., Long. 113°41′09″ W.; to Lat. 35°59′09″ N., Long. 113°40′53″ W.; to Lat. 35°58′45″ N., Long. 113°40′15″ W.; to Lat. 35°57′52″ N., Long. 113°39′34″ W.; to Lat. 35°56′44″ N., Long. 113°39′07″ W.; to Lat. 35°56′04″ N., Long. 113°39′20″ W.; to Lat. 35°55′02″ N., Long. 113°40′43″ W.; to Lat. 35°54′47″ N., Long. 113°40′51″ W.; southeast to Lat. 35°50′16″

N., Long. 113°37′13″ W.; thence along the park boundary to the point of origin.

[Doc. No. 28537, 61 FR 69330, Dec. 31, 1996, as amended by Amdt. 93–80, 65 FR 17742, Apr. 4, 2000]

EFFECTIVE DATE NOTE: By Doc. No. FAA–2001–8690, 68 FR 9498, Feb. 27, 2003, § 93.305 was amended by staying paragraphs (a) and (b), effective Feb. 20, 2003, until Feb. 20, 2006. At 71 FR 9441, Feb. 24, 2006, the stay was further extended until Feb. 20, 2011.

§ 93.307 Minimum flight altitudes.

Except in an emergency, or if otherwise necessary for safety of flight, or unless otherwise authorized by the Flight Standards District Office for a purpose listed in 93.309, no person may operate an aircraft in the Special Flight Rules Area at an altitude lower than the following:

(a) *Minimum sector altitudes*—(1) *Commercial air tours*—(i) *Marble Canyon Sector*. Lees Ferry to Boundary Ridge: 6,000 feet MSL.

(ii) *Supai Sector*. Boundary Ridge to Supai Point: 7,500 feet MSL.

(iii) *Diamond Creek Sector*. Supai Point to Diamond Creek: 6,500 feet MSL.

(iv) *Pearce Ferry Sector*. Diamond Creek to the Grand Wash Cliffs: 5,000 feet MSL.

(2) *Transient and general aviation operations*—(i) *Marble Canyon Sector*. Lees Ferry to Boundary Ridge: 8,000 feet MSL.

(ii) *Supai Sector*. Boundary Ridge to Supai Point: 10,000 feet MSL.

(iii) *Diamond Creek Sector*. Supai Point to Diamond Creek: 9,000 feet MSL.

(iv) *Pearce Ferry Sector*. Diamond Creek to the Grand Wash Cliffs: 8,000 feet MSL.

(b) *Minimum corridor altitudes*—(1) *Commercial air tours*—(i) *Zuni Point Corridors*. 7,500 feet MSL.

(ii) *Dragon Corridor*. 7,500 feet MSL.

(2) *Transient and general aviation operations*—(i) *Zuni Point Corridor*. 10,500 feet MSL.

(ii) *Dragon Corridor*. 10,500 feet MSL.

(iii) *Tuckup Corridor*. 10,500 feet MSL.

(iv) Fossil Canyon Corridor. 10,500 feet

[Doc. No. 28537, 61 FR 69330, Dec. 31, 1996, as amended by Amdt. 93–80, 65 FR 17742, 17743, Apr. 4, 2000]

§ 93.309 General operating procedures.

Except in an emergency, no person may operate an aircraft in the Special Flight Rules Area unless the operation is conducted in accordance with the following procedures. (NOTE: The following procedures do not relieve the pilot from see-and-avoid responsibility or compliance with the minimum safe altitude requirements specified in § 91.119 of this chapter.):

(a) Unless necessary to maintain a safe distance from other aircraft or terrain remain clear of the flight-free zones described in § 93.305;

(b) Unless necessary to maintain a safe distance from other aircraft or terrain, proceed through the Zuni Point, Dragon, Tuckup, and Fossil Canyon Flight Corridors described in § 93.305 at the following altitudes unless otherwise authorized in writing by the Flight Standards District Office:

(1) *Northbound*. 11,500 or 13,500 feet MSL.

(2) *Southbound*. 10,500 or 12,500 feet MSL.

(c) For operation in the flight-free zones described in § 93.305, or flight below the altitudes listed in § 93.307, is authorized in writing by the Flight Standards District Office and is conducted in compliance with the conditions contained in that authorization. Normally authorization will be granted for operation in the areas described in § 93.305 or below the altitudes listed in § 93.307 only for operations of aircraft necessary for law enforcement, firefighting, emergency medical treatment/evacuation of persons in the vicinity of the Park; for support of Park maintenance or activities; or for aerial access to and maintenance of other property located within the Special Flight Rules Area. Authorization may be issued on a continuing basis;

(d) Is conducted in accordance with a specific authorization to operate in that airspace incorporated in the operator's operations specifications and approved by the Flight Standards District Office in accordance with the provisions of this subpart;

(e) Is a search and rescue mission directed by the U.S. Air Force Rescue Coordination Center;

(f) Is conducted within 3 nautical miles of Grand Canyon Bar Ten Airstrip, Pearce Ferry Airstrip, Cliff Dwellers Airstrip, Marble Canyon Airstrip, or Tuweep Airstrip at an altitude less than 3,000 feet above airport elevation, for the purpose of landing at or taking off from that facility; or

(g) Is conducted under an instrument flight rules (IFR) clearance and the pilot is acting in accordance with ATC instructions. An IFR flight plan may not be filed on a route or at an altitude that would require operation in an area described in § 93.305.

[Doc. No. 28537, 61 FR 69330, Dec. 31, 1996, as amended by Amdt. 93–80, 65 FR 17742, 17743, Apr. 4, 2000]

§ 93.311 Minimum terrain clearance.

Except in an emergency, when necessary for takeoff or landing, or unless otherwise authorized by the Flight Standards District Office for a purpose listed in § 93.309(c), no person may operate an aircraft within 500 feet of any terrain or structure located between the north and south rims of the Grand Canyon.

§ 93.313 Communications.

Except when in contact with the Grand Canyon National Park Airport Traffic Control Tower during arrival or departure or on a search and rescue mission directed by the U.S. Air Force Rescue Coordination Center, no person may operate an aircraft in the Special Flight Rules Area unless he monitors the appropriate frequency continuously while in that airspace.

§ 93.315 Requirements for commercial Special Flight Rules Area operations.

Each person conducting commercial Special Flight Rules Area operations must be certificated in accordance with Part 119 for Part 135 or 121 operations and hold appropriate Grand Canyon National Park Special Flight Rules Area operations specifications.

[65 FR 17732, Apr. 4, 2000]

§ 93.316 [Reserved]

§ 93.317 Commercial Special Flight Rules Area operation curfew.

Unless otherwise authorized by the Flight Standards District Office, no person may conduct a commercial Special Flight Rules Area operation in the Dragon and Zuni Point corridors during the following flight-free periods:

(a) Summer season (May 1–September 30)–6 p.m. to 8 a.m. daily; and

(b) Winter season (October 1–April 30)–5 p.m. to 9 a.m. daily.

[65 FR 17732, Apr. 4, 2000]

§ 93.319 Commercial air tour limitations.

(a) Unless excepted under paragraph (f) or (g) of this section, no certificate holder certificated in accordance with part 119 for part 121 or 135 operations may conduct more commercial air tours in the Grand Canyon National Park in any calendar year than the number of allocations specified on the certificate holder's operations specifications.

(b) The Administrator determines the number of initial allocations for each certificate holder based on the total number of commercial air tours conducted by the certificate holder and reported to the FAA during the period beginning on May 1, 1997 and ending on April 30, 1998, unless excepted under paragraph (g).

(c) Certificate holders who conducted commercial air tours during the base year and reported them to the FAA receive an initial allocation.

(d) A certificate holder must use one allocation for each flight that is a commercial air tour, unless excepted under paragraph (f) or (g) of this section.

(e) Each certificate holder's operation specifications will identify the following information, as applicable:

(1) Total SFRA allocations; and

(2) Dragon corridor and Zuni Point corridor allocations.

(f) Certificate holders satisfying the requirements of § 93.315 of this subpart are not required to use a commercial air tour allocation for each commercial air tour flight in the GCNP SFRA provided the following conditions are satisfied:

(1) The certificate holder conducts its operations in conformance with the routes and airspace authorizations as specified in its Grand Canyon National Park Special Flight Rules Area operations specifications;

(2) The certificate holder must have executed a written contract with the Hualapai Indian Nation which grants the certificate holder a trespass permit and specifies the maximum number of flights to be permitted to land at Grand Canyon West Airport and at other sites located in the vicinity of that airport and operates in compliance with that contract; and

(3) The certificate holder must have a valid operations specification that authorizes the certificate holder to conduct the operations specified in the contract with the Hualapai Indian Nation and specifically approves the number of operations that may transit the Grand Canyon National Park Special Flight Rules Area under this exception.

(g) Certificate holders conducting commercial air tours at or above 14,500 feet MSL but below 18,000 feet MSL who did not receive initial allocations in 1999 because they were not required to report during the base year may operate without an allocation when conducting air tours at those altitudes. Certificate holders conducting commercial air tours in the area affected by the eastward shift of the SFRA who did not receive initial allocations in 1999 because they were not required to report during the base year may continue to operate on the specified routes without an allocation in the area bounded by longitude line 111 degrees 42 minutes east and longitude line 111 degrees 36 minutes east. This exception does not include operation in the Zuni Point corridor.

[65 FR 17732, Apr. 4, 2000]

§ 93.321 Transfer and termination of allocations.

(a) Allocations are not a property interest; they are an operating privilege subject to absolute FAA control.

(b) Allocations are subject to the following conditions:

(1) The Administrator will re-authorize and re-distribute allocations no earlier than two years from the effective date of this rule.

(2) Allocations that are held by the FAA at the time of reallocation may be distributed among remaining certificate holders, proportionate to the size of each certificate holder's allocation.

(3) The aggregate SFRA allocations will not exceed the number of operations reported to the FAA for the base year beginning on May 1, 1997 and ending on April 30, 1998, except as adjusted to incorporate operations occurring for the base year of April 1, 2000 and ending on March 31, 2001, that operate at or above 14,500 feet MSL and below 18,000 feet MSL and operations in the area affected by the eastward shift of the SFRA bounded by longitude line 111 degrees 42 minutes east to longitude 111 degrees 36 minutes east.

(4) Allocations may be transferred among Part 135 or Part 121 certificate holders, subject to all of the following:

(i) Such transactions are subject to all other applicable requirements of this chapter.

(ii) Allocations authorizing commercial air tours outside the Dragon and Zuni Point corridors may not be transferred into the Dragon and Zuni Point corridors. Allocations authorizing commercial air tours within the Dragon and Zuni Point corridors may be transferred outside of the Dragon and Zuni Point corridors.

(iii) A certificate holder must notify in writing the Las Vegas Flight Standards District Office within 10 calendar days of a transfer of allocations. This notification must identify the parties involved, the type of transfer (permanent or temporary) and the number of allocations transferred. Permanent transfers are not effective until the Flight Standards District Office reissues the operations specifications reflecting the transfer. Temporary transfers are effective upon notification.

(5) An allocation will revert to the FAA upon voluntary cessation of commercial air tours within the SFRA for any consecutive 180-day period unless the certificate holder notifies the FSDO in writing, prior to the expiration of the 180-day time period, of the following: the reason why the certificate holder has not conducted any commercial air tours during the consecutive 180-day period; and the date

the certificate holder intends on resuming commercial air tours operations. The FSDO will notify the certificate holder of any extension to the consecutive 180-days. A certificate holder may be granted one extension.

(6) The FAA retains the right to redistribute, reduce, or revoke allocations based on:

(i) Efficiency of airspace;

(ii) Voluntary surrender of allocations;

(iii) Involuntary cessation of operations; and

(iv) Aviation safety.

[65 FR 17733, Apr. 4, 2000]

§ 93.323 Flight plans.

Each certificate holder conducting a commercial SFRA operation must file a visual flight rules (VFR) flight plan in accordance with § 91.153. This section does not apply to operations conducted in accordance with § 93.309(g). The flight plan must be on file with a FAA Flight Service Station prior to each flight. Each VFR flight plan must identify the purpose of the flight in the ''remarks'' section according to one of the types set forth in the ''Las Vegas Flight Standards District Office Grand Canyon National Park Special Flight Rules Area Procedures Manual'' which is available from the Las Vegas Flight Standards District Office.

[65 FR 17733, Apr. 4, 2000]

§ 93.325 Quarterly reporting.

(a) Each certificate holder must submit in writing, within 30 days of the end of each calendar quarter, the total number of commercial SFRA operations conducted for that quarter. Quarterly reports must be filed with the Las Vegas Flight Standards District Office.

(b) Each quarterly report must contain the following information.

(1) Make and model of aircraft;

(2) Identification number (registration number) for each aircraft;

(3) Departure airport for each segment flown;

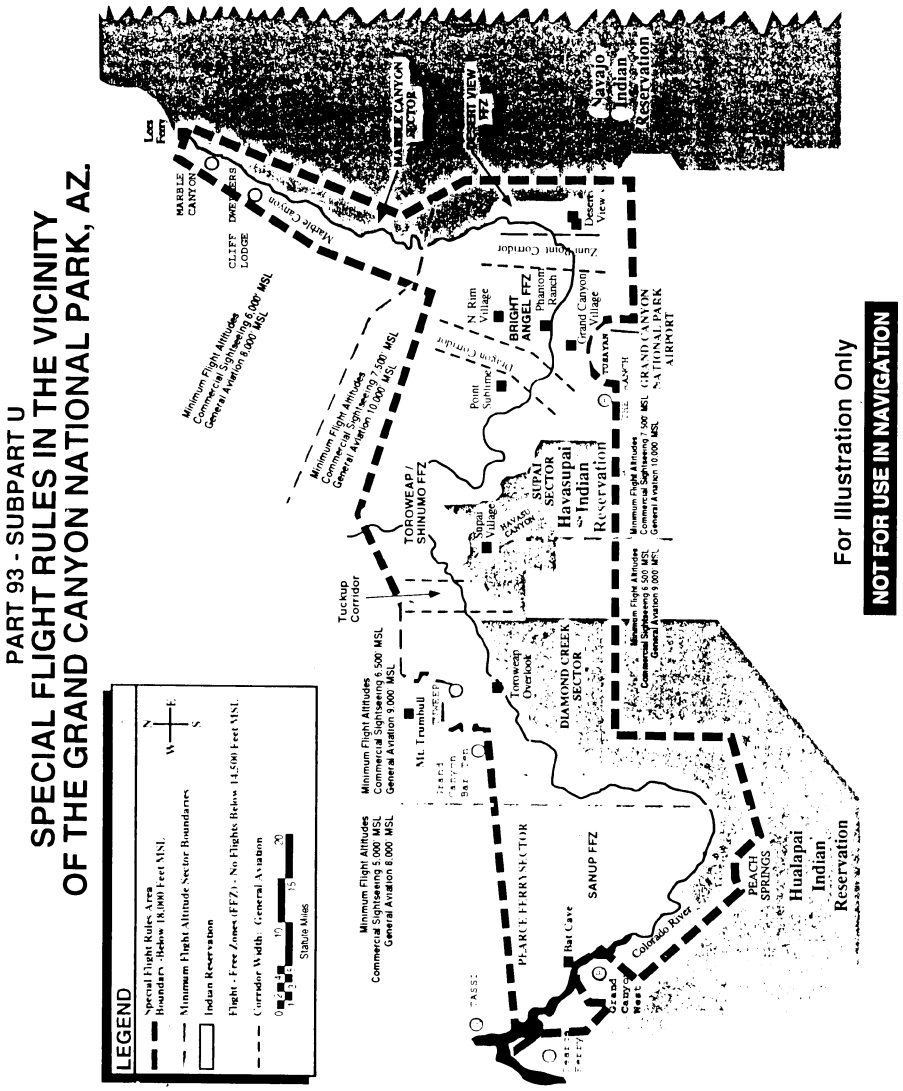
(4) Departure date and actual Universal Coordinated Time, as applicable for each segment flown;

(5) Type of operation; and

(6) Route(s) flown.

[65 FR 17733, Apr. 4, 2000]

APPENDIX TO SUBPART U OF PART 93—SPECIAL FLIGHT RULES IN THE VICINITY OF THE GRAND CANYON NATIONAL PARK, AZ



APPENDIX A TO SUBPART U OF PART 93—GCNP QUIET AIRCRAFT TECHNOLOGY DESIGNATION

This appendix contains procedures for determining the GCNP quiet aircraft technology designation status for each aircraft subject to §93.301 determined during the noise certification process as prescribed under part 36 of this chapter. Where no certificated noise level is available, the Administrator may approve an alternative measurement procedure.

Aircraft Noise Limit for GCNP Quiet Aircraft Technology Designation

A. For helicopters with a flyover noise level obtained in accordance with the measurement procedures prescribed in Appendix H of 14 CFR part 36, the limit is 80 dB for helicopters having a seating configuration of two or fewer passenger seats, increasing at 3 dB per doubling of the number of passenger seats for helicopters having a seating configuration of three or more passenger seats. The noise limit for helicopters with three or more passenger seats can be calculated by the formula:

EPNL(H) = 80 +10log(# PAX seats/2) dB

B. For helicopters with a flyover noise level obtained in accordance with the measurement procedures prescribed in Appendix J of 14 CFR part 36, the limit is 77 dB for helicopters having a seating configuration of two or fewer passenger seats, increasing at 3 dB per doubling of the number of passenger seats for helicopters having a seating configuration of three or more passenger seats. The noise limit for helicopters with three or more passenger seats can be calculated by the formula:

SEL(J) = 77 + 10log(# PAX seats/2) dB

C. For propeller-driven airplanes with a measured flyover noise level obtained in accordance with the measurement procedures prescribed in Appendix F of 14 CFR part 36 without the performance correction defined in Sec. F35.201(c), the limit is 69 dB for airplanes having a seating configuration of two or fewer passenger seats, increasing at 3 dB per doubling of the number of passenger seats for airplanes having a seating configuration of three or more passenger seats. The noise limit for propeller-driven airplanes with three or more passenger seats can be calculated by the formula:

LAmax(F) = 69 + 10log(# PAX seats/2) dB

D. In the event that a flyover noise level is not available in accordance with Appendix F of 14 CFR part 36, the noise limit for propeller-driven airplanes with a takeoff noise level obtained in accordance with the measurement procedures prescribed in Appendix G is 74 dB or 77 dB, depending on 14 CFR part 36 amendment level, for airplanes having a seating configuration of two or fewer passenger seats, increasing at 3 dB per doubling of the number of passenger seats for airplanes having a seating configuration of three or more passenger seats. The noise limit for propeller-driven airplanes with three or more passenger seats can be calculated by the formula:

LAmax(G) = 74 + 10log(# PAX seats/2) dB for certifications obtained under 14 CFR part 36, Amendment 21 or earlier;

LAmax(G) = 77 + 10log(# PAX seats/2) dB for certifications obtained under 14 CFR part 36, Amendment 22 or later.

[FAA–2003–14715, 70 FR 16092, Mar. 29, 2005]

PART 95—IFR ALTITUDES

SPECIAL FEDERAL AVIATION REGULATION NO. 97 [NOTE]

Subpart A—General

Sec.
95.1 Applicability.
95.3 Symbols.

Subpart B—Designated Mountainous Areas

95.11 General.
95.13 Eastern United States Mountainous Area.
95.15 Western United States Mountainous Area.
95.17 Alaska Mountainous Area.
95.19 Hawaii Mountainous Area.
95.21 Puerto Rico Mountainous Area.

Subpart C—En Route IFR Altitudes Over Particular Routes and Intersections

95.31 General.

Subpart D—Changeover Points

95.8001 General.

AUTHORITY: 49 U.S.C. 106(g), 40103, 40113, and 14 CFR 11.49(b)(2).

SPECIAL FEDERAL AVIATION REGULATION NO. 97

EDITORIAL NOTE: For the text of SFAR No. 97, see part 91 of this chapter.

Subpart A—General

§ 95.1 Applicability.

(a) This part prescribes altitudes governing the operation of aircraft under IFR on ATS routes, or other direct routes for which an MEA is designated in this part. In addition, it designates mountainous areas and changeover points.

(b) The MAA is the highest altitude on an ATS route, or other direct route for which an MEA is designated, at which adequate reception of VOR signals is assured.

(c) The MCA applies to the operation of an aircraft proceeding to a higher minimum en route altitude when crossing specified fixes.

(d) The MEA is the minimum en route IFR altitude on an ATS route, ATS route segment, or other direct route. The MEA applies to the entire

width of the ATS route, ATS route segment, or other direct route between fixes defining that route. Unless otherwise specified, an MEA prescribed for an off airway route or route segment applies to the airspace 4 nautical miles on each side of a direct course between the navigation fixes defining that route or route segment.

(e) The MOCA assures obstruction clearance on an ATS route, ATS route segment, or other direct route, and adequate reception of VOR navigation signals within 22 nautical miles of a VOR station used to define the route.

(f) The MRA applies to the operation of an aircraft over an intersection defined by ground-based navigation aids. The MRA is the lowest altitude at which the intersection can be determined using the ground-based navigation aids.

(g) The changeover point (COP) applies to operation of an aircraft along a Federal airway, jet route, or other direct route; for which an MEA is designated in this part. It is the point for transfer of the airborne navigation reference from the ground-based navigation aid behind the aircraft to the next appropriate ground-based navigation aid to ensure continuous reception of signals.

[Doc. No. FAA–2003–14698, 68 FR 16947, Apr. 8, 2003]

§ 95.3 Symbols.

For the purposes of this part—

(a) *COP* means changeover point.

(b) *L* means compass locator;

(c) *LF/MF* means low frequency, medium frequency;

(d) *LFR* means low frequency radio range;

(e) *VOR-E* means VOR and distance measuring equipment; and

(f) *Z* means a very high frequency location marker.

[Doc. No. 1580, 28 FR 6718, June 29, 1963, as amended by Amdt. 95–118, 29 FR 13166, Sept. 23, 1964]

Subpart B—Designated Mountainous Areas

§ 95.11 General.

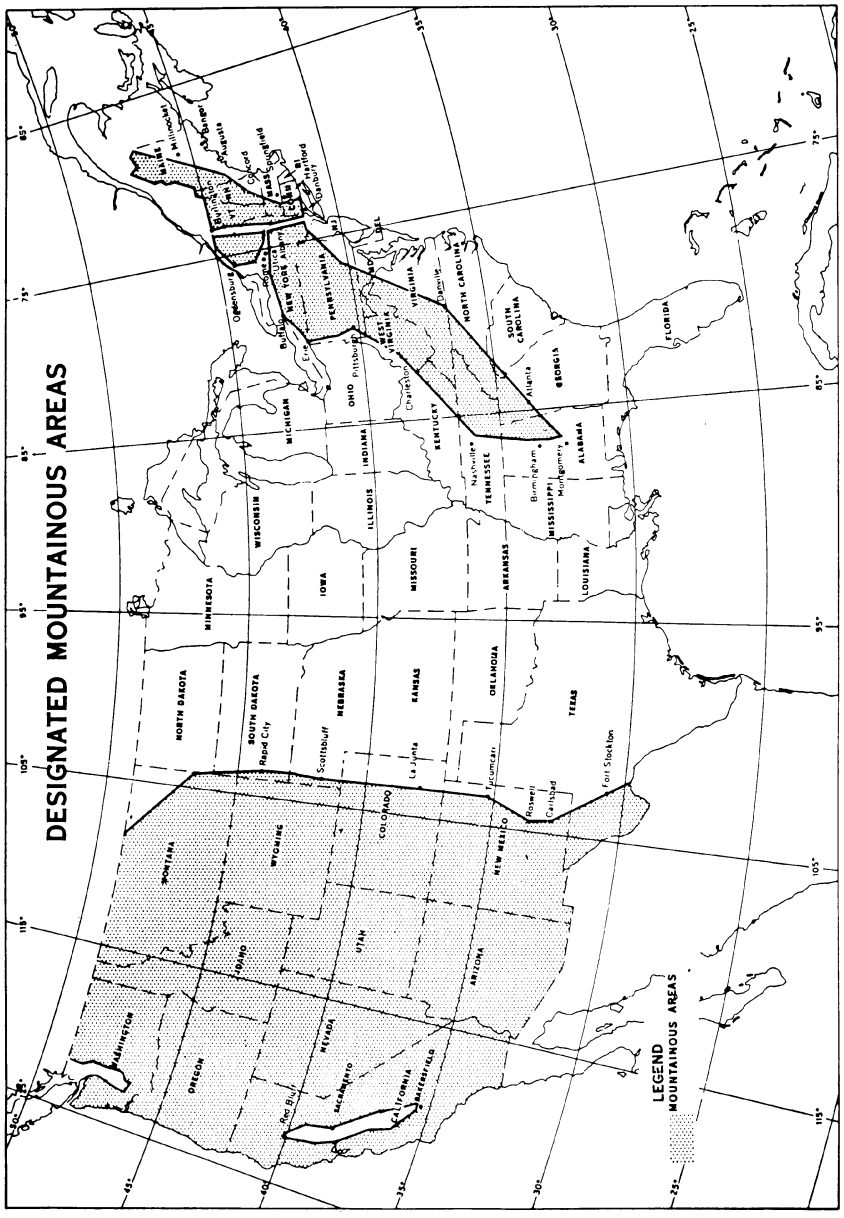
The areas described in this subpart are designated mountainous areas.

[Doc. No. 1580, 28 FR 6718, June 29, 1963]

§ 95.13 Eastern United States Mountainous Area.

All of the following area excluding those portions specified in the exceptions.

(a) *Area.*



[Doc. No. 13284, Amdt. 95–255, 40 FR 2578, Jan. 14, 1975]

Beginning at latitude 47°10′ N., longitude 67°55′ W.; thence west and south along the Canadian Border to latitude 45°00′ N., longitude 74°15′ W.; thence to latitude 44°20′ N., longitude 75°30′ W.; thence to latitude 43°05′ N., longitude 75°30′ W.; thence to latitude 42°57′ N., longitude 77°30′ W.; thence to latitude 42°52′ N., longitude 78°42′ W.; thence to

latitude 42°26′ N., longitude 79°13′ W.; thence to latitude 42°05′ N., longitude 80°00′ W.; thence to latitude 40°50′ N., longitude 80°00′ W.; thence to latitude 40°26′ N., longitude 79°54′ W.; thence to latitude 38°25′ N., longitude 81°46′ W.; thence to latitude 36°00′ N., longitude 86°00′ W.; thence to latitude 33°37′ N., longitude 86°45′ W.; thence to latitude 32°30′ N., longitude 86°25′ W.; thence to latitude 33°22′ N., longitude 85°00′ W.; thence to latitude 36°35′ N., longitude 79°20′ W.; thence to latitude 40°11′ N., longitude 76°24′ W.; thence to latitude 41°24′ N., longitude 74°30′ W.; thence to latitude 41°43′ N., longitude 72°40′ W.; thence to latitude 42°13′ N., longitude 72°44′ W.; thence to latitude 42°13′ N., longitude 72°44′ W.; thence to latitude 43°12′ N., longitude 71°30′ W.; thence to latitude 43°45′ N., longitude 70°30′ W.; thence to latitude 45°00′ N., longitude 69°30′ W.; thence to latitude 47°10′ N., longitude 67°55′ W., point of beginning.

(b) *Exceptions.* The area bounded by the following coordinates:

Beginning at latitude 45°00′ N., longitude 73°26′ W.; thence to latitude 44°32′ N., longitude 73°04′ W.; thence to latitude 42°51′ N., longitude 73°41′ W.; thence to latitude 41°38′ N., longitude 73°46′ W.; thence to latitude 41°16′ N., longitude 73°50′ W.; thence to latitude 41°17′ N., longitude 74°00′ W.; thence to latitude 41°25′ N., longitude 73°58′ W.; thence to latitude 41°26′ N., longitude 74°01′ W.; thence to latitude 41°37′ N., longitude 73°58′ W.; thence to latitude 42°41′ N., longitude 73°55′ W.; thence to latitude 43°02′ N., longitude 76°15′ W.; thence to latitude 43°17′ N., longitude 75°21′ W.; thence to latitude 42°59′ N., longitude 74°43′ W.; thence to latitude 42°52′ N., longitude 73°53′ W.; thence to latitude 44°30′ N., longitude 73°18′ W.; thence to latitude 45°00′ N., longitude 73°39′ W.; thence to latitude 45°00′ N., longitude 73°26′ W., point of beginning.

[21 FR 2750, Apr. 28, 1956. Redesignated by Amdt. 1–1, 28 FR 6718, June 29, 1963]

§ 95.15 Western United States Mountainous Area.

All of the following area excluding that portion specified in the exceptions:

(a) *Area.* From the Pacific coastline of the United States, eastward along the Canadian and Mexican borders, to the following coordinates:

Beginning at latitude 49°00′ N., longitude 108°00′ W.; thence to latitude 46°45′ N., longitude 104°00′ W.; thence to latitude 44°06′ N., longitude 103°15′ W.; thence to latitude 43°00′ N., longitude 103°15′ W.; thence to latitude 41°52′ N., longitude 103°39′ W.; thence to latitude 35°11′ N., longitude 103°39′ W.; thence to latitude 33°17′ N., longitude 104°27′ W.; thence to latitude 32°17′ N., longitude 104°14′ W.; thence to latitude 29°48′ N., longitude 102°00′ W.

(b) *Exceptions.*

(1) Beginning at latitude 35°25′ N., longitude 119°09′ W.; thence to latitude 35°29′ N., longitude 118°58′ W.; thence to latitude 36°49′ N., longitude 119°37′ W.; thence to latitude 38°30′ N., longitude 121°24′ W.; thence to latitude 39°30′ N., longitude 121°32′ W.; thence to latitude 40°08′ N., longitude 122°08′ W.; thence to latitude 40°06′ N., longitude 122°20′ W.; thence to latitude 39°05′ N., longitude 122°12′ W.; thence to latitude 38°01′ N., longitude 121°51′ W.; thence to latitude 37°37′ N., longitude 121°12′ W.; thence to latitude 37°00′ N., longitude 120°58′ W.; thence to latitude 36°14′ N., longitude 120°11′ W., point of beginning.

(2) Beginning at latitude 49°00′ N., longitude 122°21′ W.; thence to latitude 48°34′ N., longitude 122°21′ W.; thence to latitude 48°08′ N., longitude 122°00′ W.; thence to latitude 47°12′ N., longitude 122°00′ W.; thence to latitude 46°59′ N., longitude 122°13′ W.; thence to latitude 46°52′ N., longitude 122°16′ W.; thence to latitude 46°50′ N., longitude 122°40′ W.; thence to latitude 46°35′ N., longitude 122°48′ W.; thence to latitude 46°35′ N., longitude 123°17′ W.; thence to latitude 47°15′ N., longitude 123°17′ W.; thence to latitude 47°41′ N., longitude 122°54′ W.; thence to latitude 48°03′ N., longitude 122°48′ W.; thence to latitude 48°17′ N., longitude 123°15′ W.; thence North and East along the United States and Canada Boundary to latitude 49°00′ N., longitude 122°21′ W., point of beginning.

[21 FR 2750, Apr. 28, 1956. Redesignated by Amdt. 1–1, 28 FR 6718, June 29, 1963, and amended by Amdt. 95–255, 40 FR 2579, Jan. 14, 1975]

§ 95.17 Alaska Mountainous Area.

All of the following area excluding those portions specified in the exceptions:

(a) *Area.* The State of Alaska.

(b) *Exceptions;*

(1) *Fairbanks—Nenana Area.* Beginning at latitude 64°54′ N, longitude 147°00′ W; thence to latitude 64°50′ N, longitude 151°22′ W, thence to latitude 63°50′ N, longitude 152°50′ W; thence to latitude 63°30′ N, longitude 152°30′ W; thence to latitude 63°30′ N, longitude 151°30′ W; thence to latitude 64°05′ N, longitude 150°30′ W; thence to latitude 64°20′ N, longitude 149°00′ W; thence to latitude 64°07′ N, longitude 146°30′ W; thence to latitude 63°53′ N, longitude 146°00′ W; thence to latitude 63°53′ N, longitude 145°00′ W; thence to latitude

64°09′ N, longitude 145°16′ W; thence to latitude 64°12′ N, longitude 146°00′ W; thence to latitude 64°25′ N, longitude 146°37′ W; thence to latitude 64°54′ N, longitude 147°00′ W, point of beginning.

(2) *Anchorage—Homer Area.* Beginning at latitude 61°50′ N, longitude 151°12′ W; thence to latitude 61°24′ N, longitude 150°28′ W; thence to latitude 61°08′ N, longitude 151°47′ W; thence to latitude 59°49′ N, longitude 152°40′ W; thence to latitude 59°25′ N, longitude 153°10′ W; thence to latitude 59°00′ N, longitude 153°10′ W; thence to latitude 59°33′ N, longitude 151°28′ W; thence to latitude 60°31′ N, longitude 150°43′ W; thence to latitude 61°13′ N, longitude 149°39′ W; thence to latitude 61°37′ N, longitude 149°15′ W; thence to latitude 61°44′ N, longitude 149°48′ W; thence to latitude 62°23′ N, longitude 149°54′ W; thence to latitude 62°23′ N, longitude 150°14′ W; thence to latitude 61°50′ N, longitude 151°12′ W, point of beginning.

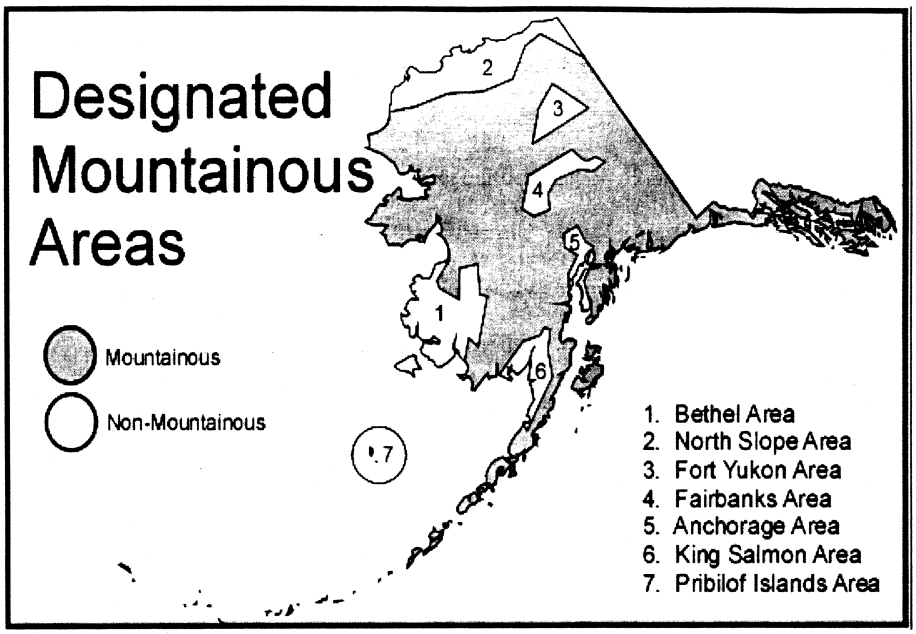
(3) *King Salmon—Port Heiden Area.* Beginning at latitude 58°49′ N, longitude 159°30′ W; thence to latitude 59°40′ N, longitude 157°00′ W; thence to latitude 59°40′ N, longitude 155°30′ W; thence to latitude 59°50′ N, longitude 154°50′ W; thence to latitude 59°35′ N, longitude 154°40′ W; thence to latitude 58°57′ N, longitude 156°05′ W; thence to latitude 58°00′ N, longitude 156°20′ W; thence to latitude 57°00′ N, longitude 158°20′ W; thence to latitude 56°43′ N, longitude 158°39′ W; thence to latitude 56°27′ N, longitude 160°00′ W; thence along the shoreline to latitude 58°49′ N, longitude 159°30′ W, point of beginning.

(4) *Bethel—Aniak Area.* Beginning at latitude 63°28′ N, longitude 161°30′ W; thence to latitude 62°40′ N, longitude 163°03′ W; thence to latitude 62°05′ N, longitude 162°38′ W; thence to latitude 61°51′ N, longitude 160°43′ W; thence to latitude 62°55′ N, longitude 160°30′ W; thence to latitude 63°00′ N, longitude 158°00′ W; thence to latitude 61°45′ N, longitude 159°30′ W; thence to latitude 61°34′ N, longitude 159°15′ W; thence to latitude 61°07′ N, longitude 160°20′ W; thence to latitude 60°25′ N, longitude 160°40′ W; thence to latitude 59°36′ N, longitude 161°49′ W; thence along the shoreline to latitude 63°28′ N, longitude 161°30′ W; point of beginning; and Nunivak Island.

(5) *North Slope Area.* Beginning at a point where latitude 69°30′ N intersects the northwest coast of Alaska and eastward along the 69°30′ parallel to latitude 69°30′ N, longitude 156°00′ W; thence to latitude 69°10′ N, longitude 153°00′ W; thence eastward along the 69°10′ N parallel to latitude 69°10′ N, longitude 149°00′ W; thence to latitude 69°50′ N, longitude 146°00′ W; thence eastward along the 69°50′ N parallel to latitude 69°50′ N, longitude 145°00′ W; thence to latitude 69°35′ N, longitude 141°00′ W; thence northward along the 141°00′ W Meridian to a point where the 141°00′ W Meridian intersects the northeast coastline of Alaska; thence westward along the northern coastline of Alaska to the intersection of latitude 69°30′ N; point of beginning .

(6) *Fort Yukon Area.* Beginning at latitude 67°20′ N, longitude 144°00′ W; thence to latitude 66°00′ N, longitude 143°00′ W; thence to latitude 66°05′ N, longitude 149°00′ W; thence to latitude 66°45′ N, longitude 148°00′ W; thence to latitude 67°00′ N, longitude 147°00′ W; thence to latitude 67°20′ N, longitude 144°00′ W; point of beginning.

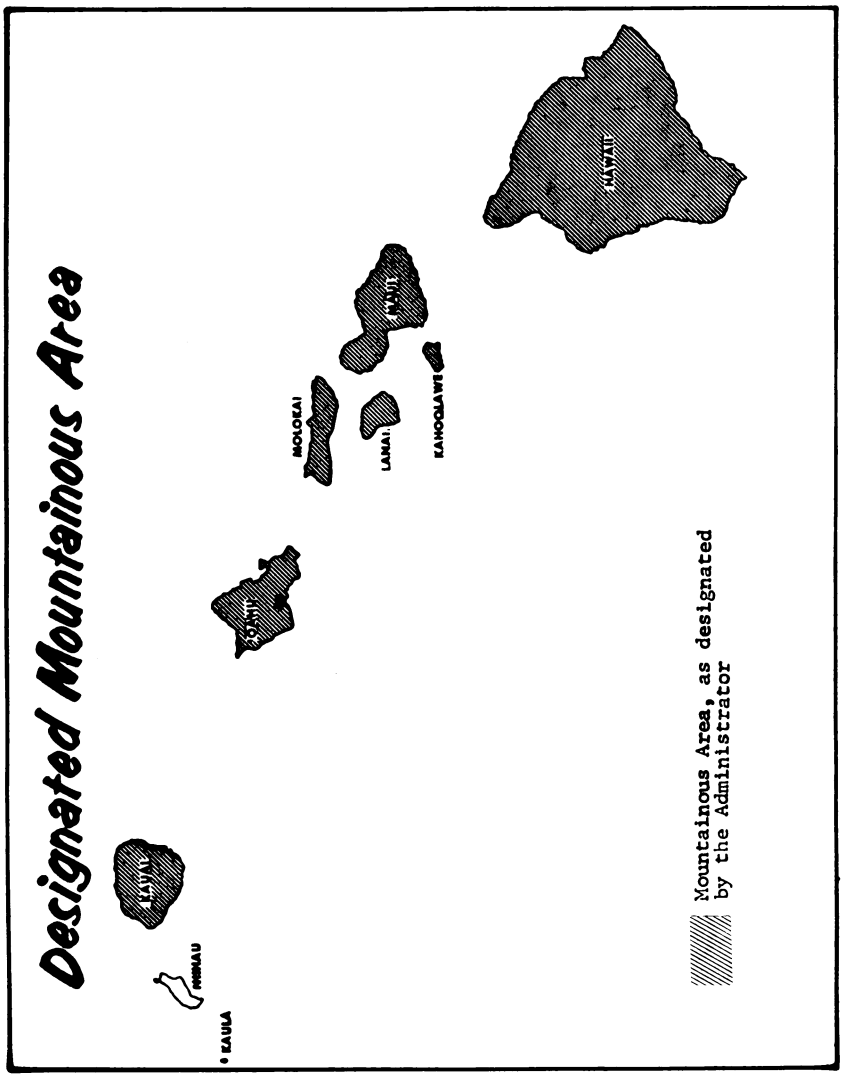
(7) The islands of Saint Paul and Saint George, together known as the Pribilof Islands, in the Bering Sea.



[Doc. No. FAA–2004–19352, 70 FR 7360, Feb. 11, 2005]

§ 95.19 Hawaii Mountainous Area.

The following islands of the State of Hawaii: Kauai, Oahu, Molokai, Lanai, Kehoolawe, Maui, and Hawaii.

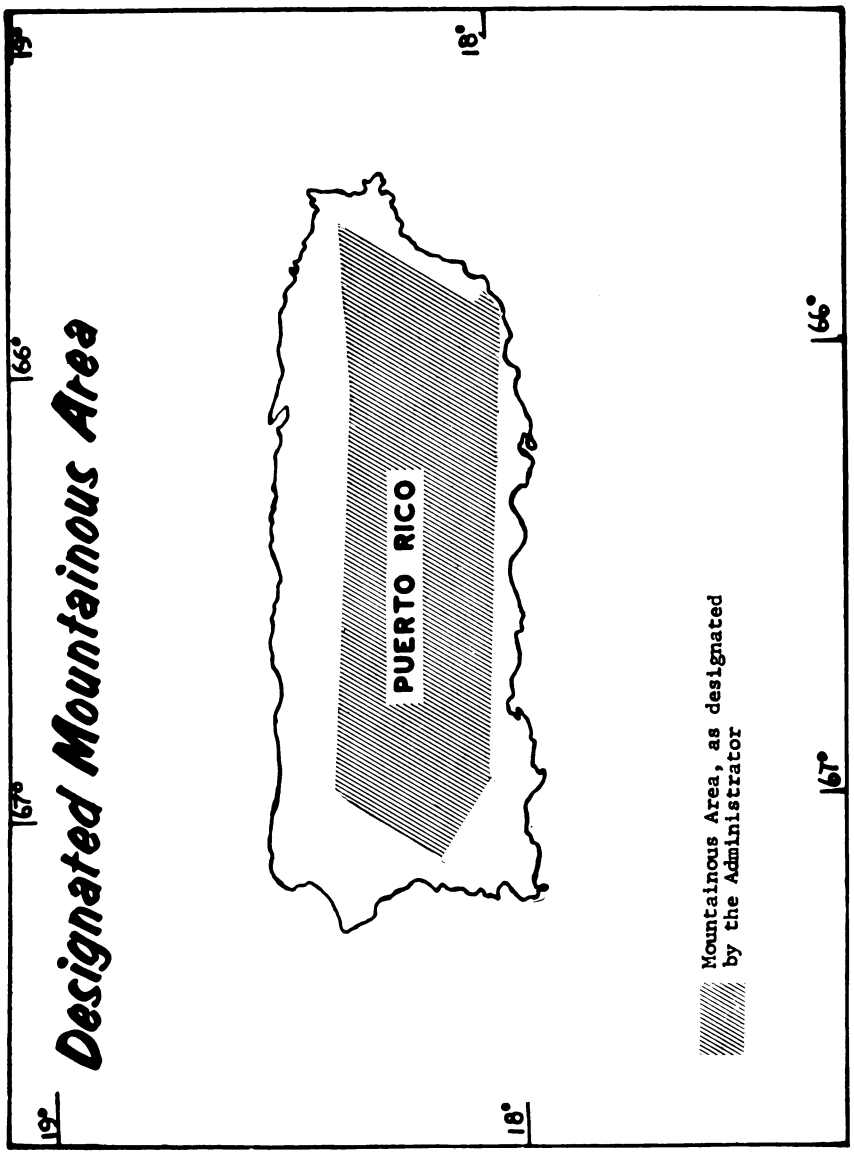


[Amdt. 88, 27 FR 4536, May 8, 1962. Redesignated by Amdt. 1–1, 28 FR 6719, June 29, 1963]

§ 95.21 Puerto Rico Mountainous Area.

The area bounded by the following coordinates:

Beginning at latitude 18°22′ N., longitude 66°58′ W., thence to latitude 18°19′ N., longitude 66°06′ W.; thence to latitude 18°20′ N., longitude 65°50′ W.; thence to latitude 18°20′ N., longitude 65°42′ W.; thence to latitude 18°03′ N., longitude 65°52′ W.; thence to latitude 18°02′ N., longitude 65°51′ W.; thence to latitude 17°59′ N., longitude 65°55′ W.; thence to latitude 18°05′ N., longitude 66°57′ W.; thence to latitude 18°11′ N., longitude 67°07′ W.; thence to latitude 18°22′ N., longitude 66°58′ W.; the point of beginning.



[Amdt. 88, 27 FR 4536, May 8, 1962; 27 FR 5603, June 13, 1962. Redesignated by Amdt. 1–1, 28 FR 6719, June 29, 1963]

Subpart C—En Route IFR Altitudes Over Particular Routes and Intersections

EDITORIAL NOTE: The prescribed IFR altitudes for flights over particular routes and intersections in this subpart were formerly carried as §§ 610.11 through 610.6887 of this title and were transferred to part 95 as §§ 95.41 through 95.6887, respectively, but are not carried in the Code of Federal Regulations. For FEDERAL REGISTER citations affecting these routes, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and on GPO Access.

§ 95.31 General.

This subpart prescribes IFR altitudes for flights along particular routes or route segments and over additional intersections not listed as a part of a route or route segment.

[Doc. No. 1580, 28 FR 6719, June 29, 1963]

Subpart D—Changeover Points

EDITORIAL NOTE: The prescribed COP's for Federal airways, jet routes, or other direct routes for which an MEA is designated in this part are not carried in the Code of Federal Regulations. For FEDERAL REGISTER citations affecting these routes see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and on GPO Access.

§ 95.8001 General.

This subpart prescribes COP's for Federal airways, jet routes, area navigation routes, or other direct routes for which an MEA is designated in this part. Unless otherwise specified the COP is midway between the navigation facilities or way points for straight route segments, or at the intersection of radials or courses forming a dogleg in the case of dogleg route segments.

[Doc. No. 10580, 35 FR 14610, Sept. 18, 1970]

PART 97—STANDARD INSTRUMENT PROCEDURES

Subpart A—General

Sec.
97.1 Applicability.
97.3 Symbols and terms used in procedures.
97.5 Bearings, courses, tracks, headings, radials, miles.

Subpart B—Procedures

97.10 [Reserved]

Subpart C—TERPS Procedures

97.20 General.

AUTHORITY: 49 U.S.C. 106(g), 40103, 40106, 40113, 40114, 40120, 44502, 44514, 44701, 44719, and 44721–44722.

SOURCE: Docket No. 1580, 28 FR 6719, June 29, 1963, unless otherwise noted.

Subpart A—General

§ 97.1 Applicability.

(a) This part prescribes standard instrument approach procedures to civil airports in the United States and the weather minimums that apply to landings under IFR at those airports.

(b) This part also prescribes obstacle departure procedures (ODPs) for certain civil airports in the United States and the weather minimums that apply to takeoffs under IFR at civil airports in the United States.

[Doc. No. FAA–2002–14002, 72 FR 31679, June 7, 2007]

§ 97.3 Symbols and terms used in procedures.

As used in the standard instrument procedures prescribed in this part—

Aircraft approach category means a grouping of aircraft based on a speed of VREF, if specified, or if VREF is not specified, 1.3 V_{so} at the maximum certificated landing weight. VREF, V_{so}, and the maximum certificated landing weight are those values as established for the aircraft by the certification authority of the country of registry. The categories are as follows—

(1) Category A: Speed less than 91 knots.

(2) Category B: Speed 91 knots or more but less than 121 knots.

(3) Category C: Speed 121 knots or more but less than 141 knots.

(4) Category D: Speed 141 knots or more but less than 166 knots.

(5) Category E: Speed 166 knots or more.

Approach procedure segments for which altitudes (minimum altitudes, unless otherwise specified) and paths are prescribed in procedures, are as follows—

(1) Initial approach is the segment between the initial approach fix and the intermediate fix or the point where the aircraft is established on the intermediate course or final approach course.

(2) Initial approach altitude is the altitude (or altitudes, in high altitude procedure) prescribed for the initial approach segment of an instrument approach.

(3) Intermediate approach is the segment between the intermediate fix or point and the final approach fix.

(4) Final approach is the segment between the final approach fix or point and the runway, airport, or missed approach point.

(5) Missed approach is the segment between the missed approach point, or point of arrival at decision altitude or decision height (DA/DH), and the missed approach fix at the prescribed altitude.

Ceiling means the minimum ceiling, expressed in feet above the airport elevation, required for takeoff or required for designating an airport as an alternate airport.

Copter procedures means helicopter procedures, with applicable minimums as prescribed in § 97.35. Helicopters may also use other procedures prescribed in subpart C of this part and may use the Category A minimum descent altitude (MDA), or decision altitude or decision height (DA/DH). For other than ''copter-only'' approaches, the required visibility minimum for Category I approaches may be reduced to one-half the published visibility minimum for Category A aircraft, but in no case may it be reduced to less than one-quarter mile prevailing visibility, or, if reported, 1,200 feet RVR. Reduction of visibility minima on Category II instrument approach procedures is prohibited.

FAF means final approach fix.

HAA means height above airport and is expressed in feet.

HAL means height above landing and is the height of the DA/MDA above a designated helicopter landing area elevation used for helicopter instrument approach procedures and is expressed in feet.

HAS means height above the surface and is the height of the DA/MDA above the highest terrain/surface within a 5,200-foot radius of the missed approach point used in helicopter instrument approach procedures and is expressed in feet above ground level (AGL).

HAT means height above touchdown.

HCH means helipoint crossing height and is the computed height of the vertical guidance path above the helipoint elevation at the helipoint expressed in feet.

Helipoint means the aiming point for the final approach course. It is normally the center point of the touchdown and lift-off area (TLOF).

Hold in lieu of PT means a holding pattern established under applicable FAA criteria, and used in lieu of a procedure turn to execute a course reversal.

MAP means missed approach point.

More than 65 knots means an aircraft that has a stalling speed of more than 65 knots (as established in an approved flight manual) at maximum certificated landing weight with full flaps, landing gear extended, and power off.

MSA means minimum safe altitude, expressed in feet above mean sea level, depicted on an approach chart that provides at least 1,000 feet of obstacle clearance for emergency use within a certain distance from the specified navigation facility or fix.

NA means not authorized.

NOPT means no procedure turn required. Altitude prescribed applies only if procedure turn is not executed.

Procedure turn means the maneuver prescribed when it is necessary to reverse direction to establish the aircraft on an intermediate or final approach course. The outbound course, direction of turn, distance within which the turn must be completed, and minimum altitude are specified in the procedure. However, the point at which the turn may be begun, and the type and rate of turn, is left to the discretion of the pilot.

RA means radio altimeter setting height.

RVV means runway visibility value.

SIAP means standard instrument approach procedure.

65 knots or less means an aircraft that has a stalling speed of 65 knots or less (as established in an approved flight

manual) at maximum certificated landing weight with full flaps, landing gear extended, and power off.

T means nonstandard takeoff minimums or specified departure routes/procedures or both.

TDZ means touchdown zone.

Visibility minimum means the minimum visibility specified for approach, landing, or takeoff, expressed in statute miles, or in feet where RVR is reported.

[Doc. No. FAA–2002–14002, 72 FR 31679, June 7, 2007]

§ 97.5 Bearings, courses, tracks, headings, radials, miles.

(a) All bearings, courses, tracks, headings, and radials in this part are magnetic, unless otherwise designated.

(b) RVR values are stated in feet. Other visibility values are stated in statute miles. All other mileages are stated in nautical miles.

[Doc. No. 561, 32 FR 13912, Oct. 6, 1967, as amended by Amdt. 97–1336, 72 FR 31680, June 7, 2007]

Subpart B—Procedures

EDITORIAL NOTE: The procedures set forth in this subpart were formerly carried as §§609.100 through 609.500 of this title and were transferred to part 97 as §§97.11 through 97.19, respectively, but are not carried in the Code of Federal Regulations. For FEDERAL REGISTER citations affecting these procedures, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and on GPO Access.

§ 97.10 [Reserved]

Subpart C—TERPS Procedures

SOURCE: Docket No. 8130, 32 FR 13912, Oct. 6, 1967, unless otherwise noted.

EDITORIAL NOTE: The procedures for §§97.21 through 97.35, respectively, are not carried in the Code of Federal Regulations. For FEDERAL REGISTER citations affecting these procedures, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and on GPO Access.

§ 97.20 General.

(a) This subpart prescribes standard instrument approach procedures and takeoff minimums and obstacle departure procedures (ODPs) based on the criteria contained in FAA Order 8260.3, U.S. Standard for Terminal Instrument Procedures (TERPs), and other related Orders in the 8260 series that also address instrument procedure design criteria.

(b) Standard instrument approach procedures and associated supporting data adopted by the FAA are documented on FAA Forms 8260–3, 8260–4, 8260–5. Takeoff minimums and obstacle departure procedures (ODPs) are documented on FAA Form 8260–15A. These forms are incorporated by reference. The Director of the Federal Register approved this incorporation by reference pursuant to 5 U.S.C. 552(a) and 1 CFR part 51. The standard instrument approach procedures and takeoff minimums and obstacle departure procedures (ODPs) are available for examination at the FAA's Rules Docket (AGC–200) and at the National Flight Data Center, 800 Independence Avenue, SW., Washington, DC 20590, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html*.

(c) Standard instrument approach procedures and takeoff minimums and obstacle departure procedures (ODPs) are depicted on aeronautical charts published by the FAA National Aeronautical Charting Office. These charts are available for purchase from the FAA's National Aeronautical Charting Office, Distribution Division, 6303 Ivy Lane, Suite 400, Greenbelt, MD 20770.

[Doc. No. FAA–2002–14002, 72 FR 31680, June 7, 2007]

PART 99—SECURITY CONTROL OF AIR TRAFFIC

Subpart A—General

Sec.

99.1 Applicability.
99.3 Definitions.
99.5 Emergency situations.
99.7 Special security instructions.
99.9 Radio requirements.
99.11 ADIZ flight plan requirements.
99.12 [Reserved]

99.13 Transponder-on requirements.
99.15 Position reports.
99.17 Deviation from flight plans and ATC clearances and instructions.
99.19–99.31 [Reserved]

Subpart B—Designated Air Defense Identification Zones

99.41 General.
99.43 Contiguous U.S. ADIZ.
99.45 Alaska ADIZ.
99.47 Guam ADIZ.
99.49 Hawaii ADIZ.

AUTHORITY: 49 U.S.C. 106(g), 40101, 40103, 40106, 40113, 40120, 44502, 44721.

SOURCE: Docket No. 25113, 53 FR 18217, May 20, 1988, unless otherwise noted.

Subpart A—General

§ 99.1 Applicability.

(a) This subpart prescribes rules for operating all aircraft (except for Department of Defense and law enforcement aircraft) in a defense area, or into, within, or out of the United States through an Air Defense Identification Zone (ADIZ) designated in subpart B.

(b) Except for §§ 99.7, 99.13, and 99.15 this subpart does not apply to the operation of any aircraft-

(1) Within the 48 contiguous States and the District of Columbia, or within the State of Alaska, on a flight which remains within 10 nautical miles of the point of departure;

(2) Operating at true airspeed of less than 180 knots in the Hawaii ADIZ or over any island, or within 12 nautical miles of the coastline of any island, in the Hawaii ADIZ;

(3) Operating at true airspeed of less than 180 knots in the Alaska ADIZ while the pilot maintains a continuous listening watch on the appropriate frequency; or

(4) Operating at true airspeed of less than 180 knots in the Guam ADIZ.

(c) An FAA ATC center may exempt the following operations from this subpart (except § 99.7) on a local basis only, with the concurrence of the U.S. military commanders concerned, or pursuant to an agreement with a U.S. Federal security or intelligence agency:

(1) Aircraft operations that are conducted wholly within the boundaries of an ADIZ and are not currently significant to the air defense system.

(2) Aircraft operations conducted in accordance with special procedures prescribed by a U.S. military authority, or a U.S. Federal security or intelligence agency concerned.

[Doc. No. 25113, 53 FR 18217, May 20, 1988, as amended by Amdt. 99–14, 53 FR 44182, Nov. 2, 1988; 66 FR 49822, Sept. 28, 2001; 69 FR 16755, Mar. 30, 2004]

§ 99.3 Definitions.

Aeronautical facility means, for the purposes of this subpart, a communications facility where flight plans or position reports are normally filed during flight operations.

Air defense identification zone (ADIZ) means an area of airspace over land or water in which the ready identification, location, and control of all aircraft (except for Department of Defense and law enforcement aircraft) is required in the interest of national security.

Defense area means any airspace of the contiguous United States that is not an ADIZ in which the control of aircraft is required for reasons of national security.

Defense visual flight rules (DVFR) means, for the purposes of this subpart, a flight within an ADIZ conducted by any aircraft (except for Department of Defense and law enforcement aircraft) in accordance with visual flight rules in part 91 of this title.

[Doc. No. FAA–2001–10693, 66 FR 49822, Sept. 28, 2001, as amended at 69 FR 16755, Mar. 30, 2004]

§ 99.5 Emergency situations.

In an emergency that requires immediate decision and action for the safety of the flight, the pilot in command of an aircraft may deviate from the rules in this part to the extent required by that emergency. He shall report the reasons for the deviation to the communications facility where flight plans or position reports are normally filed (referred to in this part as ''an appropriate aeronautical facility'') as soon as possible.

§ 99.7 Special security instructions.

Each person operating an aircraft in an ADIZ or Defense Area must, in addition to the applicable rules of this part, comply with special security instructions issued by the Administrator in the interest of national security, pursuant to agreement between the FAA and the Department of Defense, or between the FAA and a U.S. Federal security or intelligence agency.

[69 FR 16756, Mar. 30, 2004]

§ 99.9 Radio requirements.

(a) A person who operates a civil aircraft into an ADIZ must have a functioning two-way radio, and the pilot must maintain a continuous listening watch on the appropriate aeronautical facility's frequency.

(b) No person may operate an aircraft into, within, or whose departure point is within an ADIZ unless—

(1) The person files a DVFR flight plan containing the time and point of ADIZ penetration, and

(2) The aircraft departs within five minutes of the estimated departure time contained in the flight plan.

(c) If the pilot operating an aircraft under DVFR in an ADIZ cannot maintain two-way radio communications, the pilot may proceed, in accordance with original DVFR flight plan, or land as soon as practicable. The pilot must report the radio failure to an appropriate aeronautical facility as soon as possible.

(d) If a pilot operating an aircraft under IFR in an ADIZ cannot maintain two-way radio communications, the pilot must proceed in accordance with § 91.185 of this chapter.

[Doc. No. FAA–2001–10693, 66 FR 49822, Sept. 28, 2001, as amended at 69 FR 16756, Mar. 30, 2004]

§ 99.11 ADIZ flight plan requirements.

(a) No person may operate an aircraft into, within, or from a departure point within an ADIZ, unless the person files, activates, and closes a flight plan with the appropriate aeronautical facility, or is otherwise authorized by air traffic control.

(b) Unless ATC authorizes an abbreviated flight plan—

(1) A flight plan for IFR flight must contain the information specified in § 91.169; and

(2) A flight plan for VFR flight must contain the information specified in § 91.153(a) (1) through (6).

(3) If airport of departure is within the Alaskan ADIZ and there is no facility for filing a flight plan then:

(i) Immediately after takeoff or when within range of an appropriate aeronautical facility, comply with provisions of paragraph (b)(1) or (b)(2) as appropriate.

(ii) Proceed according to the instructions issued by the appropriate aeronautical facility.

(c) The pilot shall designate a flight plan for VFR flight as a DVFR flight plan.

(d) The pilot in command of an aircraft for which a flight plan has been filed must file an arrival or completion notice with an appropriate aeronautical facility.

[Doc. No. 25113, 53 FR 18217, May 20, 1988; 53 FR 44182, Nov. 2, 1988, as amended by Amdt. 99–15, 54 FR 34331, Aug. 18, 1989; 66 FR 49822, Sept. 28, 2001; 69 FR 16756, Mar. 30, 2004]

§ 99.12 [Reserved]

§ 99.13 Transponder-on requirements.

(a) *Aircraft transponder-on operation.* Each person operating an aircraft into or out of the United States into, within, or across an ADIZ designated in subpart B of this part, if that aircraft is equipped with an operable radar beacon transponder, shall operate the transponder, including altitude encoding equipment if installed, and shall reply on the appropriate code or as assigned by ATC.

(b) *ATC transponder equipment and use.* Effective September 7, 1990, unless otherwise authorized by ATC, no person may operate a civil aircraft into or out of the United States into, within, or across the contiguous U.S. ADIZ designated in subpart B of this part unless that aircraft is equipped with a coded radar beacon transponder.

(c) *ATC transponder and altitude reporting equipment and use.* Effective December 30, 1990, unless otherwise authorized by ATC, no person may operate a civil aircraft into or out of the United States into, within, or across

the contiguous U.S. ADIZ unless that aircraft is equipped with a coded radar beacon transponder and automatic pressure altitude reporting equipment having altitude reporting capability that automatically replies to interrogations by transmitting pressure altitude information in 100-foot increments.

(d) Paragraphs (b) and (c) of this section do not apply to the operation of an aircraft which was not originally certificated with an engine-driven electrical system and which has not subsequently been certified with such a system installed, a balloon, or a glider.

[Doc. No. 24903, 55 FR 8395, Mar. 7, 1990. Redesignated at 69 FR 16756, Mar. 30, 2004]

§ 99.15 Position reports.

(a) The pilot of an aircraft operating in or penetrating an ADIZ under IFR—

(1) In controlled airspace, must make the position reports required in § 91.183; and

(2) In uncontrolled airspace, must make the position reports required in this section.

(b) No pilot may operate an aircraft penetrating an ADIZ under DVFR unless—

(1) The pilot reports to an appropriate aeronautical facility before penetration: the time, position, and altitude at which the aircraft passed the last reporting point before penetration and the estimated time of arrival over the next appropriate reporting point along the flight route;

(2) If there is no appropriate reporting point along the flight route, the pilot reports at least 15 minutes before penetration: The estimated time, position, and altitude at which the pilot will penetrate; or

(3) If the departure airport is within an ADIZ or so close to the ADIZ boundary that it prevents the pilot from complying with paragraphs (b)(1) or (2) of this section, the pilot must report immediately after departure: the time of departure, the altitude, and the estimated time of arrival over the first reporting point along the flight route.

(c) In addition to any other reports as ATC may require, no pilot in command of a foreign civil aircraft may enter the United States through an ADIZ unless that pilot makes the reports required in this section or reports the position of the aircraft when it is not less that one hour and not more that 2 hours average direct cruising distance from the United States.

[69 FR 16756, Mar. 30, 2004]

§ 99.17 Deviation from flight plans and ATC clearances and instructions.

(a) No pilot may deviate from the provisions of an ATC clearance or ATC instruction except in accordance with § 91.123 of this chapter.

(b) No pilot may deviate from the filed IFR flight plan when operating an aircraft in uncontrolled airspace unless that pilot notifies an appropriate aeronautical facility before deviating.

(c) No pilot may deviate from the filed DVFR flight plan unless that pilot notifies an appropriate aeronautical facility before deviating.

[69 FR 16756, Mar. 30, 2004]

§§ 99.19–99.31 [Reserved]

Subpart B—Designated Air Defense Identification Zones

§ 99.41 General.

The airspace above the areas described in this subpart is established as an ADIZ. The lines between points described in this subpart are great circles except that the lines joining adjacent points on the same parallel of latitude are rhumb lines.

[69 FR 16756, Mar. 30, 2004]

§ 99.43 Contiguous U.S. ADIZ.

The area bounded by a line from 43°15′N, 65°55′W; 44°21′N; 67°16′W; 43°10′N; 69°40′W; 41°05′N; 69°40′W; 40°32′N; 72°15′W; 39°55′N; 73°00′W; 39°38′N; 73°00′W; 39°36′N; 73°40′W; 37°00′N; 75°30′W; 36°10′N; 75°10′W; 35°10′N; 75°10′W; 32°00′N; 80°30′W; 30°30′N; 81°00′W; 26°40′N; 79°40′W; 25°00′N; 80°05′W; 24°25′N; 81°15′W; 24°20′N; 81°45′W; 24°30′N; 82°06′W; 24°41′N; 82°06′W; 24°43′N; 82°00′W; 25°00′N; 81°30′W; 25°10′N; 81°23′W; 25°35′N; 81°30′W; 26°15′N 82°20′W; 27°50′N; 83°05′W; 28°55′N; 83°30′W; 29°42′N; 84°00′W; 29°20′N; 85°00′W; 30°00′N; 87°10′W; 30°00′N; 88°30′W; 28°45′N; 88°55′W; 28°45′N; 90°00′W; 29°25′N; 94°00′W; 28°20′N; 96°00′W; 27°30′N; 97°00′W; 26°00′N; 97°00′W; 25°58′N; 97°07′W; westward along the U.S./Mexico border to 32°32′03″N, 117°07′25″W; 32°30′N; 117°25′W;

32°35′N; 118°30′W; 33°05′N; 119°45′W; 33°55′N; 120°40′W; 34°50′N; 121°10′W; 38°50′N; 124°00′W; 40°00′N; 124°35′W; 40°25′N; 124°40′W; 42°50′N; 124°50′W; 46°15′N; 124°30′W; 48°30′N; 125°00′W; 48°20′N; 128°00′W; 48°20′N; 132°00′W; 37°42′N; 130°40′W; 29°00′N; 124°00′W; 30°45′N; 120°50′W; 32°00′N; 118°24′W; 32°30′N; 117°20′W; 32°32′03″N; 117°07′25″W; eastward along the U.S./Mexico border to 25°58′N, 97°07′W; 26°00′N; 97°00′W; 26°00′N; 95°00′W; 26°30′N; 95°00′W; then via 26°30′N; parallel to 26°30′N; 84°00′W; 24°00′N; 83°00′W; then Via 24°00′N; parallel to 24°00′N; 79°25′W; 25°40′N; 79°25′W; 27°30′N; 78°50′W; 30°45′N; 74°00′W; 39°30′N; 63°45′W; 43°00′N; 65°48′W; to point of beginning.

[Doc. No. FAA–2001–10693, 66 FR 49822, Sept. 28, 2001. Redesignated at 69 FR 16756, Mar. 30, 2004]

§ 99.45 Alaska ADIZ.

The area is bounded by a line from 54°00′N; 136°00′W; 56°57′N; 144°00′W; 57°00′N; 145°00′W; 53°00′N; 158°00′W; 50°00′N; 169°00′W; 50°00′N; 180°00′; 50°00′N; 170°00′E; 53°00′N; 170°00′E; 60°00′00″N; 180°00′; 65°00′N; 169°00′W; then along 169°00′W; to 75°00′N; 169°00′W; then along the 75°00′N; parallel to 75°00′N, 141°00′W; 69°50′N; 141°00′W 71°18′N; 156°44′W; 68°40′N; 167°10′W; 67°00′N; 165°00′W; 65°40′N; 168°15′W; 63°45′N; 165°30′W; 61°20′N; 166°40′W; 59°00′N; 163°00′W; then south along 163°00′W to 54°00′N, 163°00′W; 56°30′N; 154°00′W; 59°20′N; 146°00′W; 59°30′N; 140°00′W; 57°00′N; 136°00′W; 54°35′N, 133°00′W; to point of beginning.

[Doc. No. FAA–2001–10693, 66 FR 49822, Sept. 28, 2001. Redesignated at 69 FR 16756, Mar. 30, 2004]

§ 99.47 Guam ADIZ.

(a) *Inner boundary.* From a point 13°52′07″ N, 143°59′16″ E, counterclockwise along the 50-nautical-mile radius arc of the NIMITZ VORTAC (located at 13°27′11″ N, 144°43′51″ E); to a point 13°02′08″ N, 145°28′17″ E; then to a point 14°49′07″ N, 146°13′58″ E; counterclockwise along the 35-nautical-mile radius arc of the SAIPAN NDB (located at 15°06′46″ N, 145°42′42″ E); to a point 15°24′21″ N, 145°11′21″ E; then to the point of origin.

(b) *Outer boundary.* The area bounded by a circle with a radius of 250 NM centered at latitude 13°32′41″ N, longitude 144°50′30″ E.

[Doc. No. 25113, 53 FR 18217, May 20, 1988. Redesignated at 69 FR 16756, Mar. 30, 2004]

§ 99.49 Hawaii ADIZ.

(a) *Outer boundary.* The area included in the irregular octagonal figure formed by a line connecting 26°30′ N, 156°00′ W; 26°30′ N, 161°00′ W; 24°00′ N, 164°00′ W; 20°00′ N, 164°00′ W; 17°00′ N, 160°00′ W; 17°00′ N, 156°00′ W; 20°00′ N, 153°00′ W; 22°00′ N, 153°00′ W; to point of beginning.

(b) *Inner boundary.* The inner boundary to follow a line connecting 22°30′ N, 157°00′ W; 22°30′ N, 160°00′ W; 22°00′ N, 161°00′ W; 21°00′ N, 161°00′ W; 20°00′ N, 160°00′ W; 20°00′ N, 156°30′ W; 21°00′ N, 155°30′ W; to point of beginning.

[Doc. No. 25113, 53 FR 18217, May 20, 1988. Redesignated at 69 FR 16756, Mar. 30, 2004]

PART 101—MOORED BALLOONS, KITES, UNMANNED ROCKETS AND UNMANNED FREE BALLOONS

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AUTHORITY: 49 U.S.C. 106(g), 40103, 40113–40114, 45302, 44502, 44514, 44701–44702, 44721, 46308.

Subpart A—General

§ 101.1 Applicability.

(a) This part prescribes rules governing the operation in the United States, of the following:

(1) Except as provided for in §101.7, any balloon that is moored to the surface of the earth or an object thereon and that has a diameter of more than 6 feet or a gas capacity of more than 115 cubic feet.

(2) Except as provided for in §101.7, any kite that weighs more than 5 pounds and is intended to be flown at the end of a rope or cable.

(3) Any unmanned rocket except:

(i) Aerial firework displays; and,

(ii) Model rockets:

(*a*) Using not more than four ounces of propellant;

(*b*) Using a slow-burning propellant;

(*c*) Made of paper, wood, or breakable plastic, containing no substantial metal parts and weighing not more than 16 ounces, including the propellant; and

(*d*) Operated in a manner that does not create a hazard to persons, property, or other aircraft.

(4) Except as provided for in §101.7, any unmanned free balloon that—

(i) Carries a payload package that weighs more than four pounds and has a weight/size ratio of more than three ounces per square inch on any surface of the package, determined by dividing the total weight in ounces of the payload package by the area in square inches of its smallest surface;

(ii) Carries a payload package that weighs more than six pounds;

(iii) Carries a payload, of two or more packages, that weighs more than 12 pounds; or

(iv) Uses a rope or other device for suspension of the payload that requires an impact force of more than 50 pounds to separate the suspended payload from the balloon.

(b) For the purposes of this part, a *gyroglider* attached to a vehicle on the surface of the earth is considered to be a kite.

[Doc. No. 1580, 28 FR 6721, June 29, 1963, as amended by Amdt. 101–1, 29 FR 46, Jan. 3, 1964; Amdt. 101–3, 35 FR 8213, May 26, 1970]

§ 101.3 Waivers.

No person may conduct operations that require a deviation from this part except under a certificate of waiver issued by the Administrator.

[Doc. No. 1580, 28 FR 6721, June 29, 1963]

§ 101.5 Operations in prohibited or restricted areas.

No person may operate a moored balloon, kite, unmanned rocket, or unmanned free balloon in a prohibited or restricted area unless he has permission from the using or controlling agency, as appropriate.

[Doc. No. 1457, 29 FR 46, Jan. 3, 1964]

§ 101.7 Hazardous operations.

(a) No person may operate any moored balloon, kite, unmanned rocket, or unmanned free balloon in a manner that creates a hazard to other persons, or their property.

(b) No person operating any moored balloon, kite, unmanned rocket, or unmanned free balloon may allow an object to be dropped therefrom, if such action creates a hazard to other persons or their property.

(Sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c)))

[Doc. No. 12800, 39 FR 22252, June 21, 1974]

Subpart B—Moored Balloons and Kites

SOURCE: Docket No. 1580, 28 FR 6722, June 29, 1963, unless otherwise noted.

§ 101.11 Applicability.

This subpart applies to the operation of moored balloons and kites. However, a person operating a moored balloon or kite within a restricted area must comply only with §101.19 and with additional limitations imposed by the using or controlling agency, as appropriate.

§ 101.13 Operating limitations.

(a) Except as provided in paragraph (b) of this section, no person may operate a moored balloon or kite—

(1) Less than 500 feet from the base of any cloud;

(2) More than 500 feet above the surface of the earth;

(3) From an area where the ground visibility is less than three miles; or

(4) Within five miles of the boundary of any airport.

(b) Paragraph (a) of this section does not apply to the operation of a balloon or kite below the top of any structure and within 250 feet of it, if that shielded operation does not obscure any lighting on the structure.

§ 101.15 Notice requirements.

No person may operate an unshielded moored balloon or kite more than 150 feet above the surface of the earth unless, at least 24 hours before beginning the operation, he gives the following information to the FAA ATC facility that is nearest to the place of intended operation:

(a) The names and addresses of the owners and operators.

(b) The size of the balloon or the size and weight of the kite.

(c) The location of the operation.

(d) The height above the surface of the earth at which the balloon or kite is to be operated.

(e) The date, time, and duration of the operation.

§ 101.17 Lighting and marking requirements.

(a) No person may operate a moored balloon or kite, between sunset and sunrise unless the balloon or kite, and its mooring lines, are lighted so as to give a visual warning equal to that required for obstructions to air navigation in the FAA publication ''Obstruction Marking and Lighting''.

(b) No person may operate a moored balloon or kite between sunrise and sunset unless its mooring lines have colored pennants or streamers attached at not more than 50 foot intervals beginning at 150 feet above the surface of the earth and visible for at least one mile.

(Sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c)))

[Doc. No. 1580, 28 FR 6722, June 29, 1963, as amended by Amdt. 101–4, 39 FR 22252, June 21, 1974]

§ 101.19 Rapid deflation device.

No person may operate a moored balloon unless it has a device that will automatically and rapidly deflate the balloon if it escapes from its moorings. If the device does not function properly, the operator shall immediately notify the nearest ATC facility of the location and time of the escape and the estimated flight path of the balloon.

Subpart C—Unmanned Rockets

§ 101.21 Applicability.

This subpart applies to the operation of unmanned rockets. However, a person operating an unmanned rocket within a restricted area must comply only with § 101.23(g) and with additional limitations imposed by the using or controlling agency, as appropriate.

[Doc. No. 1580, 28 FR 6722, June 29, 1963]

§ 101.22 Special provisions for large model rockets.

Persons operating model rockets that use not more than 125 grams of propellant; that are made of paper, wood, or breakable plastic; that contain no substantial metal parts, and that weigh not more than 1,500 grams, including the propellant, need not comply with § 101.23 (b), (c), (g), and (h), provided:

(a) That person complies with all provisions of § 101.25; and

(b) The operation is not conducted within 5 miles of an airport runway or other landing area unless the information required in § 101.25 is also provided to the manager of that airport.

[Amdt. 101–6, 59 FR 50393, Oct. 3, 1994]

§ 101.23 Operating limitations.

No person may operate an unmanned rocket—

(a) In a manner that creates a collision hazard with other aircraft;

(b) In controlled airspace;

(c) Within five miles of the boundary of any airport;

(d) At any altitude where clouds or obscuring phenomena of more than five-tenths coverage prevails;

(e) At any altitude where the horizontal visibility is less than five miles;

(f) Into any cloud;

(g) Within 1,500 feet of any person or property that is not associated with the operations; or

(h) Between sunset and sunrise.

(Sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c)))

[Doc. No. 1580, 28 FR 6722, June 29, 1963, as amended by Amdt. 101–4, 39 FR 22252, June 21, 1974]

§ 101.25 Notice requirements.

No person may operate an unmanned rocket unless that person gives the following information to the FAA ATC facility nearest to the place of intended operation no less than 24 hours prior to and no more than 48 hours prior to beginning the operation:

(a) The names and addresses of the operators; except when there are multiple participants at a single event, the name and address of the person so designated as the event launch coordinator, whose duties include coordination of the required launch data estimates and coordinating the launch event;

(b) The estimated number of rockets to be operated;

(c) The estimated size and the estimated weight of each rocket; and

(d) The estimated highest altitude or flight level to which each rocket will be operated.

(e) The location of the operation.

(f) The date, time, and duration of the operation.

(g) Any other pertinent information requested by the ATC facility.

[Doc. No. 1580, 28 FR 6722, June 29, 1963, as amended by Amdt. 101–6, 59 FR 50393, Oct. 3, 1994]

Subpart D—Unmanned Free Balloons

SOURCE: Docket No. 1457, 29 FR 47, Jan. 3, 1964, unless otherwise noted.

§ 101.31 Applicability.

This subpart applies to the operation of unmanned free balloons. However, a person operating an unmanned free balloon within a restricted area must comply only with § 101.33 (d) and (e) and with any additional limitations that are imposed by the using or controlling agency, as appropriate.

§ 101.33 Operating limitations.

No person may operate an unmanned free balloon—

(a) Unless otherwise authorized by ATC, below 2,000 feet above the surface within the lateral boundaries of the surface areas of Class B, Class C, Class D, or Class E airspace designated for an airport;

(b) At any altitude where there are clouds or obscuring phenomena of more than five-tenths coverage;

(c) At any altitude below 60,000 feet standard pressure altitude where the horizontal visibility is less than five miles;

(d) During the first 1,000 feet of ascent, over a congested area of a city, town, or settlement or an open-air assembly of persons not associated with the operation; or

(e) In such a manner that impact of the balloon, or part thereof including its payload, with the surface creates a hazard to persons or property not associated with the operation.

[Doc. No. 1457, 29 FR 47, Jan. 3, 1964, as amended by Amdt. 101–5, 56 FR 65662, Dec. 17, 1991]

§ 101.35 Equipment and marking requirements.

(a) No person may operate an unmanned free balloon unless—

(1) It is equipped with at least two payload cut-down systems or devices that operate independently of each other;

(2) At least two methods, systems, devices, or combinations thereof, that function independently of each other, are employed for terminating the flight of the balloon envelope; and

(3) The balloon envelope is equipped with a radar reflective device(s) or material that will present an echo to surface radar operating in the 200 MHz to 2700 MHz frequency range.

The operator shall activate the appropriate devices required by paragraphs (a) (1) and (2) of this section when weather conditions are less than those prescribed for operation under this subpart, or if a malfunction or any other reason makes the further operation hazardous to other air traffic or to persons and property on the surface.

(b) No person may operate an unmanned free balloon below 60,000 feet standard pressure altitude between sunset and sunrise (as corrected to the altitude of operation) unless the balloon and its attachments and payload, whether or not they become separated during the operation, are equipped with lights that are visible for at least 5 miles and have a flash frequency of at least 40, and not more than 100, cycles per minute.

(c) No person may operate an unmanned free balloon that is equipped with a trailing antenna that requires an impact force of more than 50 pounds to break it at any point, unless the antenna has colored pennants or streamers that are attached at not more than 50 foot intervals and that are visible for at least one mile.

(d) No person may operate between sunrise and sunset an unmanned free balloon that is equipped with a suspension device (other than a highly conspicuously colored open parachute) more than 50 feet along, unless the suspension device is colored in alternate bands of high conspicuity colors or has colored pennants or streamers attached which are visible for at least one mile.

(Sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c)))

[Doc. No. 1457, 29 FR 47, Jan. 3, 1964, as amended by Amdt. 101–2, 32 FR 5254, Mar. 29, 1967; Amdt. 101–4, 39 FR 22252, June 21, 1974]

§ 101.37 Notice requirements.

(a) *Prelaunch notice:* Except as provided in paragraph (b) of this section, no person may operate an unmanned free balloon unless, within 6 to 24 hours before beginning the operation, he gives the following information to the FAA ATC facility that is nearest to the place of intended operation:

(1) The balloon identification.

(2) The estimated date and time of launching, amended as necessary to remain within plus or minus 30 minutes.

(3) The location of the launching site.

(4) The cruising altitude.

(5) The forecast trajectory and estimated time to cruising altitude or 60,000 feet standard pressure altitude, whichever is lower.

(6) The length and diameter of the balloon, length of the suspension device, weight of the payload, and length of the trailing antenna.

(7) The duration of flight.

(8) The forecast time and location of impact with the surface of the earth.

(b) For solar or cosmic disturbance investigations involving a critical time element, the information in paragraph (a) of this section shall be given within 30 minutes to 24 hours before beginning the operation.

(c) *Cancellation notice:* If the operation is canceled, the person who intended to conduct the operation shall immediately notify the nearest FAA ATC facility.

(d) *Launch notice:* Each person operating an unmanned free balloon shall notify the nearest FAA or military ATC facility of the launch time immediately after the balloon is launched.

§ 101.39 Balloon position reports.

(a) Each person operating an unmanned free balloon shall:

(1) Unless ATC requires otherwise, monitor the course of the balloon and record its position at least every two hours; and

(2) Forward any balloon position reports requested by ATC.

(b) One hour before beginning descent, each person operating an unmanned free balloon shall forward to the nearest FAA ATC facility the following information regarding the balloon:

(1) The current geographical position.

(2) The altitude.

(3) The forecast time of penetration of 60,000 feet standard pressure altitude (if applicable).

(4) The forecast trajectory for the balance of the flight.

(5) The forecast time and location of impact with the surface of the earth.

(c) If a balloon position report is not recorded for any two-hour period of flight, the person operating an unmanned free balloon shall immediately notify the nearest FAA ATC facility.

The notice shall include the last recorded position and any revision of the forecast trajectory. The nearest FAA ATC facility shall be notified immediately when tracking of the balloon is re-established.

(d) Each person operating an unmanned free balloon shall notify the nearest FAA ATC facility when the operation is ended.

PART 103—ULTRALIGHT VEHICLES

Subpart A—General

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AUTHORITY: 49 U.S.C. 106(g), 40103–40104, 40113, 44701.

SOURCE: Docket No. 21631, 47 FR 38776, Sept. 2, 1982, unless otherwise noted.

Subpart A—General

§ 103.1 Applicability.

This part prescribes rules governing the operation of ultralight vehicles in the United States. For the purposes of this part, an ultralight vehicle is a vehicle that:

(a) Is used or intended to be used for manned operation in the air by a single occupant;

(b) Is used or intended to be used for recreation or sport purposes only;

(c) Does not have any U.S. or foreign airworthiness certificate; and

(d) If unpowered, weighs less than 155 pounds; or

(e) If powered:

(1) Weighs less than 254 pounds empty weight, excluding floats and safety devices which are intended for deployment in a potentially catastrophic situation;

(2) Has a fuel capacity not exceeding 5 U.S. gallons;

(3) Is not capable of more than 55 knots calibrated airspeed at full power in level flight; and

(4) Has a power-off stall speed which does not exceed 24 knots calibrated airspeed.

§ 103.3 Inspection requirements.

(a) Any person operating an ultralight vehicle under this part shall, upon request, allow the Administrator, or his designee, to inspect the vehicle to determine the applicability of this part.

(b) The pilot or operator of an ultralight vehicle must, upon request of the Administrator, furnish satisfactory evidence that the vehicle is subject only to the provisions of this part.

§ 103.5 Waivers.

No person may conduct operations that require a deviation from this part except under a written waiver issued by the Administrator.

§ 103.7 Certification and registration.

(a) Notwithstanding any other section pertaining to certification of aircraft or their parts or equipment, ultralight vehicles and their component parts and equipment are not required to meet the airworthiness certification standards specified for aircraft or to have certificates of airworthiness.

(b) Notwithstanding any other section pertaining to airman certification, operators of ultralight vehicles are not required to meet any aeronautical knowledge, age, or experience requirements to operate those vehicles or to have airman or medical certificates.

(c) Notwithstanding any other section pertaining to registration and marking of aircraft, ultralight vehicles are not required to be registered or to bear markings of any type.

Subpart B—Operating Rules

§ 103.9 Hazardous operations.

(a) No person may operate any ultralight vehicle in a manner that creates a hazard to other persons or property.

(b) No person may allow an object to be dropped from an ultralight vehicle if such action creates a hazard to other persons or property.

§ 103.11 Daylight operations.

(a) No person may operate an ultralight vehicle except between the hours of sunrise and sunset.

(b) Notwithstanding paragraph (a) of this section, ultralight vehicles may be operated during the twilight periods 30 minutes before official sunrise and 30 minutes after official sunset or, in Alaska, during the period of civil twilight as defined in the Air Almanac, if:

(1) The vehicle is equipped with an operating anticollision light visible for at least 3 statute miles; and

(2) All operations are conducted in uncontrolled airspace.

§ 103.13 Operation near aircraft; right-of-way rules.

(a) Each person operating an ultralight vehicle shall maintain vigilance so as to see and avoid aircraft and shall yield the right-of-way to all aircraft.

(b) No person may operate an ultralight vehicle in a manner that creates a collision hazard with respect to any aircraft.

(c) Powered ultralights shall yield the right-of-way to unpowered ultralights.

§ 103.15 Operations over congested areas.

No person may operate an ultralight vehicle over any congested area of a city, town, or settlement, or over any open air assembly of persons.

§ 103.17 Operations in certain airspace.

No person may operate an ultralight vehicle within Class A, Class B, Class C, or Class D airspace or within the lateral boundaries of the surface area of Class E airspace designated for an airport unless that person has prior authorization from the ATC facility having jurisdiction over that airspace.

[Amdt. 103–17, 56 FR 65662, Dec. 17, 1991]

§ 103.19 Operations in prohibited or restricted areas.

No person may operate an ultralight vehicle in prohibited or restricted areas unless that person has permission from the using or controlling agency, as appropriate.

§ 103.20 Flight restrictions in the proximity of certain areas designated by notice to airmen.

No person may operate an ultralight vehicle in areas designated in a Notice to Airmen under § 91.137, § 91.138, § 91.141, § 91.143 or § 91.145 of this chapter, unless authorized by:

(a) Air Traffic Control (ATC); or

(b) A Flight Standards Certificate of Waiver or Authorization issued for the demonstration or event.

[Doc. No. FAA–2000–8274, 66 FR 47378, Sept. 11, 2001]

§ 103.21 Visual reference with the surface.

No person may operate an ultralight vehicle except by visual reference with the surface.

§ 103.23 Flight visibility and cloud clearance requirements.

No person may operate an ultralight vehicle when the flight visibility or distance from clouds is less than that in the table found below. All operations in Class A, Class B, Class C, and Class D airspace or Class E airspace designated for an airport must receive prior ATC authorization as required in § 103.17 of this part.

Airspace	Flight visibility	Distance from clouds
Class A	Not applicable	Not Applicable.
Class B	3 statute miles	Clear of Clouds.
Class C	3 statute miles	500 feet below. 1,000 feet above. 2,000 feet horizontal.
Class D	3 statute miles	500 feet below. 1,000 feet above. 2,000 feet horizontal.
Class E: Less than 10,000 feet MSL.	3 statute miles	500 feet below. 1,000 feet above. 2,000 feet horizontal.

Airspace	Flight visibility	Distance from clouds
At or above 10,000 feet MSL.	5 statute miles	1,000 feet below. 1,000 feet above. 1 statute mile horizontal.
Class G:		
1,200 feet or less above the surface (regardless of MSL altitude).	1 statute mile	Clear of clouds.
More than 1,200 feet above the surface but less than 10,000 feet MSL.	1 statute mile	500 feet below. 1,000 feet above. 2,000 feet horizontal.
More than 1,200 feet above the surface and at or above 10,000 feet MSL.	5 statute miles	1,000 feet below. 1,000 feet above. 1 statute mile horizontal.

[Amdt. 103–17, 56 FR 65662, Dec. 17, 1991]

PART 105—PARACHUTE OPERATIONS

Subpart A—General

Sec.
105.1 Applicability.
105.3 Definitions.
105.5 General.
105.7 use of alcohol and drugs.
105.9 Inspections.

Subpart B—Operating Rules

105.13 Radio equipment and use requirements.
105.15 Information required and notice of cancellation or postponement of a parachute operation.
105.17 Flight visibility and clearance from cloud requirements.
105.19 Parachute operations between sunset and sunrise.
105.21 Parachute operations over or into a congested area or an open-air assembly of persons.
105.23 Parachute operations over or onto airports.
105.25 Parachute operations in designated airspace.

Subpart C—Parachute Equipment and Packing

105.41 Applicability.
105.43 Use of single-harness, dual-parachute systems.
105.45 Use of tandem parachute systems.
105.47 Use of static lines.
105.49 Foreign parachutists and equipment.

AUTHORITY: 49 U.S.C. 106(g), 40113–40114, 44701–44702, 44721.

SOURCE: Doc. No. FAA–1999–5483, 66 FR 23553, May 9, 2001, unless otherwise noted.

§ 105.1 Applicability.

(a) Except as provided in paragraphs (b) and (c) of this section, this part prescribes rules governing parachute operations conducted in the United States.

(b) This part does not apply to a parachute operation conducted—

(1) In response to an in-flight emergency, or

(2) To meet an emergency on the surface when it is conducted at the direction or with the approval of an agency of the United States, or of a State, Puerto Rico, the District of Columbia, or a possession of the United States, or an agency or political subdivision thereof.

(c) Sections 105.5, 105.9, 105.13, 105.15, 105.17, 105.19 through 105.23, 105.25(a)(1) and 105.27 of this part do not apply to a parachute operation conducted by a member of an Armed Force—

(1) Over or within a restricted area when that area is under the control of an Armed Force.

(2) During military operations in uncontrolled airspace.

§ 105.3 Definitions.

For the purposes of this part—

Approved parachute means a parachute manufactured under a type certificate or a Technical Standard Order (C–23 series), or a personnel-carrying U.S. military parachute (other than a high altitude, high speed, or ejection type) identified by a Navy Air Facility, an Army Air Field, and Air Force-Navy drawing number, an Army Air Field order number, or any other military designation or specification number.

Automatic Activation Device means a self-contained mechanical or electromechanical device that is attached to the interior of the reserve parachute container, which automatically initiates parachute deployment of the reserve parachute at a pre-set altitude, time, percentage of terminal velocity, or combination thereof.

Direct Supervision means that a certificated rigger personally observes a non-certificated person packing a main parachute to the extent necessary to

ensure that it is being done properly, and takes responsibility for that packing.

Drop Zone means any pre-determined area upon which parachutists or objects land after making an intentional parachute jump or drop. The centerpoint target of a drop zone is expressed in nautical miles from the nearest VOR facility when 30 nautical miles or less; or from the nearest airport, town, or city depicted on the appropriate Coast and Geodetic Survey World Aeronautical Chart or Sectional Aeronautical Chart, when the nearest VOR facility is more than 30 nautical miles from the drop zone.

Foreign parachutist means a parachutist who is neither a U.S. citizen or a resident alien and is participating in parachute operations within the United States using parachute equipment not manufctured in the United States.

Freefall means the portion of a parachute jump or drop between aircraft exit and parachute deployment in which the parachute is activated manually by the parachutist at the parachutist's discretion or automatically, or, in the case of an object, is activated automatically.

Main parachute means a parachute worn as the primary parachute used or intended to be used in conjunction with a reserve parachute.

Object means any item other than a person that descends to the surface from an aircraft in flight when a parachute is used or is intended to be used during all or part of the descent.

Parachute drop means the descent of an object to the surface from an aircraft in flight when a parachute is used or intended to be used during all or part of that descent.

Parachute jump means a parachute operation that involves the descent of one or more persons to the surface from an aircraft in flight when an aircraft is used or intended to be used during all or part of that descent.

Parachute operation means the performance of all activity for the purpose of, or in support of, a parachute jump or a parachute drop. This parachute operation can involve, but is not limited to, the following persons: parachutist, parachutist in command and passenger in tandem parachute operations, drop zone or owner or operator, jump master, certificated parachute rigger, or pilot.

Parachutist means a person who intends to exit an aircraft while in flight using a single-harness, dual parachute system to descend to the surface.

Parachutist in command means the person responsible fro the operation and safety of a tandem parachute operation.

Passenger parachutist means a person who boards an aircraft, acting as other than the parachutist in command of a tandem parachute operation, with the intent of exiting the aircraft while inflight using the forward harness of a dual harness tandem parachute system to descend to the surface.

Pilot chute means a small parachute used to initiate and/or accelerate deployment of a main or reserve parachute.

Ram-air parachute means a parachute with a canopy consisting of an upper and lower surface that is inflated by ram air entering through specially designed openings in the front of the canopy to form a gliding airfoil.

Reserve parachute means an approved parachute worn for emergency use to be activated only upon failure of the main parachute or in any other emergency where use of the main parachute is impractical or use of the main parachute would increase risk.

Single-harness, dual parachute system: means the combination of a main parachute, approved reserve parachute, and approved single person harness and dual-parachute container. This parachute system may have an operational automatic activation device installed.

Tandem parachute operation: means a parachute operation in which more than one person simultaneously uses the same tandem parachute system while descending to the surface from an aircraft in flight.

Tandem parachute system: means the combination of a main parachute, approved reserve parachute, and approved harness and dual parachute container, and a separate approved forward harness for a passenger parachutist. This parachute system must have an operational automatic activation device installed.

§ 105.5 General.

No person may conduct a parachute operation, and no pilot in command of an aircraft may allow a parachute operation to be conducted from an aircraft, if that operation creates a hazard to air traffic or to persons or property on the surface.

§ 105.7 Use of alcohol and drugs.

No person may conduct a parachute operation, and no pilot in command of an aircraft may allow a person to conduct a parachute operation from that aircraft, if that person is or appears to be under the influence of—

(a) Alcohol, or

(b) Any drug that affects that person's faculties in any way contrary to safety.

§ 105.9 Inspections.

The Administrator may inspect any parachute operation to which this part applies (including inspections at the site where the parachute operation is being conducted) to determine compliance with the regulations of this part.

Subpart B—Operating Rules

§ 105.13 Radio equipment and use requirements.

(a) Except when otherwise authorized by air traffic control—

(1) No person may conduct a parachute operation, and no pilot in command of an aircraft may allow a parachute operation to be conducted from that aircraft, in or into controlled airspace unless, during that flight—

(i) The aircraft is equipped with a functioning two-way radio communication system appropriate to the air traffic control facilities being used; and

(ii) Radio communications have been established between the aircraft and the air traffic control facility having jurisdiction over the affected airspace of the first intended exit altitude at least 5 minutes before the parachute operation begins. The pilot in command must establish radio communications to receive information regarding air traffic activity in the vicinity of the parachute operation.

(2) The pilot in command of an aircraft used for any parachute operation in or into controlled airspace must, during each flight—

(i) Continuously monitor the appropriate frequency of the aircraft's radio communications system from the time radio communications are first established between the aircraft and air traffic control, until the pilot advises air traffic control that the parachute operation has ended for that flight.

(ii) Advise air traffic control when the last parachutist or object leaves the aircraft.

(b) Parachute operations must be aborted if, prior to receipt of a required air traffic control authorization, or during any parachute operation in or into controlled airspace, the required radio communications system is or becomes inoperative.

§ 105.15 Information required and notice of cancellation or postponement of a parachute operation.

(a) Each person requesting an authorization under §§ 105.21(b) and 105.25(a)(2) of this part and each person submitting a notification under § 105.25(a)(3) of this part must provide the following information (on an individual or group basis):

(1) The date and time the parachute operation will begin.

(2) The radius of the drop zone around the target expressed in nautical miles.

(3) The location of the center of the drop zone in relation to—

(i) The nearest VOR facility in terms of the VOR radial on which it is located and its distance in nautical miles from the VOR facility when that facility is 30 nautical miles or less from the drop zone target; or

(ii) the nearest airport, town, or city depicted on the appropriate Coast and Geodetic Survey World Aeronautical Chart or Sectional Aeronautical Chart, when the nearest VOR facility is more than 30 nautical miles from the drop zone target.

(4) Each altitude above mean sea level at which the aircraft will be operated when parachutists or objects exist the aircraft.

(5) The duration of the intended parachute operation.

(6) The name, address, and telephone number of the person who requests the

authorization or gives notice of the parachute operation.

(7) The registration number of the aircraft to be used.

(8) The name of the air traffic control facility with jurisdiction of the airspace at the first intended exit altitude to be used for the parachute operation.

(b) Each holder of a certificate of authorization issued under §§ 105.21(b) and 105.25(b) of this part must present that certificate for inspection upon the request of the Administrator or any Federal, State, or local official.

(c) Each person requesting an authorization under §§ 105.21(b) and 105.25(a)(2) of this part and each person submitting a notice under § 105.25(a)(3) of this part must promptly notify the air traffic control facility having jurisdiction over the affected airspace if the proposed or scheduled parachute operation is canceled or postponed.

§ 105.17 Flight visibility and clearance from cloud requirements.

No person may conduct a parachute operation, and no pilot in command of an aircraft may allow a parachute operation to be conducted from that aircraft—

(a) Into or through a cloud, or

(b) When the flight visibility or the distance from any cloud is less than that prescribed in the following table:

Altitude	Flight visibility (statute miles)	Distance from clouds
1,200 feet or less above the surface regardless of the MSL altitude.	3	500 feet below, 1,000 feet above, 2,000 feet horizontal.
More than 1,200 feet above the surface but less than 10,000 feet MSL.	3	500 feet below, 1,000 feet above, 2,000 feet horizontal.
More than 1,200 feet above the surface and at or above 10,000 feet MSL.	5	1,000 feet below, 1,000 feet above, 1 mile horizontal.

§ 105.19 Parachute operations between sunset and sunrise.

(a) No person may conduct a parachute operation, and no pilot in command of an aircraft may allow a person to conduct a parachute operation from an aircraft between sunset and sunrise, unless the person or object descending from the aircraft displays a light that is visible for at least 3 statute miles.

(b) The light required by paragraph (a) of this section must be displayed from the time that the person or object is under a properly functioning open parachute until that person or object reaches the surface.

§ 105.21 Parachute operations over or into a congested area or an open-air assembly of persons.

(a) No person may conduct a parachute operation, and no pilot in command of an aircraft may allow a parachute operation to be conducted from that aircraft, over or into a congested area of a city, town, or settlement, or an open-air assembly of persons unless a certificate of authorization for that parachute operation has been issued under this section. However, a parachutist may drift over a congested area or an open-air assembly of persons with a fully deployed and properly functioning parachute if that parachutist is at a sufficient altitude to avoid creating a hazard to persons or property on the surface.

(b) An application for a certificate of authorization issued under this section must—

(1) Be made in the form and manner prescribed by the Administrator, and

(2) Contain the information required in § 105.15(a) of this part.

(c) Each holder of, and each person named as a participant in a certificate of authorization issued under this section must comply with all requirements contained in the certificate of authorization.

(d) Each holder of a certificate of authorization issued under this section must present that certificate for inspection upon the request of the Administrator, or any Federal, State, or local official.

§ 105.23 Parachute operations over or onto airports.

No person may conduct a parachute operation, and no pilot in command of an aircraft may allow a parachute operation to be conducted from that aircraft, over or onto any airport unless—

(a) For airports with an operating control tower:

(1) Prior approval has been obtained from the management of the airport to conduct parachute operations over or on that airport.

(2) Approval has been obtained from the control tower to conduct parachute operations over or onto that airport.

(3) Two-way radio communications are maintained between the pilot of the aircraft involved in the parachute operation and the control tower of the airport over or onto which the parachute operation is being conducted.

(b) For airports without an operating control tower, prior approval has been obtained from the management of the airport to conduct parachute operations over or on that airport.

(c) A parachutist may drift over that airport with a fully deployed and properly functioning parachute if the parachutist is at least 2,000 feet above that airport's traffic pattern, and avoids creating a hazard to air traffic or to persons and property on the ground.

§ 105.25 Parachute operations in designated airspace.

(a) No person may conduct a parachute operation, and no pilot in command of an aircraft may allow a parachute operation to be conducted from that aircraft—

(1) Over or within a restricted area or prohibited area unless the controlling agency of the area concerned has authorized that parachute operation;

(2) Within or into a Class A, B, C, D airspace area without, or in violation of the requirements of, an air traffic control authorization issued under this section;

(3) Except as provided in paragraph (c) and (d) of this section, within or into Class E or G airspace area unless the air traffic control facility having jurisdiction over the airspace at the first intended exit altitude is notified of the parachute operation no earlier than 24 hours before or no later than 1 hour before the parachute operation begins.

(b) Each request for a parachute operation authorization or notification required under this section must be submitted to the air traffic control facility having jurisdiction over the airspace at the first intended exit altitude and must include the information prescribed by §105.15(a) of this part.

(c) For the purposes of paragraph (a)(3) of this section, air traffic control facilities may accept a written notification from an organization that conducts parachute operations and lists the scheduled series of parachute operations to be conducted over a stated period of time not longer than 12 calendar months. The notification must contain the information prescribed by §105.15(a) of this part, identify the responsible persons associated with that parachute operation, and be submitted at least 15 days, but not more than 30 days, before the parachute operation begins. The FAA may revoke the acceptance of the notification for any failure of the organization conducting the parachute operations to comply with its requirements.

(d) Paragraph (a)(3) of this section does not apply to a parachute operation conducted by a member of an Armed Force within a restricted area that extends upward from the surface when that area is under the control of an Armed Force.

Subpart C—Parachute Equipment and Packing

§ 105.41 Applicability.

This subpart prescribed rules governing parachute equipment used in civil parachute operations.

§ 105.43 Use of single-harness, dual-parachute systems.

No person may conduct a parachute operation using a single-harness, dual-parachute system, and no pilot in command of an aircraft may allow any person to conduct a parachute operation from that aircraft using a single-harness, dual-parachute system, unless that system has at least one main parachute, one approved reserve parachute, and one approved single person harness and container that are packed as follows:

(a) The main parachute must have been packed within 120 days before the date of its use of a certificated parachute rigger, the person making the next jump with that parachute, or a

non-certificated person under the direct supervision of a certification parachute rigger.

(b) The reserve parachute must have been packed by a certificated parachute rigger—

(1) Within 120 days before the date of its use, if its canopy, shroud, and harness are composed exclusively of nylon, rayon, or similar synthetic fiber or material that is substantially resistant to damage from mold, mildew, and other fungi, and other rotting agents propagated in a moist environment; or

(2) Within 60 days before the date of its use, if it is composed of any amount of silk, pongee, or other natural fiber, or material not specified in paragraph (b)(1) of this section.

(c) If installed, the automatic activation device must be maintained in accordance with manufacturer instructions for that automatic activation device.

§ 105.45 Use of tandem parachute systems.

(a) No person may conduct a parachute operation using a tandem parachute system, and no pilot in command of an aircraft may allow any person to conduct a parachute operation from that aircraft using a tandem parachute system, unless—

(1) One of the parachutists using the tandem parachute system is the parachutist in command, and meets the following requirements:

(i) Has a minimum of 3 years of experience in parachuting, and must provide documentation that the parachutist—

(ii) Has completed a minimum of 500 freefall parachute jumps using a ram-air parachute, and

(iii) Holds a master parachute license issued by an organization recognized by the FAA, and

(iv) Has successfully completed a tandem instructor course given by the manufacturer of the tandem parachute system used in the parachute operation or a course acceptable to the Administrator.

(v) Has been certified by the appropriate parachute manufacturer or tandem course provider as being properly trained on the use of the specific tandem parachute system to be used.

(2) The person acting as parachutist in command:

(i) Has briefed the passenger parachutist before boarding the aircraft. The briefing must include the procedures to be used in case of an emergency with the aircraft or after exiting the aircraft, while preparing to exit and exiting the aircraft, freefall, operating the parachute after freefall, landing approach, and landing.

(ii) Uses the harness position prescribed by the manufacturer of the tandem parachute equipment.

(b) No person may make a parachute jump with a tandem parachute system unless—

(1) The main parachute has been packed by a certificated parachute rigger, the parachutist in command making the next jump with that parachute, or a person under the direct supervision of a certificated parachute rigger.

(2) The reserve parachute has been packed by a certificated parachute rigger in accordance with § 105.43(b) of this part.

(3) The tandem parachute system contains an operational automatic activation device for the reserve parachute, approved by the manufacturer of that tandem parachute system. The device must—

(i) Have been maintained in accordance with manufacturer instructions, and

(ii) Be armed during each tandem parachute operation.

(4) The passenger parachutist is provided with a manual main parachute activation device and instructed on the use of that device, if required by the owner/operator.

(5) The main parachute is equipped with a single-point release system.

(6) The reserve parachute meets Technical Standard Order C23 specifications.

§ 105.47 Use of static lines.

(a) Except as provided in paragraph (c) of this section, no person may conduct a parachute operation using a static line attached to the aircraft and the main parachute unless an assist device, described and attached as follows, is used to aid the pilot chute in performing its function, or, if no pilot

chute is used, to aid in the direct deployment of the main parachute canopy. The assist device must—

(1) Be long enough to allow the main parachute container to open before a load is placed on the device.

(2) Have a static load strength of—

(i) At least 28 pounds but not more than 160 pounds if it is used to aid the pilot chute in performing its function; or

(ii) At least 56 pounds but not more than 320 pounds if it is used to aid in the direct deployment of the main parachute canopy; and

(3) Be attached as follows:

(i) At one end, to the static line above the static-line pins or, if static-line pins are not used, above the static-line ties to the parachute cone.

(ii) At the other end, to the pilot chute apex, bridle cord, or bridle loop, or, if no pilot chute is used, to the main parachute canopy.

(b) No person may attach an assist device required by paragraph (a) of this section to any main parachute unless that person is a certificated parachute rigger or that person makes the next parachute jump with that parachute.

(c) An assist device is not required for parachute operations using direct-deployed, ram-air parachutes.

§ 105.49 Foreign parachutists and equipment.

(a) No person may conduct a parachute operation, and no pilot in command of an aircraft may allow a parachute operation to be conducted from that aircraft with an unapproved foreign parachute system unless—

(1) The parachute system is worn by a foreign parachutist who is the owner of that system.

(2) The parachute system is of a single-harness dual parachute type.

(3) The parachute system meets the civil aviation authority requirements of the foreign parachutist's country.

(4) All foreign non-approved parachutes deployed by a foreign parachutist during a parachute operation conducted under this section shall be packed as follows—

(i) The main parachute must be packed by the foreign parachutist making the next parachute jump with that parachute, a certificated parachute rigger, or any other person acceptable to the Administrator.

(ii) The reserve parachute must be packed in accordance with the foreign parachutist's civil aviation authority requirements, by a certificated parachute rigger, or any other person acceptable to the Administrator.

SUBCHAPTER G—AIR CARRIERS AND OPERATORS FOR COMPENSATION OR HIRE: CERTIFICATION AND OPERATIONS

PART 119—CERTIFICATION: AIR CARRIERS AND COMMERCIAL OPERATORS

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119.69 Management personnel required for operations conducted under part 135 of this chapter.
119.71 Management personnel: Qualifications for operations conducted under part 135 of this chapter.

AUTHORITY: 49 U.S.C. 106(g), 1153, 40101, 40102, 40103, 40113, 44105, 44106, 44111, 44701–44717, 44722, 44901, 44903, 44904, 44906, 44912, 44914, 44936, 44938, 46103, 46105.

SOURCE: Docket No. 28154, 60 FR 65913, Dec. 20, 1995, unless otherwise noted.

Subpart A—General

§ 119.1 Applicability.

(a) This part applies to each person operating or intending to operate civil aircraft—

(1) As an air carrier or commercial operator, or both, in air commerce; or

(2) When common carriage is not involved, in operations of U.S.-registered civil airplanes with a seat configuration of 20 or more passengers, or a maximum payload capacity of 6,000 pounds or more.

(b) This part prescribes—

(1) The types of air operator certificates issued by the Federal Aviation Administration, including air carrier certificates and operating certificates;

(2) The certification requirements an operator must meet in order to obtain and hold a certificate authorizing operations under part 121, 125, or 135 of this chapter and operations specifications for each kind of operation to be conducted and each class and size of aircraft to be operated under part 121 or 135 of this chapter;

(3) The requirements an operator must meet to conduct operations under part 121, 125, or 135 of this chapter and

in operating each class and size of aircraft authorized in its operations specifications;

(4) Requirements affecting wet leasing of aircraft and other arrangements for transportation by air;

(5) Requirements for obtaining deviation authority to perform operations under a military contract and obtaining deviation authority to perform an emergency operation; and

(6) Requirements for management personnel for operations conducted under part 121 or part 135 of this chapter.

(c) Persons subject to this part must comply with the other requirements of this chapter, except where those requirements are modified by or where additional requirements are imposed by part 119, 121, 125, or 135 of this chapter.

(d) This part does not govern operations conducted under part 91, subpart K (when common carriage is not involved) nor does it govern operations conducted under part 129, 133, 137, or 139 of this chapter.

(e) Except for operations when common carriage is not involved conducted with airplanes having a passenger-seat configuration of 20 seats or more, excluding any required crewmember seat, or a payload capacity of 6,000 pounds or more, this part does not apply to—

(1) Student instruction;

(2) Nonstop Commercial Air Tours conducted after September 11, 2007, in an airplane or helicopter having a standard airworthiness certificate and passenger-seat configuration of 30 seats or fewer and a maximum payload capacity of 7,500 pounds or less that begin and end at the same airport, and are conducted within a 25-statute mile radius of that airport, in compliance with the Letter of Authorization issued under §91.147 of this chapter. For nonstop Commercial Air Tours conducted in accordance with part 136, subpart B of this chapter, National Parks Air Tour Management, the requirements of part 119 of this chapter apply unless excepted in §136.37(g)(2). For Nonstop Commercial Air Tours conducted in the vicinity of the Grand Canyon National Park, Arizona, the requirements of SFAR 50–2, part 93, subpart U, and part 119 of this chapter, as applicable, apply.

(3) Ferry or training flights;

(4) Aerial work operations, including—

(i) Crop dusting, seeding, spraying, and bird chasing;

(ii) Banner towing;

(iii) Aerial photography or survey;

(iv) Fire fighting;

(v) Helicopter operations in construction or repair work (but it does apply to transportation to and from the site of operations); and

(vi) Powerline or pipeline patrol;

(5) Sightseeing flights conducted in hot air balloons;

(6) Nonstop flights conducted within a 25-statute-mile radius of the airport of takeoff carrying persons or objects for the purpose of conducting intentional parachute operations.

(7) Helicopter flights conducted within a 25 statute mile radius of the airport of takeoff if—

(i) Not more than two passengers are carried in the helicopter in addition to the required flightcrew;

(ii) Each flight is made under day VFR conditions;

(iii) The helicopter used is certificated in the standard category and complies with the 100-hour inspection requirements of part 91 of this chapter;

(iv) The operator notifies the FAA Flight Standards District Office responsible for the geographic area concerned at least 72 hours before each flight and furnishes any essential information that the office requests;

(v) The number of flights does not exceed a total of six in any calendar year;

(vi) Each flight has been approved by the Administrator; and

(vii) Cargo is not carried in or on the helicopter;

(8) Operations conducted under part 133 of this chapter or 375 of this title;

(9) Emergency mail service conducted under 49 U.S.C. 41906; or

(10) Operations conducted under the provisions of §91.321 of this chapter.

[Docket No. 28154, 60 FR 65913, Dec. 20, 1995, as amended by Amdt. 119–4, 66 FR 23557, May 9, 2001; Amdt. 119–5, 67 FR 9554, Mar. 1, 2002; Amdt. 119–7, 68 FR 54584, Sept. 17, 2003; 72 FR 6911, Feb. 13, 2007]

§119.3 Definitions.

For the purpose of subchapter G of this chapter, the term—

All-cargo operation means any operation for compensation or hire that is other than a passenger-carrying operation or, if passengers are carried, they are only those specified in §§121.583(a) or 135.85 of this chapter.

Certificate-holding district office means the Flight Standards District Office that has responsibility for administering the certificate and is charged with the overall inspection of the certificate holder's operations.

Commercial air tour means a flight conducted for compensation or hire in an airplane or helicopter where a purpose of the flight is sightseeing. The FAA may consider the following factors in determining whether a flight is a commercial air tour:

(1) Whether there was a holding out to the public of willingness to conduct a sightseeing flight for compensation or hire;

(2) Whether the person offering the flight provided a narrative that referred to areas or points of interest on the surface below the route of the flight;

(3) The area of operation;

(4) How often the person offering the flight conducts such flights;

(5) The route of flight;

(6) The inclusion of sightseeing flights as part of any travel arrangement package;

(7) Whether the flight in question would have been canceled based on poor visibility of the surface below the route of the flight; and

(8) Any other factors that the FAA considers appropriate.

Commuter operation means any scheduled operation conducted by any person operating one of the following types of aircraft with a frequency of operations of at least five round trips per week on at least one route between two or more points according to the published flight schedules:

(1) Airplanes, other than turbojet powered airplanes, having a maximum passenger-seat configuration of 9 seats or less, excluding each crewmember seat, and a maximum payload capacity of 7,500 pounds or less; or

(2) Rotorcraft.

Direct air carrier means a person who provides or offers to provide air transportation and who has control over the operational functions performed in providing that transportation.

DOD commercial air carrier evaluator means a qualified Air Mobility Command, Survey and Analysis Office (AMC/DOB) cockpit evaluator performing the duties specified in Public Law 99–661 when the evaluator is flying on an air carrier that is contracted or pursuing a contract with the U.S. Department of Defense (DOD).

Domestic operation means any scheduled operation conducted by any person operating any airplane described in paragraph (1) of this definition at locations described in paragraph (2) of this definition:

(1) Airplanes:

(i) Turbojet-powered airplanes;

(ii) Airplanes having a passenger-seat configuration of more than 9 passenger seats, excluding each crewmember seat; or

(iii) Airplanes having a payload capacity of more than 7,500 pounds.

(2) Locations:

(i) Between any points within the 48 contiguous States of the United States or the District of Columbia; or

(ii) Operations solely within the 48 contiguous States of the United States or the District of Columbia; or

(iii) Operations entirely within any State, territory, or possession of the United States; or

(iv) When specifically authorized by the Administrator, operations between any point within the 48 contiguous States of the United States or the District of Columbia and any specifically authorized point located outside the 48 contiguous States of the United States or the District of Columbia.

Empty weight means the weight of the airframe, engines, propellers, rotors, and fixed equipment. Empty weight excludes the weight of the crew and payload, but includes the weight of all fixed ballast, unusable fuel supply, undrainable oil, total quantity of engine coolant, and total quantity of hydraulic fluid.

Flag operation means any scheduled operation conducted by any person operating any airplane described in paragraph (1) of this definition at the locations described in paragraph (2) of this definition:

(1) Airplanes:

(i) Turbojet-powered airplanes;

(ii) Airplanes having a passenger-seat configuration of more than 9 passenger seats, excluding each crewmember seat; or

(iii) Airplanes having a payload capacity of more than 7,500 pounds.

(2) Locations:

(i) Between any point within the State of Alaska or the State of Hawaii or any territory or possession of the United States and any point outside the State of Alaska or the State of Hawaii or any territory or possession of the United States, respectively; or

(ii) Between any point within the 48 contiguous States of the United States or the District of Columbia and any point outside the 48 contiguous States of the United States and the District of Columbia.

(iii) Between any point outside the U.S. and another point outside the U.S.

Justifiable aircraft equipment means any equipment necessary for the operation of the aircraft. It does not include equipment or ballast specifically installed, permanently or otherwise, for the purpose of altering the empty weight of an aircraft to meet the maximum payload capacity.

Kind of operation means one of the various operations a certificate holder is authorized to conduct, as specified in its operations specifications, i.e., domestic, flag, supplemental, commuter, or on-demand operations.

Maximum payload capacity means:

(1) For an aircraft for which a maximum zero fuel weight is prescribed in FAA technical specifications, the maximum zero fuel weight, less empty weight, less all justifiable aircraft equipment, and less the operating load (consisting of minimum flightcrew, foods and beverages, and supplies and equipment related to foods and beverages, but not including disposable fuel or oil).

(2) For all other aircraft, the maximum certificated takeoff weight of an aircraft, less the empty weight, less all justifiable aircraft equipment, and less the operating load (consisting of minimum fuel load, oil, and flightcrew). The allowance for the weight of the crew, oil, and fuel is as follows:

(i) Crew—for each crewmember required by the Federal Aviation Regulations—

(A) For male flight crewmembers—180 pounds.

(B) For female flight crewmembers—140 pounds.

(C) For male flight attendants—180 pounds.

(D) For female flight attendants—130 pounds.

(E) For flight attendants not identified by gender—140 pounds.

(ii) Oil—350 pounds or the oil capacity as specified on the Type Certificate Data Sheet.

(iii) Fuel—the minimum weight of fuel required by the applicable Federal Aviation Regulations for a flight between domestic points 174 nautical miles apart under VFR weather conditions that does not involve extended overwater operations.

Maximum zero fuel weight means the maximum permissible weight of an aircraft with no disposable fuel or oil. The zero fuel weight figure may be found in either the aircraft type certificate data sheet, the approved Aircraft Flight Manual, or both.

Noncommon carriage means an aircraft operation for compensation or hire that does not involve a holding out to others.

On-demand operation means any operation for compensation or hire that is one of the following:

(1) Passenger-carrying operations conducted as a public charter under part 380 of this title or any operations in which the departure time, departure location, and arrival location are specifically negotiated with the customer or the customer's representative that are any of the following types of operations:

(i) Common carriage operations conducted with airplanes, including turbojet-powered airplanes, having a passenger-seat configuration of 30 seats or fewer, excluding each crewmember seat, and a payload capacity of 7,500 pounds or less, except that operations using a specific airplane that is also used in domestic or flag operations and that is so listed in the operations specifications as required by §119.49(a)(4) for those operations are considered supplemental operations;

(ii) Noncommon or private carriage operations conducted with airplanes having a passenger-seat configuration of less than 20 seats, excluding each crewmember seat, and a payload capacity of less than 6,000 pounds; or

(iii) Any rotorcraft operation.

(2) Scheduled passenger-carrying operations conducted with one of the following types of aircraft with a frequency of operations of less than five round trips per week on at least one route between two or more points according to the published flight schedules:

(i) Airplanes, other than turbojet powered airplanes, having a maximum passenger-seat configuration of 9 seats or less, excluding each crewmember seat, and a maximum payload capacity of 7,500 pounds or less; or

(ii) Rotorcraft.

(3) All-cargo operations conducted with airplanes having a payload capacity of 7,500 pounds or less, or with rotorcraft.

Passenger-carrying operation means any aircraft operation carrying any person, unless the only persons on the aircraft are those identified in §§ 121.583(a) or 135.85 of this chapter, as applicable. An aircraft used in a passenger-carrying operation may also carry cargo or mail in addition to passengers.

Principal base of operations means the primary operating location of a certificate holder as established by the certificate holder.

Provisional airport means an airport approved by the Administrator for use by a certificate holder for the purpose of providing service to a community when the regular airport used by the certificate holder is not available.

Regular airport means an airport used by a certificate holder in scheduled operations and listed in its operations specifications.

Scheduled operation means any common carriage passenger-carrying operation for compensation or hire conducted by an air carrier or commercial operator for which the certificate holder or its representative offers in advance the departure location, departure time, and arrival location. It does not include any passenger-carrying operation that is conducted as a public charter operation under part 380 of this title.

Supplemental operation means any common carriage operation for compensation or hire conducted with any airplane described in paragraph (1) of this definition that is a type of operation described in paragraph (2) of this definition:

(1) Airplanes:

(i) Airplanes having a passenger-seat configuration of more than 30 seats, excluding each crewmember seat;

(ii) Airplanes having a payload capacity of more than 7,500 pounds; or

(iii) Each propeller-powered airplane having a passenger-seat configuration of more than 9 seats and less than 31 seats, excluding each crewmember seat, that is also used in domestic or flag operations and that is so listed in the operations specifications as required by § 119.49(a)(4) for those operations; or

(iv) Each turbojet powered airplane having a passenger seat configuration of 1 or more and less than 31 seats, excluding each crewmember seat, that is also used in domestic or flag operations and that is so listed in the operations specifications as required by § 119.49(a)(4) for those operations.

(2) Types of operation:

(i) Operations for which the departure time, departure location, and arrival location are specifically negotiated with the customer or the customer's representative;

(ii) All-cargo operations; or

(iii) Passenger-carrying public charter operations conducted under part 380 of this title.

Wet lease means any leasing arrangement whereby a person agrees to provide an entire aircraft and at least one crewmember. A wet lease does not include a code-sharing arrangement.

When common carriage is not involved or operations not involving common carriage means any of the following:

(1) Noncommon carriage.

(2) Operations in which persons or cargo are transported without compensation or hire.

(3) Operations not involving the transportation of persons or cargo.

(4) Private carriage.

Years in service means the calendar time elapsed since an aircraft was

issued its first U.S. or first foreign airworthiness certificate.

[Doc. No. 28154, 60 FR 65913, Dec. 20, 1995, as amended by Amdt. 119–1, 61 FR 2609, Jan. 26, 1996; Amdt. 119–2, 61 FR 30433, June 14, 1996; Amdt. 119–3, 62 FR 13253, Mar. 19, 1997; Amdt. 119–6, 67 FR 72761, Dec. 6, 2002; Amdt. 119–8, 68 FR 41217, July 10, 2003; 72 FR 6911, Feb. 13, 2007]

§ 119.5 Certifications, authorizations, and prohibitions.

(a) A person authorized by the Administrator to conduct operations as a direct air carrier will be issued an Air Carrier Certificate.

(b) A person who is not authorized to conduct direct air carrier operations, but who is authorized by the Administrator to conduct operations as a U.S. commercial operator, will be issued an Operating Certificate.

(c) A person who is not authorized to conduct direct air carrier operations, but who is authorized by the Administrator to conduct operations when common carriage is not involved as an operator of U.S.-registered civil airplanes with a seat configuration of 20 or more passengers, or a maximum payload capacity of 6,000 pounds or more, will be issued an Operating Certificate.

(d) A person authorized to engage in common carriage under part 121 or part 135 of this chapter, or both, shall be issued only one certificate authorizing such common carriage, regardless of the kind of operation or the class or size of aircraft to be operated.

(e) A person authorized to engage in noncommon or private carriage under part 125 or part 135 of this chapter, or both, shall be issued only one certificate authorizing such carriage, regardless of the kind of operation or the class or size of aircraft to be operated.

(f) A person conducting operations under more than one paragraph of §§ 119.21, 119.23, or 119.25 shall conduct those operations in compliance with—

(1) The requirements specified in each paragraph of those sections for the kind of operation conducted under that paragraph; and

(2) The appropriate authorizations, limitations, and procedures specified in the operations specifications for each kind of operation.

(g) No person may operate as a direct air carrier or as a commercial operator without, or in violation of, an appropriate certificate and appropriate operations specifications. No person may operate as a direct air carrier or as a commercial operator in violation of any deviation or exemption authority, if issued to that person or that person's representative.

(h) A person holding an Operating Certificate authorizing noncommon or private carriage operations shall not conduct any operations in common carriage. A person holding an Air Carrier Certificate or Operating Certificate authorizing common carriage operations shall not conduct any operations in noncommon carriage.

(i) No person may operate as a direct air carrier without holding appropriate economic authority from the Department of Transportation.

(j) A certificate holder under this part may not operate aircraft under part 121 or part 135 of this chapter in a geographical area unless its operations specifications specifically authorize the certificate holder to operate in that area.

(k) No person may advertise or otherwise offer to perform an operation subject to this part unless that person is authorized by the Federal Aviation Administration to conduct that operation.

(l) No person may operate an aircraft under this part, part 121 of this chapter, or part 135 of this chapter in violation of an air carrier operating certificate, operating certificate, or appropriate operations specifications issued under this part.

[Doc. No. 28154, 60 FR 65913, Dec. 20, 1995, as amended by Amdt. 119–3, 62 FR 13253, Mar. 19, 1997; 62 FR 15570, Apr. 1, 1997]

§ 119.7 Operations specifications.

(a) Each certificate holder's operations specifications must contain—

(1) The authorizations, limitations, and certain procedures under which each kind of operation, if applicable, is to be conducted; and

(2) Certain other procedures under which each class and size of aircraft is to be operated.

(b) Except for operations specifications paragraphs identifying authorized kinds of operations, operations specifications are not a part of a certificate.

§ 119.9 Use of business names.

(a) A certificate holder under this part may not operate an aircraft under part 121 or part 135 of this chapter using a business name other than a business name appearing in the certificate holder's operations specifications.

(b) No person may operate an aircraft under part 121 or part 135 of this chapter unless the name of the certificate holder who is operating the aircraft, or the air carrier or operating certificate number of the certificate holder who is operating the aircraft, is legibly displayed on the aircraft and is clearly visible and readable from the outside of the aircraft to a person standing on the ground at any time except during flight time. The means of displaying the name on the aircraft and its readability must be acceptable to the Administrator.

[Doc. No. 28154, 60 FR 65913, Dec. 20, 1995, as amended by Amdt. 119–3, 62 FR 13253, Mar. 19, 1997]

Subpart B—Applicability of Operating Requirements to Different Kinds of Operations Under Parts 121, 125, and 135 of This Chapter

§ 119.21 Commercial operators engaged in intrastate common carriage and direct air carriers.

(a) Each person who conducts airplane operations as a commercial operator engaged in intrastate common carriage of persons or property for compensation or hire in air commerce, or as a direct air carrier, shall comply with the certification and operations specifications requirements in subpart C of this part, and shall conduct its:

(1) Domestic operations in accordance with the applicable requirements of part 121 of this chapter, and shall be issued operations specifications for those operations in accordance with those requirements. However, based on a showing of safety in air commerce, the Administrator may permit persons who conduct domestic operations between any point located within any of the following Alaskan islands and any point in the State of Alaska to comply with the requirements applicable to flag operations contained in subpart U of part 121 of this chapter:

(i) The Aleutian Islands.

(ii) The Pribilof Islands.

(iii) The Shumagin Islands.

(2) Flag operations in accordance with the applicable requirements of part 121 of this chapter, and shall be issued operations specifications for those operations in accordance with those requirements.

(3) Supplemental operations in accordance with the applicable requirements of part 121 of this chapter, and shall be issued operations specifications for those operations in accordance with those requirements. However, based on a determination of safety in air commerce, the Administrator may authorize or require those operations to be conducted under paragraph (a)(1) or (a)(2) of this section.

(4) Commuter operations in accordance with the applicable requirements of part 135 of this chapter, and shall be issued operations specifications for those operations in accordance with those requirements.

(5) On-demand operations in accordance with the applicable requirements of part 135 of this chapter, and shall be issued operations specifications for those operations in accordance with those requirements.

(b) Persons who are subject to the requirements of paragraph (a)(4) of this section may conduct those operations in accordance with the requirements of paragraph (a)(1) or (a)(2) of this section, provided they obtain authorization from the Administrator.

(c) Persons who are subject to the requirements of paragraph (a)(5) of this section may conduct those operations in accordance with the requirements of paragraph (a)(3) of this section, provided they obtain authorization from the Administrator.

[Doc. No. 28154, 60 FR 65913, Dec. 20, 1995, as amended by Amdt. 119–2, 61 FR 30433, June 14, 1996; Amdt. 119–3, 62 FR 13254, Mar. 19, 1997]

§ 119.23 Operators engaged in passenger-carrying operations, cargo operations, or both with airplanes when common carriage is not involved.

(a) Each person who conducts operations when common carriage is not involved with airplanes having a passenger-seat configuration of 20 seats or more, excluding each crewmember seat, or a payload capacity of 6,000 pounds or more, shall, unless deviation authority is issued—

(1) Comply with the certification and operations specifications requirements of part 125 of this chapter;

(2) Conduct its operations with those airplanes in accordance with the requirements of part 125 of this chapter; and

(3) Be issued operations specifications in accordance with those requirements.

(b) Each person who conducts noncommon carriage (except as provided in §91.501(b) of this chapter) or private carriage operations for compensation or hire with airplanes having a passenger-seat configuration of less than 20 seats, excluding each crewmember seat, and a payload capacity of less than 6,000 pounds shall—

(1) Comply with the certification and operations specifications requirements in subpart C of this part;

(2) Conduct those operations in accordance with the requirements of part 135 of this chapter, except for those requirements applicable only to commuter operations; and

(3) Be issued operations specifications in accordance with those requirements.

[Doc. No. 28154, 60 FR 65913, Dec. 20, 1995, as amended by Amdt. 119–2, 61 FR 30434, June 14, 1996]

§ 119.25 Rotorcraft operations: Direct air carriers and commercial operators.

Each person who conducts rotorcraft operations for compensation or hire must comply with the certification and operations specifications requirements of Subpart C of this part, and shall conduct its:

(a) Commuter operations in accordance with the applicable requirements of part 135 of this chapter, and shall be issued operations specifications for those operations in accordance with those requirements.

(b) On-demand operations in accordance with the applicable requirements of part 135 of this chapter, and shall be issued operations specifications for those operations in accordance with those requirements.

Subpart C—Certification, Operations Specifications, and Certain Other Requirements for Operations Conducted Under Part 121 or Part 135 of This Chapter

§ 119.31 Applicability.

This subpart sets out certification requirements and prescribes the content of operations specifications and certain other requirements for operations conducted under part 121 or part 135 of this chapter.

§ 119.33 General requirements.

(a) A person may not operate as a direct air carrier unless that person—

(1) Is a citizen of the United States;

(2) Obtains an Air Carrier Certificate; and

(3) Obtains operations specifications that prescribe the authorizations, limitations, and procedures under which each kind of operation must be conducted.

(b) A person other than a direct air carrier may not conduct any commercial passenger or cargo aircraft operation for compensation or hire under part 121 or part 135 of this chapter unless that person—

(1) Is a citizen of the United States;

(2) Obtains an Operating Certificate; and

(3) Obtains operations specifications that prescribe the authorizations, limitations, and procedures under which each kind of operation must be conducted.

(c) Each applicant for a certificate under this part and each applicant for operations specifications authorizing a new kind of operation that is subject to §121.163 or §135.145 of this chapter shall conduct proving tests as authorized by the Administrator during the application process for authority to conduct

operations under part 121 or part 135 of this chapter. All proving tests must be conducted in a manner acceptable to the Administrator. All proving tests must be conducted under the appropriate operating and maintenance requirements of part 121 or 135 of this chapter that would apply if the applicant were fully certificated. The Administrator will issue a letter of authorization to each person stating the various authorities under which the proving tests shall be conducted.

[Doc. No. 28154, 60 FR 65913, Dec. 20, 1995, as amended by Amdt. 119–2, 61 FR 30434, June 14, 1996]

§ 119.35 Certificate application requirements for all operators.

(a) A person applying to the Administrator for an Air Carrier Certificate or Operating Certificate under this part (applicant) must submit an application—

(1) In a form and manner prescribed by the Administrator; and

(2) Containing any information the Administrator requires the applicant to submit.

(b) Each applicant must submit the application to the Administrator at least 90 days before the date of intended operation.

[Doc. No. 28154, 62 FR 13254, Mar. 19, 1997; 62 FR 15570, Apr. 1, 1997]

§ 119.36 Additional certificate application requirements for commercial operators.

(a) Each applicant for the original issue of an operating certificate for the purpose of conducting intrastate common carriage operations under part 121 or part 135 of this chapter must submit an application in a form and manner prescribed by the Administrator to the Flight Standards District Office in whose area the applicant proposes to establish or has established his or her principal base of operations.

(b) Each application submitted under paragraph (a) of this section must contain a signed statement showing the following:

(1) For corporate applicants:

(i) The name and address of each stockholder who owns 5 percent or more of the total voting stock of the corporation, and if that stockholder is not the sole beneficial owner of the stock, the name and address of each beneficial owner. An individual is considered to own the stock owned, directly or indirectly, by or for his or her spouse, children, grandchildren, or parents.

(ii) The name and address of each director and each officer and each person employed or who will be employed in a management position described in §§ 119.65 and 119.69, as applicable.

(iii) The name and address of each person directly or indirectly controlling or controlled by the applicant and each person under direct or indirect control with the applicant.

(2) For non-corporate applicants:

(i) The name and address of each person having a financial interest therein and the nature and extent of that interest.

(ii) The name and address of each person employed or who will be employed in a management position described in §§ 119.65 and 119.69, as applicable.

(c) In addition, each applicant for the original issue of an operating certificate under paragraph (a) of this section must submit with the application a signed statement showing—

(1) The nature and scope of its intended operation, including the name and address of each person, if any, with whom the applicant has a contract to provide services as a commercial operator and the scope, nature, date, and duration of each of those contracts; and

(2) For applicants intending to conduct operations under part 121 of this chapter, the financial information listed in paragraph (e) of this section.

(d) Each applicant for, or holder of, a certificate issued under paragraph (a) of this section, shall notify the Administrator within 10 days after—

(1) A change in any of the persons, or the names and addresses of any of the persons, submitted to the Administrator under paragraph (b)(1) or (b)(2) of this section; or

(2) For applicants intending to conduct operations under part 121 of this chapter, a change in the financial information submitted to the Administrator under paragraph (e) of this section that occurs while the application

for the issue is pending before the FAA and that would make the applicant's financial situation substantially less favorable than originally reported.

(e) Each applicant for the original issue of an operating certificate under paragraph (a) of this section who intends to conduct operations under part 121 of this chapter must submit the following financial information:

(1) A balance sheet that shows assets, liabilities, and net worth, as of a date not more than 60 days before the date of application.

(2) An itemization of liabilities more than 60 days past due on the balance sheet date, if any, showing each creditor's name and address, a description of the liability, and the amount and due date of the liability.

(3) An itemization of claims in litigation, if any, against the applicant as of the date of application showing each claimant's name and address and a description and the amount of the claim.

(4) A detailed projection of the proposed operation covering 6 complete months after the month in which the certificate is expected to be issued including—

(i) Estimated amount and source of both operating and nonoperating revenue, including identification of its existing and anticipated income producing contracts and estimated revenue per mile or hour of operation by aircraft type;

(ii) Estimated amount of operating and nonoperating expenses by expense objective classification; and

(iii) Estimated net profit or loss for the period.

(5) An estimate of the cash that will be needed for the proposed operations during the first 6 months after the month in which the certificate is expected to be issued, including—

(i) Acquisition of property and equipment (explain);

(ii) Retirement of debt (explain);

(iii) Additional working capital (explain);

(iv) Operating losses other than depreciation and amortization (explain); and

(v) Other (explain).

(6) An estimate of the cash that will be available during the first 6 months after the month in which the certificate is expected to be issued, from—

(i) Sale of property or flight equipment (explain);

(ii) New debt (explain);

(iii) New equity (explain);

(iv) Working capital reduction (explain);

(v) Operations (profits) (explain);

(vi) Depreciation and amortization (explain); and

(vii) Other (explain).

(7) A schedule of insurance coverage in effect on the balance sheet date showing insurance companies; policy numbers; types, amounts, and period of coverage; and special conditions, exclusions, and limitations.

(8) Any other financial information that the Administrator requires to enable him or her to determine that the applicant has sufficient financial resources to conduct his or her operations with the degree of safety required in the public interest.

(f) Each financial statement containing financial information required by paragraph (e) of this section must be based on accounts prepared and maintained on an accrual basis in accordance with generally accepted accounting principles applied on a consistent basis, and must contain the name and address of the applicant's public accounting firm, if any. Information submitted must be signed by an officer, owner, or partner of the applicant or certificate holder.

[Doc. No. 28154, 62 FR 13254, Mar. 19, 1997; 62 FR 15570, Apr. 1, 1997]

§ 119.37 Contents of an Air Carrier Certificate or Operating Certificate.

The Air Carrier Certificate or Operating Certificate includes—

(a) The certificate holder's name;

(b) The location of the certificate holder's principal base of operations;

(c) The certificate number;

(d) The certificate's effective date; and

(e) The name or the designator of the certificate-holding district office.

§ 119.39 Issuing or denying a certificate.

(a) An applicant may be issued an Air Carrier Certificate or Operating Certificate if, after investigation, the Administrator finds that the applicant—

(1) Meets the applicable requirements of this part;

(2) Holds the economic authority applicable to the kinds of operations to be conducted, issued by the Department of Transportation, if required; and

(3) Is properly and adequately equipped in accordance with the requirements of this chapter and is able to conduct a safe operation under appropriate provisions of part 121 or part 135 of this chapter and operations specifications issued under this part.

(b) An application for a certificate may be denied if the Administrator finds that—

(1) The applicant is not properly or adequately equipped or is not able to conduct safe operations under this subchapter;

(2) The applicant previously held an Air Carrier Certificate or Operating Certificate which was revoked;

(3) The applicant intends to or fills a key management position listed in §119.65(a) or §119.69(a), as applicable, with an individual who exercised control over or who held the same or a similar position with a certificate holder whose certificate was revoked, or is in the process of being revoked, and that individual materially contributed to the circumstances causing revocation or causing the revocation process;

(4) An individual who will have control over or have a substantial ownership interest in the applicant had the same or similar control or interest in a certificate holder whose certificate was revoked, or is in the process of being revoked, and that individual materially contributed to the circumstances causing revocation or causing the revocation process; or

(5) In the case of an applicant for an Operating Certificate for intrastate common carriage, that for financial reasons the applicant is not able to conduct a safe operation.

§ 119.41 Amending a certificate.

(a) The Administrator may amend any certificate issued under this part if—

(1) The Administrator determines, under 49 U.S.C. 44709 and part 13 of this chapter, that safety in air commerce and the public interest requires the amendment; or

(2) The certificate holder applies for the amendment and the certificate-holding district office determines that safety in air commerce and the public interest allows the amendment.

(b) When the Administrator proposes to issue an order amending, suspending, or revoking all or part of any certificate, the procedure in §13.19 of this chapter applies.

(c) When the certificate holder applies for an amendment of its certificate, the following procedure applies:

(1) The certificate holder must file an application to amend its certificate with the certificate-holding district office at least 15 days before the date proposed by the applicant for the amendment to become effective, unless the administrator approves filing within a shorter period; and

(2) The application must be submitted to the certificate-holding district office in the form and manner prescribed by the Administrator.

(d) When a certificate holder seeks reconsideration of a decision from the certificate-holding district office concerning amendments of a certificate, the following procedure applies:

(1) The petition for reconsideration must be made within 30 days after the certificate holder receives the notice of denial; and

(2) The certificate holder must petition for reconsideration to the Director, Flight Standards Service.

§ 119.43 Certificate holder's duty to maintain operations specifications.

(a) Each certificate holder shall maintain a complete and separate set of its operations specifications at its principal base of operations.

(b) Each certificate holder shall insert pertinent excerpts of its operations specifications, or references thereto, in its manual and shall—

(1) Clearly identify each such excerpt as a part of its operations specifications; and

(2) State that compliance with each operations specifications requirement is mandatory.

(c) Each certificate holder shall keep each of its employees and other persons used in its operations informed of the provisions of its operations specifications that apply to that employee's or person's duties and responsibilities.

§ 119.45 [Reserved]

§ 119.47 Maintaining a principal base of operations, main operations base, and main maintenance base; change of address.

(a) Each certificate holder must maintain a principal base of operations. Each certificate holder may also establish a main operations base and a main maintenance base which may be located at either the same location as the principal base of operations or at separate locations.

(b) At least 30 days before it proposes to establish or change the location of its principal base of operations, its main operations base, or its main maintenance base, a certificate holder must provide written notification to its certificate-holding district office.

§ 119.49 Contents of operations specifications.

(a) Each certificate holder conducting domestic, flag, or commuter operations must obtain operations specifications containing all of the following:

(1) The specific location of the certificate holder's principal base of operations and, if different, the address that shall serve as the primary point of contact for correspondence between the FAA and the certificate holder and the name and mailing address of the certificate holder's agent for service.

(2) Other business names under which the certificate holder may operate.

(3) Reference to the economic authority issued by the Department of Transportation, if required.

(4) Type of aircraft, registration markings, and serial numbers of each aircraft authorized for use, each regular and alternate airport to be used in scheduled operations, and, except for commuter operations, each provisional and refueling airport.

(i) Subject to the approval of the Administrator with regard to form and content, the certificate holder may incorporate by reference the items listed in paragraph (a)(4) of this section into the certificate holder's operations specifications by maintaining a current listing of those items and by referring to the specific list in the applicable paragraph of the operations specifications.

(ii) The certificate holder may not conduct any operation using any aircraft or airport not listed.

(5) Kinds of operations authorized.

(6) Authorization and limitations for routes and areas of operations.

(7) Airport limitations.

(8) Time limitations, or standards for determining time limitations, for overhauling, inspecting, and checking airframes, engines, propellers, rotors, appliances, and emergency equipment.

(9) Authorization for the method of controlling weight and balance of aircraft.

(10) Interline equipment interchange requirements, if relevant.

(11) Aircraft wet lease information required by § 119.53(c).

(12) Any authorized deviation and exemption granted from any requirement of this chapter.

(13) An authorization permitting, or a prohibition against, accepting, handling, and transporting materials regulated as hazardous materials in transport under 49 CFR parts 171 through 180.

(14) Any other item the Administrator determines is necessary.

(b) Each certificate holder conducting supplemental operations must obtain operations specifications containing all of the following:

(1) The specific location of the certificate holder's principal base of operations, and, if different, the address that shall serve as the primary point of contact for correspondence between the FAA and the certificate holder and the name and mailing address of the certificate holder's agent for service.

(2) Other business names under which the certificate holder may operate.

(3) Reference to the economic authority issued by the Department of Transportation, if required.

(4) Type of aircraft, registration markings, and serial number of each aircraft authorized for use.

(i) Subject to the approval of the Administrator with regard to form and content, the certificate holder may incorporate by reference the items listed in paragraph (b)(4) of this section into the certificate holder's operations specifications by maintaining a current listing of those items and by referring to the specific list in the applicable paragraph of the operations specifications.

(ii) The certificate holder may not conduct any operation using any aircraft not listed.

(5) Kinds of operations authorized.

(6) Authorization and limitations for routes and areas of operations.

(7) Special airport authorizations and limitations.

(8) Time limitations, or standards for determining time limitations, for overhauling, inspecting, and checking airframes, engines, propellers, appliances, and emergency equipment.

(9) Authorization for the method of controlling weight and balance of aircraft.

(10) Aircraft wet lease information required by §119.53(c).

(11) Any authorization or requirement to conduct supplemental operations as provided by §119.21(a)(3) (i) or (ii).

(12) Any authorized deviation or exemption from any requirement of this chapter.

(13) An authorization permitting, or a prohibition against, accepting, handling, and transporting materials regulated as hazardous materials in transport under 49 CFR parts 171 through 180.

(14) Any other item the Administrator determines is necessary.

(c) Each certificate holder conducting on-demand operations must obtain operations specifications containing all of the following:

(1) The specific location of the certificate holder's principal base of operations, and if different, the address that shall serve as the primary point of contact for correspondence between the FAA and the name and mailing address of the certificate holder's agent for service.

(2) Other business names under which the certificate holder may operate.

(3) Reference to the economic authority issued by the Department of Transportation, if required.

(4) Kind and area of operations authorized.

(5) Category and class of aircraft that may be used in those operations.

(6) Type of aircraft, registration markings, and serial number of each aircraft that is subject to an airworthiness maintenance program required by §135.411(a)(2) of this chapter.

(i) Subject to the approval of the Administrator with regard to form and content, the certificate holder may incorporate by reference the items listed in paragraph (c)(6) of this section into the certificate holder's operations specifications by maintaining a current listing of those items and by referring to the specific list in the applicable paragraph of the operations specifications.

(ii) The certificate holder may not conduct any operation using any aircraft not listed.

(7) Registration markings of each aircraft that is to be inspected under an approved aircraft inspection program under §135.419 of this chapter.

(8) Time limitations or standards for determining time limitations, for overhauls, inspections, and checks for airframes, engines, propellers, rotors, appliances, and emergency equipment of aircraft that are subject to an airworthiness maintenance program required by §135.411(a)(2) of this chapter.

(9) Additional maintenance items required by the Administrator under §135.421 of this chapter.

(10) Aircraft wet lease information required by §119.53(c).

(11) Any authorized deviation or exemption from any requirement of this chapter.

(12) An authorization permitting, or a prohibition against, accepting, handling, and transporting materials regulated as hazardous materials in transport under 49 CFR parts 171 through 180.

(13) Any other item the Administrator determines is necessary.

[Docket No. 28154, 60 FR 65913, Dec. 20, 1995, as amended by Amdt. 119–10, 70 FR 58823, Oct. 7, 2005]

§ 119.51 Amending operations specifications.

(a) The Administrator may amend any operations specifications issued under this part if—

(1) The Administrator determines that safety in air commerce and the public interest require the amendment; or

(2) The certificate holder applies for the amendment, and the Administrator determines that safety in air commerce and the public interest allows the amendment.

(b) Except as provided in paragraph (e) of this section, when the Administrator initiates an amendment to a certificate holder's operations specifications, the following procedure applies:

(1) The certificate-holding district office notifies the certificate holder in writing of the proposed amendment.

(2) The certificate-holding district office sets a reasonable period (but not less than 7 days) within which the certificate holder may submit written information, views, and arguments on the amendment.

(3) After considering all material presented, the certificate-holding district office notifies the certificate holder of—

(i) The adoption of the proposed amendment;

(ii) The partial adoption of the proposed amendment; or

(iii) The withdrawal of the proposed amendment.

(4) If the certificate-holding district office issues an amendment to the operations specifications, it becomes effective not less than 30 days after the certificate holder receives notice of it unless—

(i) The certificate-holding district office finds under paragraph (e) of this section that there is an emergency requiring immediate action with respect to safety in air commerce; or

(ii) The certificate holder petitions for reconsideration of the amendment under paragraph (d) of this section.

(c) When the certificate holder applies for an amendment to its operations specifications, the following procedure applies:

(1) The certificate holder must file an application to amend its operations specifications—

(i) At least 90 days before the date proposed by the applicant for the amendment to become effective, unless a shorter time is approved, in cases of mergers; acquisitions of airline operational assets that require an additional showing of safety (e.g., proving tests); changes in the kind of operation as defined in § 119.3; resumption of operations following a suspension of operations as a result of bankruptcy actions; or the initial introduction of aircraft not before proven for use in air carrier or commercial operator operations.

(ii) At least 15 days before the date proposed by the applicant for the amendment to become effective in all other cases.

(2) The application must be submitted to the certificate-holding district office in a form and manner prescribed by the Administrator.

(3) After considering all material presented, the certificate-holding district office notifies the certificate holder of—

(i) The adoption of the applied for amendment;

(ii) The partial adoption of the applied for amendment; or

(iii) The denial of the applied for amendment. The certificate holder may petition for reconsideration of a denial under paragraph (d) of this section.

(4) If the certificate-holding district office approves the amendment, following coordination with the certificate holder regarding its implementation, the amendment is effective on the date the Administrator approves it.

(d) When a certificate holder seeks reconsideration of a decision from the certificate-holding district office concerning the amendment of operations specifications, the following procedure applies:

(1) The certificate holder must petition for reconsideration of that decision within 30 days of the date that the certificate holder receives a notice of

denial of the amendment to its operations specifications, or of the date it receives notice of an FAA-initiated amendment to its operations specifications, whichever circumstance applies.

(2) The certificate holder must address its petition to the Director, Flight Standards Service.

(3) A petition for reconsideration, if filed within the 30-day period, suspends the effectiveness of any amendment issued by the certificate-holding district office unless the certificate-holding district office has found, under paragraph (e) of this section, that an emergency exists requiring immediate action with respect to safety in air transportation or air commerce.

(4) If a petition for reconsideration is not filed within 30 days, the procedures of paragraph (c) of this section apply.

(e) If the certificate-holding district office finds that an emergency exists requiring immediate action with respect to safety in air commerce or air transportation that makes the procedures set out in this section impracticable or contrary to the public interest:

(1) The certificate-holding district office amends the operations specifications and makes the amendment effective on the day the certificate holder receives notice of it.

(2) In the notice to the certificate holder, the certificate-holding district office articulates the reasons for its finding that an emergency exists requiring immediate action with respect to safety in air transportation or air commerce or that makes it impracticable or contrary to the public interest to stay the effectiveness of the amendment.

§ 119.53 Wet leasing of aircraft and other arrangements for transportation by air.

(a) Unless otherwise authorized by the Administrator, prior to conducting operations involving a wet lease, each certificate holder under this part authorized to conduct common carriage operations under this subchapter shall provide the Administrator with a copy of the wet lease to be executed which would lease the aircraft to any other person engaged in common carriage operations under this subchapter, including foreign air carriers, or to any other foreign person engaged in common carriage wholly outside the United States.

(b) No certificate holder under this part may wet lease from a foreign air carrier or any other foreign person or any person not authorized to engage in common carriage.

(c) Upon receiving a copy of a wet lease, the Administrator determines which party to the agreement has operational control of the aircraft and issues amendments to the operations specifications of each party to the agreement, as needed. The lessor must provide the following information to be incorporated into the operations specifications of both parties, as needed.

(1) The names of the parties to the agreement and the duration thereof.

(2) The nationality and registration markings of each aircraft involved in the agreement.

(3) The kind of operation (e.g., domestic, flag, supplemental, commuter, or on-demand).

(4) The airports or areas of operation.

(5) A statement specifying the party deemed to have operational control and the times, airports, or areas under which such operational control is exercised.

(d) In making the determination of paragraph (c) of this section, the Administrator will consider the following:

(1) Crewmembers and training.

(2) Airworthiness and performance of maintenance.

(3) Dispatch.

(4) Servicing the aircraft.

(5) Scheduling.

(6) Any other factor the Administrator considers relevant.

(e) Other arrangements for transportation by air: Except as provided in paragraph (f) of this section, a certificate holder under this part operating under part 121 or 135 of this chapter may not conduct any operation for another certificate holder under this part or a foreign air carrier under part 129 of this chapter or a foreign person engaged in common carriage wholly outside the United States unless it holds applicable Department of Transportation economic authority, if required, and is authorized under its operations specifications to conduct the same kinds of operations (as defined in

§119.3). The certificate holder conducting the substitute operation must conduct that operation in accordance with the same operations authority held by the certificate holder arranging for the substitute operation. These substitute operations must be conducted between airports for which the substitute certificate holder holds authority for scheduled operations or within areas of operations for which the substitute certificate holder has authority for supplemental or on-demand operations.

(f) A certificate holder under this part may, if authorized by the Department of Transportation under §380.3 of this title and the Administrator in the case of interstate commuter, interstate domestic, and flag operations, or the Administrator in the case of scheduled intrastate common carriage operations, conduct one or more flights for passengers who are stranded because of the cancellation of their scheduled flights. These flights must be conducted under the rules of part 121 or part 135 of this chapter applicable to supplemental or on-demand operations.

§119.55 Obtaining deviation authority to perform operations under a U.S. military contract.

(a) The Administrator may authorize a certificate holder that is authorized to conduct supplemental or on-demand operations to deviate from the applicable requirements of this part, part 121, or part 135 of this chapter in order to perform operations under a U.S. military contract.

(b) A certificate holder that has a contract with the U.S. Department of Defense's Air Mobility Command (AMC) must submit a request for deviation authority to AMC. AMC will review the requests, then forward the carriers' consolidated requests, along with AMC's recommendations, to the FAA for review and action.

(c) The Administrator may authorize a deviation to perform operations under a U.S. military contract under the following conditions—

(1) The Department of Defense certifies to the Administrator that the operation is essential to the national defense;

(2) The Department of Defense further certifies that the certificate holder cannot perform the operation without deviation authority;

(3) The certificate holder will perform the operation under a contract or subcontract for the benefit of a U.S. armed service; and

(4) The Administrator finds that the deviation is based on grounds other than economic advantage either to the certificate holder or to the United States.

(d) In the case where the Administrator authorizes a deviation under this section, the Administrator will issue an appropriate amendment to the certificate holder's operations specifications.

(e) The Administrator may, at any time, terminate any grant of deviation authority issued under this section.

§119.57 Obtaining deviation authority to perform an emergency operation.

(a) In emergency conditions, the Administrator may authorize deviations if—

(1) Those conditions necessitate the transportation of persons or supplies for the protection of life or property; and

(2) The Administrator finds that a deviation is necessary for the expeditious conduct of the operations.

(b) When the Administrator authorizes deviations for operations under emergency conditions—

(1) The Administrator will issue an appropriate amendment to the certificate holder's operations specifications; or

(2) If the nature of the emergency does not permit timely amendment of the operations specifications—

(i) The Administrator may authorize the deviation orally; and

(ii) The certificate holder shall provide documentation describing the nature of the emergency to the certificate-holding district office within 24 hours after completing the operation.

§119.59 Conducting tests and inspections.

(a) At any time or place, the Administrator may conduct an inspection or test to determine whether a certificate holder under this part is complying

with title 49 of the United States Code, applicable regulations, the certificate, or the certificate holder's operations specifications.

(b) The certificate holder must—

(1) Make available to the Administrator at the certificate holder's principal base of operations—

(i) The certificate holder's Air Carrier Certificate or the certificate holder's Operating Certificate and the certificate holder's operations specifications; and

(ii) A current listing that will include the location and persons responsible for each record, document, and report required to be kept by the certificate holder under title 49 of the United States Code applicable to the operation of the certificate holder.

(2) Allow the Administrator to make any test or inspection to determine compliance respecting any matter stated in paragraph (a) of this section.

(c) Each employee of, or person used by, the certificate holder who is responsible for maintaining the certificate holder's records must make those records available to the Administrator.

(d) The Administrator may determine a certificate holder's continued eligibility to hold its certificate and/or operations specifications on any grounds listed in paragraph (a) of this section, or any other appropriate grounds.

(e) Failure by any certificate holder to make available to the Administrator upon request, the certificate, operations specifications, or any required record, document, or report is grounds for suspension of all or any part of the certificate holder's certificate and operations specifications.

(f) In the case of operators conducting intrastate common carriage operations, these inspections and tests include inspections and tests of financial books and records.

§ 119.61 Duration and surrender of certificate and operations specifications.

(a) An Air Carrier Certificate or Operating Certificate issued under this part is effective until—

(1) The certificate holder surrenders it to the Administrator; or

(2) The Administrator suspends, revokes, or otherwise terminates the certificate.

(b) Operations specifications issued under this part, part 121, or part 135 of this chapter are effective unless—

(1) The Administrator suspends, revokes, or otherwise terminates the certificate;

(2) The operations specifications are amended as provided in § 119.51;

(3) The certificate holder does not conduct a kind of operation for more than the time specified in § 119.63 and fails to follow the procedures of § 119.63 upon resuming that kind of operation; or

(4) The Administrator suspends or revokes the operations specifications for a kind of operation.

(c) Within 30 days after a certificate holder terminates operations under part 135 of this chapter, the operating certificate and operations specifications must be surrendered by the certificate holder to the certificate-holding district office.

§ 119.63 Recency of operation.

(a) Except as provided in paragraph (b) of this section, no certificate holder may conduct a kind of operation for which it holds authority in its operations specifications unless the certificate holder has conducted that kind of operation within the preceding number of consecutive calendar days specified in this paragraph:

(1) For domestic, flag, or commuter operations—30 days.

(2) For supplemental or on-demand operations—90 days, except that if the certificate holder has authority to conduct domestic, flag, or commuter operations, and has conducted domestic, flag or commuter operations within the previous 30 days, this paragraph does not apply.

(b) If a certificate holder does not conduct a kind of operation for which it is authorized in its operations specifications within the number of calendar days specified in paragraph (a) of this section, it shall not conduct such kind of operation unless—

(1) It advises the Administrator at least 5 consecutive calendar days before resumption of that kind of operation; and

(2) It makes itself available and accessible during the 5 consecutive calendar day period in the event that the FAA decides to conduct a full inspection reexamination to determine whether the certificate holder remains properly and adequately equipped and able to conduct a safe operation.

[Doc. No. 28154, 60 FR 65913, Dec. 20, 1995, as amended by Amdt. 119–2, 61 FR 30434, June 14, 1996]

§ 119.65 Management personnel required for operations conducted under part 121 of this chapter.

(a) Each certificate holder must have sufficient qualified management and technical personnel to ensure the highest degree of safety in its operations. The certificate holder must have qualified personnel serving full-time in the following or equivalent positions:

(1) Director of Safety.

(2) Director of Operations.

(3) Chief Pilot.

(4) Director of Maintenance.

(5) Chief Inspector.

(b) The Administrator may approve positions or numbers of positions other than those listed in paragraph (a) of this section for a particular operation if the certificate holder shows that it can perform the operation with the highest degree of safety under the direction of fewer or different categories of management personnel due to—

(1) The kind of operation involved;

(2) The number and type of airplanes used; and

(3) The area of operations.

(c) The title of the positions required under paragraph (a) of this section or the title and number of equivalent positions approved under paragraph (b) of this section shall be set forth in the certificate holder's operations specifications.

(d) The individuals who serve in the positions required or approved under paragraph (a) or (b) of this section and anyone in a position to exercise control over operations conducted under the operating certificate must—

(1) Be qualified through training, experience, and expertise;

(2) To the extent of their responsibilities, have a full understanding of the following materials with respect to the certificate holder's operation—

(i) Aviation safety standards and safe operating practices;

(ii) 14 CFR Chapter I (Federal Aviation Regulations);

(iii) The certificate holder's operations specifications;

(iv) All appropriate maintenance and airworthiness requirements of this chapter (e.g., parts 1, 21, 23, 25, 43, 45, 47, 65, 91, and 121 of this chapter); and

(v) The manual required by §121.133 of this chapter; and

(3) Discharge their duties to meet applicable legal requirements and to maintain safe operations.

(e) Each certificate holder must:

(1) State in the general policy provisions of the manual required by §121.133 of this chapter, the duties, responsibilities, and authority of personnel required under paragraph (a) of this section;

(2) List in the manual the names and business addresses of the individuals assigned to those positions; and

(3) Notify the certificate-holding district office within 10 days of any change in personnel or any vacancy in any position listed.

§ 119.67 Management personnel: Qualifications for operations conducted under part 121 of this chapter.

(a) To serve as Director of Operations under §119.65(a) a person must—

(1) Hold an airline transport pilot certificate;

(2) Have at least 3 years supervisory or managerial experience within the last 6 years in a position that exercised operational control over any operations conducted with large airplanes under part 121 or part 135 of this chapter, or if the certificate holder uses only small airplanes in its operations, the experience may be obtained in large or small airplanes; and

(3) In the case of a person becoming a Director of Operations—

(i) For the first time ever, have at least 3 years experience, within the past 6 years, as pilot in command of a large airplane operated under part 121 or part 135 of this chapter, if the certificate holder operates large airplanes. If the certificate holder uses only small airplanes in its operation, the experience may be obtained in either large or small airplanes.

(ii) In the case of a person with previous experience as a Director of Operations, have at least 3 years experience as pilot in command of a large airplane operated under part 121 or part 135 of this chapter, if the certificate holder operates large airplanes. If the certificate holder uses only small airplanes in its operation, the experience may be obtained in either large or small airplanes.

(b) To serve as Chief Pilot under §119.65(a) a person must hold an airline transport pilot certificate with appropriate ratings for at least one of the airplanes used in the certificate holder's operation and:

(1) In the case of a person becoming a Chief Pilot for the first time ever, have at least 3 years experience, within the past 6 years, as pilot in command of a large airplane operated under part 121 or part 135 of this chapter, if the certificate holder operates large airplanes. If the certificate holder uses only small airplanes in its operation, the experience may be obtained in either large or small airplanes.

(2) In the case of a person with previous experience as a Chief Pilot, have at least 3 years experience, as pilot in command of a large airplane operated under part 121 or part 135 of this chapter, if the certificate holder operates large airplanes. If the certificate holder uses only small airplanes in its operation, the experience may be obtained in either large or small airplanes.

(c) To serve as Director of Maintenance under §119.65(a) a person must—

(1) Hold a mechanic certificate with airframe and powerplant ratings;

(2) Have 1 year of experience in a position responsible for returning airplanes to service;

(3) Have at least 1 year of experience in a supervisory capacity under either paragraph (c)(4)(i) or (c)(4)(ii) of this section maintaining the same category and class of airplane as the certificate holder uses; and

(4) Have 3 years experience within the past 6 years in one or a combination of the following—

(i) Maintaining large airplanes with 10 or more passenger seats, including at the time of appointment as Director of Maintenance, experience in maintaining the same category and class of airplane as the certificate holder uses; or

(ii) Repairing airplanes in a certificated airframe repair station that is rated to maintain airplanes in the same category and class of airplane as the certificate holder uses.

(d) To serve as Chief Inspector under §119.65(a) a person must—

(1) Hold a mechanic certificate with both airframe and powerplant ratings, and have held these ratings for at least 3 years;

(2) Have at least 3 years of maintenance experience on different types of large airplanes with 10 or more passenger seats with an air carrier or certificated repair station, 1 year of which must have been as maintenance inspector; and

(3) Have at least 1 year of experience in a supervisory capacity maintaining the same category and class of aircraft as the certificate holder uses.

(e) A certificate holder may request a deviation to employ a person who does not meet the appropriate airman experience, managerial experience, or supervisory experience requirements of this section if the Manager of the Air Transportation Division, AFS–200, or the Manager of the Aircraft Maintenance Division, AFS–300, as appropriate, finds that the person has comparable experience, and can effectively perform the functions associated with the position in accordance with the requirements of this chapter and the procedures outlined in the certificate holder's manual. Grants of deviation under this paragraph may be granted after consideration of the size and scope of the operation and the qualifications of the intended personnel. The Administrator may, at any time, terminate any grant of deviation authority issued under this paragraph.

[Doc. No. 28154, 60 FR 65913, Dec. 20, 1995, as amended by Amdt. 119–2, 61 FR 30434, June 14, 1996; Amdt. 119–3, 62 FR 13255, Mar. 19, 1997]

§ 119.69 Management personnel required for operations conducted under part 135 of this chapter.

(a) Each certificate holder must have sufficient qualified management and

technical personnel to ensure the safety of its operations. Except for a certificate holder using only one pilot in its operations, the certificate holder must have qualified personnel serving in the following or equivalent positions:

(1) Director of Operations.

(2) Chief Pilot.

(3) Director of Maintenance.

(b) The Administrator may approve positions or numbers of positions other than those listed in paragraph (a) of this section for a particular operation if the certificate holder shows that it can perform the operation with the highest degree of safety under the direction of fewer or different categories of management personnel due to—

(1) The kind of operation involved;

(2) The number and type of aircraft used; and

(3) The area of operations.

(c) The title of the positions required under paragraph (a) of this section or the title and number of equivalent positions approved under paragraph (b) of this section shall be set forth in the certificate holder's operations specifications.

(d) The individuals who serve in the positions required or approved under paragraph (a) or (b) of this section and anyone in a position to exercise control over operations conducted under the operating certificate must—

(1) Be qualified through training, experience, and expertise;

(2) To the extent of their responsibilities, have a full understanding of the following material with respect to the certificate holder's operation—

(i) Aviation safety standards and safe operating practices;

(ii) 14 CFR Chapter I (Federal Aviation Regulations);

(iii) The certificate holder's operations specifications;

(iv) All appropriate maintenance and airworthiness requirements of this chapter (e.g., parts 1, 21, 23, 25, 43, 45, 47, 65, 91, and 135 of this chapter); and

(v) The manual required by §135.21 of this chapter; and

(3) Discharge their duties to meet applicable legal requirements and to maintain safe operations.

(e) Each certificate holder must—

(1) State in the general policy provisions of the manual required by §135.21 of this chapter, the duties, responsibilities, and authority of personnel required or approved under paragraph (a) or (b), respectively, of this section;

(2) List in the manual the names and business addresses of the individuals assigned to those positions; and

(3) Notify the certificate-holding district office within 10 days of any change in personnel or any vacancy in any position listed.

§119.71 Management personnel: Qualifications for operations conducted under part 135 of this chapter.

(a) To serve as Director of Operations under §119.69(a) for a certificate holder conducting any operations for which the pilot in command is required to hold an airline transport pilot certificate a person must hold an airline transport pilot certificate and either:

(1) Have at least 3 years supervisory or managerial experience within the last 6 years in a position that exercised operational control over any operations conducted under part 121 or part 135 of this chapter; or

(2) In the case of a person becoming Director of Operations—

(i) For the first time ever, have at least 3 years experience, within the past 6 years, as pilot in command of an aircraft operated under part 121 or part 135 of this chapter.

(ii) In the case of a person with previous experience as a Director of Operations, have at least 3 years experience, as pilot in command of an aircraft operated under part 121 or part 135 of this chapter.

(b) To serve as Director of Operations under §119.69(a) for a certificate holder that only conducts operations for which the pilot in command is required to hold a commercial pilot certificate, a person must hold at least a commercial pilot certificate. If an instrument rating is required for any pilot in command for that certificate holder, the Director of Operations must also hold an instrument rating. In addition, the Director of Operations must either—

(1) Have at least 3 years supervisory or managerial experience within the last 6 years in a position that exercised

operational control over any operations conducted under part 121 or part 135 of this chapter; or

(2) In the case of a person becoming Director of Operations—

(i) For the first time ever, have at least 3 years experience, within the past 6 years, as pilot in command of an aircraft operated under part 121 or part 135 of this chapter.

(ii) In the case of a person with previous experience as a Director of Operations, have at least 3 years experience as pilot in command of an aircraft operated under part 121 or part 135 of this chapter.

(c) To serve as Chief Pilot under §119.69(a) for a certificate holder conducting any operation for which the pilot in command is required to hold an airline transport pilot certificate a person must hold an airline transport pilot certificate with appropriate ratings and be qualified to serve as pilot in command in at least one aircraft used in the certificate holder's operation and:

(1) In the case of a person becoming a Chief Pilot for the first time ever, have at least 3 years experience, within the past 6 years, as pilot in command of an aircraft operated under part 121 or part 135 of this chapter.

(2) In the case of a person with previous experience as a Chief Pilot, have at least 3 years experience as pilot in command of an aircraft operated under part 121 or part 135 of this chapter.

(d) To serve as Chief Pilot under §119.69(a) for a certificate holder that only conducts operations for which the pilot in command is required to hold a commercial pilot certificate, a person must hold at least a commercial pilot certificate. If an instrument rating is required for any pilot in command for that certificate holder, the Chief Pilot must also hold an instrument rating. The Chief Pilot must be qualified to serve as pilot in command in at least one aircraft used in the certificate holder's operation. In addition, the Chief Pilot must:

(1) In the case of a person becoming a Chief Pilot for the first time ever, have at least 3 years experience, within the past 6 years, as pilot in command of an aircraft operated under part 121 or part 135 of this chapter.

(2) In the case of a person with previous experience as a Chief Pilot, have at least 3 years experience as pilot in command of an aircraft operated under part 121 or part 135 of this chapter.

(e) To serve as Director of Maintenance under §119.69(a) a person must hold a mechanic certificate with airframe and powerplant ratings and either:

(1) Have 3 years of experience within the past 6 years maintaining aircraft as a certificated mechanic, including, at the time of appointment as Director of Maintenance, experience in maintaining the same category and class of aircraft as the certificate holder uses; or

(2) Have 3 years of experience within the past 6 years repairing aircraft in a certificated airframe repair station, including 1 year in the capacity of approving aircraft for return to service.

(f) A certificate holder may request a deviation to employ a person who does not meet the appropriate airmen experience requirements, managerial experience requirements, or supervisory experience requirements of this section if the Manager of the Air Transportation Division, AFS–200, or the Manager of the Aircraft Maintenance Division, AFS–300, as appropriate, find that the person has comparable experience, and can effectively perform the functions associated with the position in accordance with the requirements of this chapter and the procedures outlined in the certificate holder's manual. The Administrator may, at any time, terminate any grant of deviation authority issued under this paragraph.

[Doc. No. 28154, 60 FR 65913, Dec. 20, 1995, as amended by Amdt. 119–3, 62 FR 13255, Mar. 19, 1997; Amdt. 119–12, 72 FR 54816, Sept. 27, 2007]

PART 121—OPERATING REQUIREMENTS: DOMESTIC, FLAG, AND SUPPLEMENTAL OPERATIONS

SPECIAL FEDERAL AVIATION REGULATION NO. 14

SPECIAL FEDERAL AVIATION REGULATION NO. 36

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AUTHORITY: 49 U.S.C. 106(g), 40113, 40119, 41706, 44101, 44701–44702, 44705, 44709–44711, 44713, 44716–44717, 44722, 46105.

SPECIAL FEDERAL AVIATION REGULATION NO. 14

Contrary performance provisions of the Civil Air Regulations notwithstanding, the Administrator may grant performance credit for the use of standby power on transport category airplanes. Such credit shall be applicable only to the maximum certificated take-off and landing weights, and the take-off distance, and the take-off paths, and shall not exceed that found by the Administrator to result in an over-all level of safety in the take-off, approach, and landing regimes of

flight equivalent to that prescribed in the regulations under which the airplane was originally certificated without standby power. (NOTE: Standby power is power and/or thrust obtained from rocket engines for a relatively short period and actuated only in cases of emergency.) The following provisions shall apply:

(1) *Take-off; general.* The take-off data prescribed in sections (2) and (3) shall be determined at all weights and altitudes, and at ambient temperatures if applicable, at which performance credit is to be applied.

(2) *Take-off path.* (a) The one-engine-inoperative take-off path with standby power in use shall be determined in accordance with the performance requirements of the applicable airworthiness regulations.

(b) The one-engine-inoperative take-off path (excluding that portion where the airplane is on or just above the take-off surface-determined in accordance with paragraph (a) of this section shall lie above the one/engine-inoperative take-off path without standby power at the maximum take/off weight at which all of the applicable airworthiness requirements are met. For the purpose of this comparison, the flight path shall be considered to extend to at least a height of 400 feet above the take-off surface.

(c) The take-off path with all engines operating, but without the use of standby power, shall reflect a conservatively greater overall level of performance than the one-engine-inoperative take-off path established in accordance with paragraph (a) of this section. The aforementioned margin shall be established by the Administrator to insure safe day-to-day operations, but in no case shall it be less than 15 percent. The all-engines-operating take-off path shall be determined by a procedure consistent with that established in complying with paragraph (a) of this section.

(d) For reciprocating-engine-powered airplanes, the take-off path to be scheduled in the Airplane Flight Manual shall represent the one-engine-inoperative take-off path determined in accordance with paragraph (a) of this section and modified to reflect the procedure (see section (6)) established by the applicant for flap retraction and attainment of the en route speed. The scheduled take-off path shall have a positive slope at all points of the airborne portion and at no point shall it lie above the take-off path specified in paragraph (a) of this section.

(3) *Take-off distance.* The take-off distance shall be the horizontal distance along the one/engine-inoperative take-off to the point where the airplane attains a height of 50 feet above the take-off surface for reciprocating-engine-powered airplanes and a height of 35 feet above the take-off surface for turbine-powered airplanes.

(4) *Maximum certificated take-off weights.* The maximum certificated take-off weights shall be determined at all altitudes, and at ambient temperatures if applicable, at which performance credit is to be applied and shall not exceed the weights established in compliance with paragraphs (a) and (b) of this section.

(a) The conditions of section (2) (b) through (d) shall be met at the maximum certificated take-off weight.

(b) Without the use of standby power, the airplane shall meet all of the en route requirements of the applicable airworthiness regulations under which the airplane was originally certificated. In addition, turbine-powered airplanes without the use of standby power shall meet the final take-off climb requirements prescribed in the applicable airworthiness regulations.

(5) *Maximum certificated landing weights.* (a) The maximum certificated landing weights (one-engine/inoperative approach and all-engine/operating landing climb) shall be determined at all altitudes, and at ambient temperatures if applicable, at which performance credit is to be applied and shall not exceed that established in compliance with the provisions of paragraph (b) of this section.

(b) The flight path, with the engines operating at the power and/or thrust appropriate to the airplane configuration and with standby power in use, shall lie above the flight path without standby power in use at the maximum weight at which all of the applicable airworthiness requirements are met. In addition, the flight paths shall comply with the provisions of paragraphs (i) and (ii) of this paragraph (b).

(i) The flight paths shall be established without changing the appropriate airplane configuration.

(ii) The flight paths shall be carried out for a minimum height of 400 feet above the point where standby power is actuated.

(6) *Airplane configuration, speed, and power and/or thrust; general.* Any change in the airplane's configuration, speed, and power and/or thrust shall be made in accordance with the procedures established by the applicant for the operation of the airplane in service and shall comply with the provisions of paragraphs (a) through (c) of this section. In addition, procedures shall be established for the execution of balked landings and missed approaches.

(a) The Administrator shall find that the procedure can be consistently executed in service by crews of average skill.

(b) The procedure shall not involve methods or the use of devices which have not been proven to be safe and reliable.

(c) Allowances shall be made for such time delays in the execution of the procedures as may be reasonably expected to occur during service.

(7) *Installation and operation; standby power.* The standby power unit and its installation shall comply with the provisions of paragraphs (a) and (b) of this section.

(a) The standby power unit and its installation shall not adversely affect the safety of the airplane.

(b) The operation of the standby power unit and its control shall have proven to be safe and reliable.

[23 FR 7454, Sept. 25, 1958. Redesignated at 29 FR 19099, Dec. 30, 1964]

SPECIAL FEDERAL AVIATION REGULATION NO. 36

1. *Definitions.* For purposes of this Special Federal Aviation Regulation—

(a) A product is an aircraft, airframe, aircraft engine, propeller, or appliance;

(b) An article is an airframe, powerplant, propeller, instrument, radio, or accessory; and

(c) A component is a part of a product or article.

2. *General.* (a) Contrary provisions of §121.379(b) and §135.437(b) of this chapter notwithstanding, the holder of an air carrier certificate or operating certificate, that operates large aircraft, and that has been issued operations specifications for operations required to be conducted in accordance with 14 CFR part 121 or 135, may perform a major repair on a product as described in §121.379(b) or §135.437(a), using technical data that have not been approved by the Administrator, and approve that product for return to service, if authorized in accordance with this Special Federal Aviation Regulation.

(b) [Reserved]

(c) Contrary provisions of §145.201(c)(2) notwithstanding, the holder of a repair station certificate under 14 CFR part 145 that is located in the United States may perform a major repair on an article for which it is rated using technical data not approved by the FAA and approve that article for return to service, if authorized in accordance with this Special Federal Aviation Regulation. If the certificate holder holds a rating limited to a component of a product or article, the holder may not, by virtue of this Special Federal Aviation Regulation, approve that product or article for return to service.

3. *Major Repair Data and Return to Service.* (a) As referenced in section 2 of this Special Federal Aviation Regulation, a certificate holder may perform a major repair on a product or article using technical data that have not been approved by the Administrator, and approve that product or article for return to service, if the certificate holder—

(1) Has been issued an authorization under, and a procedures manual that complies with, Special Federal Aviation Regulation No. 36–8, effective on January 23, 2004;

(2) Has developed the technical data in accordance with the procedures manual;

(3) Has developed the technical data specifically for the product or article being repaired; and

(4) Has accomplished the repair in accordance with the procedures manual and the procedures approved by the Administrator for the certificate.

(b) For purposes of this section, an authorization holder may develop technical data to perform a major repair on a product or article and use that data to repair a subsequent product or article of the same type as long as the holder—

(1) Evaluates each subsequent repair and the technical data to determine that performing the subsequent repair with the same data will return the product or article to its original or properly altered condition, and that the repaired product or article conforms with applicable airworthiness requirements; and

(2) Records each evaluation in the records referenced in paragraph (a) of section 13 of this Special Federal Aviation Regulation.

4. *Application.* The applicant for an authorization under this Special Federal Aviation Regulation must submit an application before November 14, 2006, in writing, and signed by an officer of the applicant, to the certificate holding district office charged with the overall inspection of the applicant's operations under its certificate. The application must contain—

(a) If the applicant is

(1) The holder of an air carrier operating or commercial operating certificate, or the holder of an air taxi operating certificate that operates large aircraft, the—

(i) The applicant's certificate number; and

(ii) The specific product(s) the applicant is authorized to maintain under its certificate, operations specifications, and maintenance manual; or

(2) The holder of a domestic repair station certificate—

(i) The applicant's certificate number;

(ii) A copy of the applicant's operations specifications; and

(iii) The specific article(s) for which the applicant is rated;

(b) The name, signature, and title of each person for whom authorization to approve, on behalf of the authorization holder, the use of technical data for major repairs is requested; and

(c) The qualifications of the applicant's staff that show compliance with section 5 of this Special Federal Aviation Regulation.

5. *Eligibility.* (a) To be eligible for an authorization under this Special Federal Aviation Regulation, the applicant, in addition to having the authority to repair products or articles must—

(1) Hold an air carrier certificate or operating certificate, operate large aircraft, and have been issued operations specifications for operations required to be conducted in

accordance with 14 CFR part 121 or 135, or hold a domestic repair station certificate under 14 CFR part 145;

(2) Have an adequate number of sufficiently trained personnel in the United States to develop data and repair the products that the applicant is authorized to maintain under its operating certificate or the articles for which it is rated under its domestic repair station certificate;

(3) Employ, or have available, a staff of engineering personnel that can determine compliance with the applicable airworthiness requirements of the Federal Aviation Regulations.

(b) At least one member of the staff required by paragraph (a)(3) of this section must—

(1) Have a thorough working knowledge of the applicable requirements of the Federal Aviation Regulations;

(2) Occupy a position on the applicant's staff that has the authority to establish a repair program that ensures that each repaired product or article meets the applicable requirements of the Federal Aviation Regulations;

(3) Have at least one year of satisfactory experience in processing engineering work, in direct contact with the FAA, for type certification or major repair projects; and

(4) Have at least eight years of aeronautical engineering experience (which may include the one year of experience in processing engineering work for type certification or major repair projects).

(c) The holder of an authorization issued under this Special Federal Aviation Regulation shall notify the Administrator within 48 hours of any change (including a change of personnel) that could affect the ability of the holder to meet the requirements of this Special Federal Aviation Regulation.

6. *Procedures Manual.* (a) A certificate holder may not approve a product or article for return to service under section 2 of this Special Federal Aviation Regulation unless the holder—

(1) Has a procedures manual that has been approved by the Administrator as complying with paragraph (b) of this section; and

(2) Complies with the procedures contained in this procedures manual.

(b) The approved procedures manual must contain—

(1) The procedures for developing and determining the adequacy of technical data for major repairs;

(2) The identification (names, signatures, and responsibilities) of officials and of each staff member described in section 5 of this Special Federal Aviation Regulation who—

(i) Has the authority to make changes in procedures that require a revision to the procedures manual; and

(ii) Prepares or determines the adequacy of technical data, plans or conducts tests, and approves, on behalf of the authorization holder, test results; and

(3) A ''log of revisions'' page that identifies each revised item, page, and date of revision, and contains the signature of the person approving the change for the Administrator.

(c) The holder of an authorization issued under this Special Federal Aviation Regulation may not approve a product or article for return to service after a change in staff necessary to meet the requirements of section 5 of this regulation or a change in procedures from those approved under paragraph (a) of this section, unless that change has been approved by the FAA and entered in the procedures manual.

7. *Duration of Authorization.* Each authorization issued under this Special Federal Aviation Regulation is effective from the date of issuance until, November 14, 2009, unless it is earlier surrendered, suspended, revoked or otherwise terminated. Upon termination of such authorization, the terminated authorization holder must:

(a) Surrender to the FAA all data developed pursuant to Special Federal Aviation Regulation No. 36; or

(b) Maintain indefinitely all data developed pursuant to Special Federal Aviation Regulation No. 36, and make that data available to the FAA for inspection upon request.

8. *Transferability.* An authorization issued under this Special Federal Aviation Regulation is not transferable.

9. *Inspections.* Each holder of an authorization issued under this Special Federal Aviation Regulation and each applicant for an authorization must allow the Administrator to inspect its personnel, facilities, products and articles, and records upon request.

10. *Limits of Applicability.* An authorization issued under this Special Federal Aviation Regulation applies only to—

(a) A product that the air carrier, commercial, or air taxi operating certificate holder is authorized to maintain pursuant to its continuous airworthiness maintenance program or maintenance manual; or

(b) An article for which the domestic repair station certificate holder is rated. If the certificate holder is rated for a component of an article, the holder may not, in accordance with this Special Federal Aviation Regulation, approve that article for return to service.

11. *Additional Authorization Limitations.* Each hold of an authorization issued under this Special Federal Aviation Regulation must comply with any additional limitations prescribed by the Administrator and made a part of the authorization.

12. *Data Review and Service Experience.* If the Administrator finds that a product or article has been approved for return to service after a major repair has been performed under this Special Federal Aviation Regulation, that the product or article may not

conform to the applicable airworthiness requirements or that an unsafe feature or characteristic of the product or article may exist, and that the nonconformance or unsafe feature or characteristic may be attributed to the repair performed, the holder of the authorization, upon notification by the Administrator, shall—

(a) Investigate the matter;

(b) Report to the Administrator the results of the investigation and any action proposed or taken; and

(c) If notified that an unsafe condition exists, provide within the time period stated by the Administrator, the information necessary for the FAA to issue an airworthiness directive under part 39 of the Federal Aviation Regulations.

13. *Current Records.* Each holder of an authorization issued under this Special Federal Aviation Regulation shall maintain, at its facility, current records containing—

(a) For each product or article for which it has developed and used major repair data, a technical data file that includes all data and amendments thereto (including drawings, photographs, specifications, instructions, and reports) necessary to accomplish the major repair;

(b) A list of products or articles by make, model, manufacturer's serial number (including specific part numbers and serial numbers of components) and, if applicable, FAA Technical Standard Order (TSO) or Parts Manufacturer Approval (PMA) identification, that have been repaired under the authorization; and

(c) A file of information from all available sources on difficulties experienced with products and articles repaired under the authorization.

This Special Federal Aviation Regulation terminates November 14, 2009.

[SFAR 36–6, 59 FR 3940, Jan. 27, 1994, as amended by Amdt. SFAR 36–7, 64 FR 960, Jan. 6, 1999; Amdt. 121–286, 66 FR 41116, Aug. 6, 2001; Amdt. SFAR 36–8, 68 FR 65378, Nov. 19, 2003; Amdt. 121–311, 70 FR 59946, Oct. 13, 2005]

SPECIAL FEDERAL AVIATION REGULATION NO. 50–2

EDITORIAL NOTE: For the text of SFAR No. 50–2, see part 91 of this chapter.

SPECIAL FEDERAL AVIATION REGULATION NO. 71

EDITORIAL NOTE: For the text of SFAR No. 71, see part 91 of this chapter.

SPECIAL FEDERAL AVIATION REGULATION 80—ALTERNATIVE COMMUNICATIONS AND DISPATCHING PROCEDURES

1. *Applicability.* This Special Federal Aviation Regulation applies to each holder of an air carrier or operating certificate (hereafter, certificate holder) that meets one of the following eligibility requirements:

a. The certificate holder conducts scheduled operations with airplanes having a passenger-seat configuration of 30 seats or fewer, excluding each crewmember seat, and a payload capacity of 7,500 pounds or less under part 121 of this chapter.

b. The certificate holder conducts domestic operations in Alaska under part 121 of this chapter.

2. *Alternative requirements.*

a. If an operator described in paragraph 1.a. of this SFAR is conducting a flight with an airplane described in 1.a. and if communications cannot be maintained over the entire route (which would be contrary to the requirements of §121.99 of this chapter), such an operator may continue to operate over such a route subject to approval by the Administrator. In granting such approval the Administrator considers the following:

i. The operator has an established dispatch communication system.

ii. Gaps in communication are not over the entire route, but only over portions of the route.

iii. When communication gaps occur, they occur due to one or more of the following:

A. Lack of infrastructure.

B. Geographical considerations.

C. Assigned operating altitude.

iv. Procedures are established for the prompt re-establishment of communications.

v. The operator has presented a plan or schedule for coming into compliance with the requirements in §121.99 of this chapter.

b. A certificate holder who conducts domestic operations in Alaska may, notwithstanding the requirements of §121.99 of this chapter, use a communications system operated by the United States for those operations.

c. An operator described in paragraph 1.a. of this SFAR who conducts operations in Alaska may share the aircraft dispatcher required by §121.395 with another operator described in paragraph 1.a. of this SFAR who conducts operations in Alaska if authorized to do so by the Administrator. Before granting such an authorization, the Administrator considers:

i. The operators' joint plans for complying with the aircraft dispatcher training rules in subpart N of part 121 of this chapter and the aircraft dispatcher qualification and duty time limitation rules in subpart P of part 121 of this chapter.

ii. The number of flights for which the aircraft dispatcher would be responsible.

iii. Whether the responsibilities of the dispatcher would be beyond the capability of a single dispatcher.

3. *Expiration*. This Special Federal Aviation Regulation terminates on March 12, 2001, unless sooner terminated.

[SFAR–80, 62 FR 13255, Mar. 19, 1997; 62 FR 15570, Apr. 1, 1997]

SPECIAL FEDERAL AVIATION REGULATION 92–5—FLIGHTCREW COMPARTMENT ACCESS AND DOOR DESIGNS

1. *Applicability*. This Special Federal Aviation Regulation (SFAR) applies to all operators that hold an air carrier certificate or operating certificate issued under 14 CFR part 119 and that conduct operations under this part 121 and to operators of U.S. registered transport category airplanes operated under 14 CFR part 129, except paragraph 5 of this SFAR does not apply to cargo operations and 14 CFR part 129 operations. It applies to the operators specified in this SFAR that modify airplanes to improve the flightcrew compartment door installations to restrict the unwanted entry of persons into the flightcrew compartment. This SFAR also applies to production certificate holders and applicants for airworthiness certificates for airplanes to be operated by operators specified in this SFAR, and producers of parts to be used in modifications of such airplanes.

2. *Regulatory Relief*. Contrary provisions of this part 21, and §§121.313(h), 121.153(a)(2), 121.153(c), 121.379(b), 121.583(b)(1) and (2) and 14 CFR 129.13 notwithstanding:

(a) An operator may operate airplanes modified to improve the flightcrew compartment door installations to restrict the unauthorized entry of persons into the flightcrew compartment without regard to the applicable airworthiness requirements and may modify those airplanes for that purpose, using technical data not previously approved by the Administrator, subject to the following conditions:

(i) Not later than February 15, 2002, submit to the Director, Aircraft Certification Service, a detailed description of the changes to the airplane that have been accomplished before that date to enhance the intrusion resistance of the flightcrew compartment including identification of what major alterations have been done without previously approved data.

(ii) If, upon reviewing the data submitted in paragraph 2(a)(i) of this SFAR, the Administrator determines that a door modification presents an unacceptable safety risk, the FAA may issue an order requiring changes to such modifications.

(b) An applicant for an airworthiness certificate may obtain such a certificate for modified airplanes to be operated by operators described in this SFAR.

(c) A holder of a production certificate may submit for airworthiness certification or approval, modified airplanes to be operated by operators described in this SFAR.

(d) A person may produce parts for installation on airplanes in connection with modifications described in this SFAR, without FAA parts manufacturer approval (PMA).

3. *Report of Modifications*. Not later than April 22, 2002, all operators who are required to install flightdeck door modifications in accordance with 14 CFR 121.313(j) must submit a report to the Director, Aircraft Certification Service. The report must describe the modifications to be made and provide a schedule for the changes necessary to restore compliance with all applicable airworthiness requirements and to meet the requirements of 14 CFR 121.313(j). The schedule may not extend beyond the termination date of this SFAR.

4. *Return to Service Documentation*. Where operators have modified airplanes as authorized in this SFAR, the affected airplane must be returned to service with a note that it was done under the provisions of this SFAR.

5. *Provision for Flightdeck Door Compartment Key*. Contrary to provisions of §121.313(g), the following provision applies: A key for each door that separates a passenger compartment from an emergency exit must be identified to passengers in the briefing required by §121.571(a)(1)(ii). The key required for access to the emergency exit must be readily available for each crewmember. No key to the flightcrew compartment shall be available to any crewmember during flight, except for flight crewmembers, unless an internal flightdeck locking device such as a deadbolt or bar is installed, operative, and in use.

6. *Door Modification Requirement*. After March 1, 2002, for each airplane required under §121.313(f) to have a door between the passenger and pilot compartments, and for transport category all-cargo airplanes that have a door installed between the pilot compartment and any other occupied compartment on or after January 15, 2002, such door must be equipped with an internal locking device installed, operative, and in use. Such internal locking device has to be designed so that it can only be unlocked from inside the flightdeck.

7. *Termination*. For all-cargo transport category airplanes, this SFAR terminates on October 1, 2003. For passenger airplanes, this SFAR expires on April 9, 2003, except for airplanes meeting the criteria specified in paragraphs 7.a, b, and c, below. For airplanes meeting these criteria, this SFAR expires on July 31, 2003.

a. Before midnight April 9, 2003, the operator must have installed a strengthened

flightdeck door meeting the requirement of paragraph 7.b;

b. Before midnight April 9, 2003, the FAA must have found that the door complies with 14 CFR 25.795(a)(1) and (2) in effect on January 15, 2002; and

c. Before March 10, 2003, a formal application for certification approval of the door must have been submitted to the FAA.

[Doc. FAA–2001–10770, 68 FR 17516, Apr. 9, 2003]

SPECIAL FEDERAL AVIATION REGULATION NO. 93

EDITORIAL NOTE: For the text of SFAR No. 93, see part 61 of this chapter.

SPECIAL FEDERAL AVIATION REGULATION NO. 97

EDITORIAL NOTE: For the text of SFAR No. 97, see part 91 of this chapter.

SPECIAL FEDERAL AVIATION REGULATION 106—RULES FOR USE OF PORTABLE OXYGEN CONCENTRATOR SYSTEMS ON BOARD AIRCRAFT

Section 1. *Applicability*—This rule prescribes special operating rules for the use of portable oxygen concentrator units on board civil aircraft. This rule applies to both the aircraft operator and the passenger using the portable oxygen concentrator on board the aircraft.

Section 2. *Definitions*—For the purposes of this SFAR the following definitions apply: Portable Oxygen Concentrator: means the *AirSep LifeStyle*, *AirSep FreeStyle*, *Inogen One*, *SeQual Eclipse*, or *Respironics EverGo* Portable Oxygen Concentrator medical device units as long as those medical device units: (1) Do not contain hazardous materials as determined by the Pipeline and Hazardous Materials Safety Administration; (2) are also regulated by the Food and Drug Administration; and (3) assist a user of medical oxygen under a doctor's care. These units perform by separating oxygen from nitrogen and other gases contained in ambient air and dispensing it in concentrated form to the user.

Section 3. Operating Requirements—

(a) No person may use and no aircraft operator may allow the use of any portable oxygen concentrator device, except the *AirSep LifeStyle*, *AirSep FreeStyle*, *Inogen One*, *SeQual Eclipse*, or *Respironics EverGo* Portable Oxygen Concentrator units. These units may be carried on and used by a passenger on board an aircraft provided the aircraft operator ensures that the following conditions are satisfied:

(1) The device does not cause interference with the electrical, navigation or communication equipment on the aircraft on which the device is to be used;

(2) No smoking or open flame is permitted within 10 feet of any seat row where a person is using a portable oxygen concentrator.

(3) During movement on the surface, takeoff, and landing, the unit must:

(i) Either be stowed under the seat in front of the user, or in another approved stowage location, so that it does not block the aisle way or the entryway into the row; or

(ii) If it is to be operated by the user, be used only at a seat location that does not restrict any passenger's access to, or use of, any required emergency or regular exit, or the aisle(s) in the passenger compartment;

(4) No person using a portable oxygen concentrator is permitted to sit in an exit row;

(5) The pilot in command must be apprised whenever a passenger brings and intends to use a portable oxygen concentrator on board the aircraft and the pilot in command must be informed about the contents of the physician's written statement (as required in Section 3(b)(3) of this SFAR), including the magnitude and nature of the passenger's oxygen needs.

(6) Whenever the pilot in command turns off the ''Fasten Seat Belt'' sign, or otherwise signifies that permission is granted to move about the passenger cabin, passengers operating their portable oxygen concentrator may continue to operate it while moving about the cabin.

(b) The user of the portable oxygen concentrator must comply with the following conditions to use the device on board the aircraft:

(1) The user must be capable of hearing the unit's alarms, seeing the alarm light indicators, and have the cognitive ability to take the appropriate action in response to the various caution and warning alarms and alarm light indicators, or be travelling with someone who is capable of performing those functions;

(2) The user must ensure that the portable oxygen concentrator is free of oil, grease or other petroleum products and is in good condition free from damage or other signs of excessive wear or abuse;

(3) The user must inform the aircraft operator that he or she intends to use a portable oxygen concentrator on board the aircraft and must allow the crew of the aircraft to review the contents of the physician's statement. The user must have a written statement, to be kept in that person's possession, signed by a licensed physician that:

(i) States whether the user of the device has the physical and cognitive ability to see, hear, and understand the device's aural and visual cautions and warnings and is able, without assistance, to take the appropriate action in response to those cautions and warnings;

(ii) States whether or not oxygen use is medically necessary for all or a portion of the duration of the trip; and

(iii) Specifies the maximum oxygen flow rate corresponding to the pressure in the cabin of the aircraft under normal operating conditions.

(4) Only lotions or salves that are oxygen approved may be used by persons using the portable oxygen concentrator device;

(5) The user, whose physician statement specifies the duration of oxygen use, must obtain from the aircraft operator, or by other means, the duration of the planned flight. The user must carry on the flight a sufficient number of batteries to power the device for the duration of the oxygen use specified in the user's physician statement, including a conservative estimate of any unanticipated delays; and

(6) The user must ensure that all portable oxygen concentrator batteries carried onboard the aircraft in carry-on baggage are protected from short circuit and are packaged in a manner that protects them from physical damage. Batteries protected from short circuit include: (1) Those designed with recessed battery terminals; or (2) those packaged so that the battery terminals do not contact metal objects (including the battery terminals of other batteries). When a battery-powered oxygen concentrator is carried onboard aircraft as carry-on baggage and is not intended to be used during the flight, the battery must be removed and packaged separately unless the concentrator contains at least two effective protective features to prevent accidental operation during transport.

Section 4. *Expiration Date*—This SFAR No. 106 will remain in effect until further notice.

[Doc. FAA–2004–18596, 70 FR 40164, July 12, 2005, as amended at 71 FR 53956, Sept. 12, 2006]

Subpart A—General

§ 121.1 Applicability.

This part prescribes rules governing—

(a) The domestic, flag, and supplemental operations of each person who holds or is required to hold an Air Carrier Certificate or Operating Certificate under part 119 of this chapter.

(b) Each person employed or used by a certificate holder conducting operations under this part including maintenance, preventive maintenance, and alteration of aircraft.

(c) Each person who applies for provisional approval of an Advanced Qualification Program curriculum, curriculum segment, or portion of a curriculum segment under SFAR No. 58 of 14 CFR part 121, and each person employed or used by an air carrier or commercial operator under this part to perform training, qualification, or evaluation functions under an Advanced Qualification Program under SFAR No. 58 of 14 CFR part 121.

(d) Nonstop Commercial Air Tours conducted for compensation or hire in accordance with §119.1(e)(2) of this chapter must comply with drug and alcohol requirements in §§121.455, 121.457, 121.458 and 121.459, and with the provisions of part 136, subpart A of this chapter by September 11, 2007. An operator who does not hold an air carrier certificate or an operating certificate is permitted to use a person who is otherwise authorized to perform aircraft maintenance or preventive maintenance duties and who is not subject to anti-drug and alcohol misuse prevention programs to perform—

(1) Aircraft maintenance or preventive maintenance on the operator's aircraft if the operator would otherwise be required to transport the aircraft more than 50 nautical miles further than the repair point closest to the operator's principal base of operations to obtain these services; or

(2) Emergency repairs on the operator's aircraft if the aircraft cannot be safely operated to a location where an employee subject to FAA-approved programs can perform the repairs.

(e) Each person who is on board an aircraft being operated under this part.

(f) Each person who is an applicant for an Air Carrier Certificate or an Operating Certificate under part 119 of this chapter, when conducting proving tests.

(g) This part also establishes requirements for operators to take actions to support the continued airworthiness of each airplane.

[Doc. No. 28154, 60 FR 65925, Dec. 20, 1995, as amended by Amdt. 121–328, 72 FR 6912, Feb. 13, 2007; Amdt. 121–336, 72 FR 63411, Nov. 8, 2007]

§ 121.2 Compliance schedule for operators that transition to part 121; certain new entrant operators.

(a) *Applicability*. This section applies to the following:

(1) Each certificate holder that was issued an air carrier or operating certificate and operations specifications under the requirements of part 135 of this chapter or under SFAR No. 38–2 of 14 CFR part 121 before January 19, 1996, and that conducts scheduled passenger-carrying operations with:

(i) Nontransport category turbopropeller powered airplanes type certificated after December 31, 1964, that have a passenger seat configuration of 10–19 seats;

(ii) Transport category turbopropeller powered airplanes that have a passenger seat configuration of 20–30 seats; or

(iii) Turbojet engine powered airplanes having a passenger seat configuration of 1–30 seats.

(2) Each person who, after January 19, 1996, applies for or obtains an initial air carrier or operating certificate and operations specifications to conduct scheduled passenger-carrying operations in the kinds of airplanes described in paragraphs (a)(1)(i), (a)(1)(ii), or paragraph (a)(1)(iii) of this section.

(b) *Obtaining operations specifications.* A certificate holder described in paragraph (a)(1) of this section may not, after March 20, 1997, operate an airplane described in paragraphs (a)(1)(i), (a)(1)(ii), or (a)(1)(iii) of this section in scheduled passenger-carrying operations, unless it obtains operations specifications to conduct its scheduled operations under this part on or before March 20, 1997.

(c) *Regular or accelerated compliance.* Except as provided in paragraphs (d), (e), and (i) of this section, each certificate holder described in paragraphs (a)(1) of this section shall comply with each applicable requirement of this part on and after March 20, 1997 or on and after the date on which the certificate holder is issued operations specifications under this part, whichever occurs first. Except as provided in paragraphs (d) and (e) of this section, each person described in paragraph (a)(2) of this section shall comply with each applicable requirement of this part on and after the date on which that person is issued a certificate and operations specifications under this part.

(d) *Delayed compliance dates.* Unless paragraph (e) of this section specifies an earlier compliance date, no certificate holder that is covered by paragraph (a) of this section may operate an airplane in 14 CFR part 121 operations on or after a date listed in this paragraph (d) unless that airplane meets the applicable requirement of this paragraph (d):

(1) *Nontransport category turbopropeller powered airplanes type certificated after December 31, 1964, that have a passenger seat configuration of 10–19 seats.* No certificate holder may operate under this part an airplane that is described in paragraph (a)(1)(i) of this section on or after a date listed in paragraph (d)(1) of this section unless that airplane meets the applicable requirement listed in paragraph (d)(1) of this section:

(i) December 20, 1997:

(A) Section 121.289, Landing gear aural warning.

(B) Section 121.308, Lavatory fire protection.

(C) Section 121.310(e), Emergency exit handle illumination.

(D) Section 121.337(b)(8), Protective breathing equipment.

(E) Section 121.340, Emergency flotation means.

(ii) December 20, 1999: Section 121.342, Pitot heat indication system.

(iii) December 20, 2010:

(A) For airplanes described in §121.157(f), the Airplane Performance Operating Limitations in §§121.189 through 121.197.

(B) Section 121.161(b), Ditching approval.

(C) Section 121.305(j), Third attitude indicator.

(D) Section 121.312(c), Passenger seat cushion flammability.

(iv) March 12, 1999: Section 121.310(b)(1), Interior emergency exit locating sign.

(2) *Transport category turbopropeller powered airplanes that have a passenger seat configuration of 20–30 seats.* No certificate holder may operate under this part an airplane that is described in paragraph (a)(1)(ii) of this section on or after a date listed in paragraph (d)(2) of this section unless that airplane meets the applicable requirement listed in paragraph (d)(2) of this section:

(i) December 20, 1997:

(A) Section 121.308, Lavatory fire protection.

(B) Section 121.337(b) (8) and (9), Protective breathing equipment.

(C) Section 121.340, Emergency flotation means.

(ii) December 20, 2010: §121.305(j), third attitude indicator.

(e) *Newly manufactured airplanes.* No certificate holder that is described in paragraph (a) of this section may operate under this part an airplane manufactured on or after a date listed in this paragraph unless that airplane meets the applicable requirement listed in this paragraph (e).

(1) For nontransport category turbopropeller powered airplanes type certificated after December 31, 1964, that have a passenger seat configuration of 10–19 seats:

(i) Manufactured on or after March 20, 1997:

(A) Section 121.305(j), Third attitude indicator.

(B) Section 121.311(f), Safety belts and shoulder harnesses.

(ii) Manufactured on or after December 20, 1997; Section 121.317(a), Fasten seat belt light.

(iii) Manufactured on or after December 20, 1999: Section 121.293, Takeoff warning system.

(iv) Manufactured on or after March 12, 1999: Section 121.310(b)(1), Interior emergency exit locating sign.

(2) For transport category turbopropeller powered airplanes that have a passenger seat configuration of 20–30 seats manufactured on or after March 20, 1997: Section 121.305(j), Third attitude indicator.

(f) *New type certification requirements.* No person may operate an airplane for which the application for a type certificate was filed after March 29, 1995, in 14 CFR part 121 operations unless that airplane is type certificated under part 25 of this chapter.

(g) *Transition plan.* Before March 19, 1996 each certificate holder described in paragraph (a)(1) of this section must submit to the FAA a transition plan (containing a calendar of events) for moving from conducting its scheduled operations under the commuter requirements of part 135 of this chapter to the requirements for domestic or flag operations under this part. Each transition plan must contain details on the following:

(1) Plans for obtaining new operations specifications authorizing domestic or flag operations;

(2) Plans for being in compliance with the applicable requirements of this part on or before March 20, 1997; and

(3) Plans for complying with the compliance date schedules contained in paragraphs (d) and (e) of this section.

(h) *Continuing requirements.* A certificate holder described in paragraph (a) of this section shall comply with the applicable airplane operating and equipment requirements of part 135 of this chapter for the airplanes described in paragraph (a)(1) of this section, until the airplane meets the specific compliance dates in paragraphs (d) and (e) of this section.

(i) *Delayed pilot age limitation.* (1) Notwithstanding §121.383(c), and except as provided in paragraph (i)(2) of this section, a certificate holder may use the services of a person as a pilot in operations covered by paragraph (a)(1) of this section after that person has reached his or her 60th birthday, until December 20, 1999. Notwithstanding §121.383(c), and except as provided in paragraph (i)(2) of this section, a person may serve as a pilot in operations covered by paragraph (a)(1) of this section after that person has reached his or her 60th birthday, until December 20, 1999.

(2) This paragraph applies only to persons who were employed as pilots by a certificate holder in operations covered by paragraph (a)(1) of this section on March 20, 1997.

(j) Any training or qualification obtained by a crewmember under part 135 of this chapter before March 20, 1997, is entitled to credit under this part for the purpose of meeting the requirements of this part, as determined by the Administrator. Records kept by a certificate holder under part 135 of this chapter before March 20, 1997, can be annotated, with the approval of the Administrator, to reflect crewmember

training and qualification credited toward part 121 requirements.

[Doc. No. 28154, 60 FR 65925, Dec. 20, 1995, as amended by Amdt. 121–253, 61 FR 2609, Jan. 26, 1996; Amdt 121–256, 61 FR 30434, June 14, 1996; Amdt. 121–262, 62 FR 13256, Mar. 19, 1997]

§ 121.4 Applicability of rules to unauthorized operators.

The rules in this part which refer to a person certificated under part 119 of this chapter apply also to any person who engages in an operation governed by this part without the appropriate certificate and operations specifications required by part 119 of this chapter.

[Doc. No. 11675, 37 FR 20937, Oct. 5, 1972, as amended by Amdt. 121–251, 60 FR 65926, Dec. 20, 1995]

§ 121.7 Definitions.

The following definitions apply to those sections of part 121 that apply to ETOPS:

Adequate Airport means an airport that an airplane operator may list with approval from the FAA because that airport meets the landing limitations of § 121.197 and is either—

(1) An airport that meets the requirements of part 139, subpart D of this chapter, excluding those that apply to aircraft rescue and firefighting service, or

(2) A military airport that is active and operational.

ETOPS Alternate Airport means an adequate airport listed in the certificate holder's operations specifications that is designated in a dispatch or flight release for use in the event of a diversion during ETOPS. This definition applies to flight planning and does not in any way limit the authority of the pilot-in-command during flight.

ETOPS Area of Operation means one of the following areas:

(1) For turbine-engine-powered airplanes with two engines, an area beyond 60 minutes from an adequate airport, computed using a one-engine-inoperative cruise speed under standard conditions in still air.

(2) For turbine-engine-powered passenger-carrying airplanes with more than two engines, an area beyond 180 minutes from an adequate airport, computed using a one-engine-inoperative cruise speed under standard conditions in still air.

ETOPS Entry Point means the first point on the route of an ETOPS flight, determined using a one-engine-inoperative cruise speed under standard conditions in still air, that is—

(1) More than 60 minutes from an adequate airport for airplanes with two engines;

(2) More than 180 minutes from an adequate airport for passenger-carrying airplanes with more than two engines.

ETOPS Qualified Person means a person, performing maintenance for the certificate holder, who has satisfactorily completed the certificate holder's ETOPS training program.

Maximum Diversion Time means, for the purposes of ETOPS route planning, the longest diversion time authorized for a flight under the operator's ETOPS authority. It is calculated under standard conditions in still air at a one-engine-inoperative cruise speed.

North Pacific Area of Operation means Pacific Ocean areas north of 40° N latitudes including NOPAC ATS routes, and published PACOTS tracks between Japan and North America.

North Polar Area means the entire area north of 78° N latitude.

One-engine-inoperative-Cruise Speed means a speed within the certified operating limits of the airplane that is specified by the certificate holder and approved by the FAA for —

(1) Calculating required fuel reserves needed to account for an inoperative engine; or

(2) Determining whether an ETOPS alternate is within the maximum diversion time authorized for an ETOPS flight.

South Polar Area means the entire area South of 60° S latitude.

[Doc. No. FAA–2002–6717, 72 FR 1878, Jan. 16, 2007]

§ 121.11 Rules applicable to operations in a foreign country.

Each certificate holder shall, while operating an airplane within a foreign country, comply with the air traffic rules of the country concerned and the local airport rules, except where any rule of this part is more restrictive and

may be followed without violating the rules of that country.

[Doc. No. 16383, 43 FR 22641, May 25, 1978]

§ 121.15 Carriage of narcotic drugs, marihuana, and depressant or stimulant drugs or substances.

If a certificate holder operating under this part permits any aircraft owned or leased by that holder to be engaged in any operation that the certificate holder knows to be in violation of §91.19(a) of this chapter, that operation is a basis for suspending or revoking the certificate.

[Doc. No. 28154, 60 FR 65926, Dec. 20, 1995]

Subpart B—Certification Rules for Domestic and Flag Air Carriers [Reserved]

Subpart C—Certification Rules for Supplemental Air Carriers and Commercial Operators [Reserved]

Subpart D—Rules Governing All Certificate Holders Under This Part [Reserved]

Subpart E—Approval of Routes: Domestic and Flag Operations

SOURCE: Docket No. 6258, 29 FR 19194, Dec. 31, 1964, unless otherwise noted.

§ 121.91 Applicability.

This subpart prescribes rules for obtaining approval of routes by certificate holders conducting domestic or flag operations.

[Doc. No. 28154, 61 FR 2610, Jan. 26, 1996]

§ 121.93 Route requirements: General.

(a) Each certificate holder conducting domestic or flag operations seeking a route approval must show—

(1) That it is able to conduct satisfactorily scheduled operations between each regular, provisional, and refueling airport over that route or route segment; and

(2) That the facilities and services required by §§121.97 through 121.107 are available and adequate for the proposed operation.

The Administrator approves a route outside of controlled airspace if he determines that traffic density is such that an adequate level of safety can be assured.

(b) Paragraph (a) of this section does not require actual flight over a route or route segment if the certificate holder shows that the flight is not essential to safety, considering the availability and adequacy of airports, lighting, maintenance, communication, navigation, fueling, ground, and airplane radio facilities, and the ability of the personnel to be used in the proposed operation.

[Doc. No. 6258, 29 FR 19194, Dec. 31, 1964, as amended by Amdt. 121–3, 30 FR 3638, Mar. 19, 1965; Amdt. 121–253, 61 FR 2610, Jan. 26, 1996]

§ 121.95 Route width.

(a) Approved routes and route segments over U.S. Federal airways or foreign airways (and advisory routes in the case of certificate holders conducting flag operations) have a width equal to the designated width of those airways or routes. Whenever the Administrator finds it necessary to determine the width of other approved routes, he considers the following:

(1) Terrain clearance.

(2) Minimum en route altitudes.

(3) Ground and airborne navigation aids.

(4) Air traffic density.

(5) ATC procedures.

(b) Any route widths of other approved routes determined by the Administrator are specified in the certificate holder's operations specifications.

[Doc. No. 6258, 29 FR 19194, Dec. 31, 1964, as amended by Amdt. 121–253, 61 FR 2610, Jan. 26, 1996]

§ 121.97 Airports: Required data.

(a) Each certificate holder conducting domestic or flag operations must show that each route it submits for approval has enough airports that are properly equipped and adequate for the proposed operation, considering such items as size, surface, obstructions, facilities, public protection, lighting, navigational and communications aids, and ATC.

(b) Each certificate holder conducting domestic or flag operations

must show that it has an approved system for obtaining, maintaining, and distributing to appropriate personnel current aeronautical data for each airport it uses to ensure a safe operation at that airport. The aeronautical data must include the following:

(1) Airports.

(i) Facilities.

(ii) Public protection. After February 15, 2008, for ETOPS beyond 180 minutes or operations in the North Polar area and South Polar area, this includes facilities at each airport or in the immediate area sufficient to protect the passengers from the elements and to see to their welfare.

(iii) Navigational and communications aids.

(iv) Construction affecting takeoff, landing, or ground operations.

(v) Air traffic facilities.

(2) Runways, clearways and stopways.

(i) Dimensions.

(ii) Surface.

(iii) Marking and lighting systems.

(iv) Elevation and gradient.

(3) Displaced thresholds.

(i) Location.

(ii) Dimensions.

(iii) Takeoff or landing or both.

(4) Obstacles.

(i) Those affecting takeoff and landing performance computations in accordance with Subpart I of this part.

(ii) Controlling obstacles.

(5) Instrument flight procedures.

(i) Departure procedure.

(ii) Approach procedure.

(iii) Missed approach procedure.

(6) Special information.

(i) Runway visual range measurement equipment.

(ii) Prevailing winds under low visibility conditions.

(c) If the certificate-holding district office charged with the overall inspection of the certificate holder's operations finds that revisions are necessary for the continued adequacy of the certificate holder's system for collection, dissemination, and usage of aeronautical data that has been granted approval, the certificate holder shall, after notification by the certificate-holding district office, make those revisions in the system. Within 30 days after the certificate holder receives such notice, the certificate holder may file a petition to reconsider the notice with the Director, Flight Standards Service. This filing of a petition to reconsider stays the notice pending a decision by the Director, Flight Standards Service. However, if the certificate-holding district office finds that there is an emergency that requires immediate action in the interest of safety in air transportation, the Director, Flight Standards Service may, upon statement of the reasons, require a change effective without stay.

[Doc. No. 6258, 29 FR 19194, Dec. 31, 1964, as amended by Amdt. 121–162, 45 FR 46738, July 10, 1980; Amdt. 121–207, 54 FR 39293, Sept. 25, 1989; Amdt. 121–253, 61 FR 2610, Jan. 26, 1996; Amdt. 121–329, 72 FR 1878, Jan. 16, 2007]

§ 121.99 Communications facilities—domestic and flag operations.

(a) Each certificate holder conducting domestic or flag operations must show that a two-way communication system, or other means of communication approved by the FAA certificate holding district office, is available over the entire route. The communications may be direct links or via an approved communication link that will provide reliable and rapid communications under normal operating conditions between each airplane and the appropriate dispatch office, and between each airplane and the appropriate air traffic control unit.

(b) Except in an emergency, for all flag and domestic kinds of operations, the communications systems between each airplane and the dispatch office must be independent of any system operated by the United States.

(c) Each certificate holder conducting flag operations must provide voice communications for ETOPS where voice communication facilities are available. In determining whether facilities are available, the certificate holder must consider potential routes and altitudes needed for diversion to ETOPS Alternate Airports. Where facilities are not available or are of such poor quality that voice communication is not possible, another communication system must be substituted.

(d) Except as provided in paragraph (e) of this section, after February 15, 2008 for ETOPS beyond 180 minutes,

each certificate holder conducting flag operations must have a second communication system in addition to that required by paragraph (c) of this section. That system must be able to provide immediate satellite-based voice communications of landline-telephone fidelity. The system must be able to communicate between the flight crew and air traffic services, and the flight crew and the certificate holder. In determining whether such communications are available, the certificate holder must consider potential routes and altitudes needed for diversion to ETOPS Alternate Airports. Where immediate, satellite-based voice communications are not available, or are of such poor quality that voice communication is not possible, another communication system must be substituted.

(e) Operators of two-engine turbine-powered airplanes with 207 minute ETOPS approval in the North Pacific Area of Operation must comply with the requirements of paragraph (d) of this section as of February 15, 2007.

[Doc. No. 28154, 62 FR 13256, Mar. 19, 1997, as amended by Amdt. 121–329, 72 FR 1878, Jan. 16, 2007; Amdt. 121–333, 72 FR 31680, June 7, 2007]

§ 121.101 Weather reporting facilities.

(a) Each certificate holder conducting domestic or flag operations must show that enough weather reporting services are available along each route to ensure weather reports and forecasts necessary for the operation.

(b) Except as provided in paragraph (d) of this section, no certificate holder conducting domestic or flag operations may use any weather report to control flight unless—

(1) For operations within the 48 contiguous States and the District of Columbia, it was prepared by the U.S. National Weather Service or a source approved by the U.S. National Weather Service; or

(2) For operations conducted outside the 48 contiguous States and the District of Columbia, it was prepared by a source approved by the Administrator.

(c) Each certificate holder conducting domestic or flag operations that uses forecasts to control flight movements shall use forecasts prepared from weather reports specified in paragraph (b) of this section and from any source approved under its system adopted pursuant to paragraph (d) of this section.

(d) Each certificate holder conducting domestic or flag operations shall adopt and put into use an approved system for obtaining forecasts and reports of adverse weather phenomena, such as clear air turbulence, thunderstorms, and low altitude wind shear, that may affect safety of flight on each route to be flown and at each airport to be used.

[Doc. No. 6258, 29 FR 19194, Dec. 31, 1964, as amended by Amdt. 121–27, 36 FR 13911, July 28, 1971; Amdt. 121–134, 42 FR 27573, May 31, 1977; Amdt. 121–253, 61 FR 2610, Jan. 26, 1996]

§ 121.103 En route navigation facilities.

(a) Except as provided in paragraph (b) of this section, each certificate holder conducting domestic or flag operations must show, for each proposed route (including to any regular, provisional, refueling or alternate airports), that suitable navigation aids are available to navigate the airplane along the route within the degree of accuracy required for ATC. Navigation aids required for approval of routes outside of controlled airspace are listed in the certificate holder's operations specifications except for those aids required for routes to alternate airports.

(b) Navigation aids are not required for any of the following operations—

(1) Day VFR operations that the certificate holder shows can be conducted safely by pilotage because of the characteristics of the terrain;

(2) Night VFR operations on routes that the certificate holder shows have reliably lighted landmarks adequate for safe operation; and

(3) Other operations approved by the certificate holding district office.

[Doc. No. FAA–2002–14002, 72 FR 31681, June 7, 2007]

§ 121.105 Servicing and maintenance facilities.

Each certificate holder conducting domestic or flag operations must show that competent personnel and adequate facilities and equipment (including spare parts, supplies, and materials)

are available at such points along the certificate holder's route as are necessary for the proper servicing, maintenance, and preventive maintenance of airplanes and auxiliary equipment.

[Doc. No. 28154, 61 FR 2610, Jan. 26, 1996]

§ 121.106 ETOPS Alternate Airport: Rescue and fire fighting service.

(a) Except as provided in paragraph (b) of this section, the following rescue and fire fighting service (RFFS) must be available at each airport listed as an ETOPS Alternate Airport in a dispatch or flight release.

(1) For ETOPS up to 180 minutes, each designated ETOPS Alternate Airport must have RFFS equivalent to that specified by ICAO as Category 4, or higher.

(2) For ETOPS beyond 180 minutes, each designated ETOPS Alternate Airport must have RFFS equivalent to that specified by ICAO Category 4, or higher. In addition, the aircraft must remain within the ETOPS authorized diversion time from an Adequate Airport that has RFFS equivalent to that specified by ICAO Category 7, or higher.

(b) If the equipment and personnel required in paragraph (a) of this section are not immediately available at an airport, the certificate holder may still list the airport on the dispatch or flight release if the airport's RFFS can be augmented to meet paragraph (a) of this section from local fire fighting assets. A 30-minute response time for augmentation is adequate if the local assets can be notified while the diverting airplane is en route. The augmenting equipment and personnel must be available on arrival of the diverting airplane and must remain as long as the diverting airplane needs RFFS.

[Doc. No. FAA–2002–6717, 72 FR 1879, Jan. 16, 2007]

§ 121.107 Dispatch centers.

Each certificate holder conducting domestic or flag operations must show that it has enough dispatch centers, adequate for the operations to be conducted, that are located at points necessary to ensure proper operational control of each flight.

[Doc. No. 28154, 61 FR 2610, Jan. 26, 1996]

Subpart F—Approval of Areas and Routes for Supplemental Operations

SOURCE: Docket No. 6258, 29 FR 19195, Dec. 31, 1964, unless otherwise noted.

§ 121.111 Applicability.

This subpart prescribes rules for obtaining approval of areas and routes by certificate holders conducting supplemental operations.

[Doc. No. 28154, 61 FR 2610, Jan. 26, 1996]

§ 121.113 Area and route requirements: General.

(a) Each certificate holder conducting supplemental operations seeking route and area approval must show—

(1) That it is able to conduct operations within the United States in accordance with paragraphs (a) (3) and (4) of this section;

(2) That it is able to conduct operations in accordance with the applicable requirements for each area outside the United States for which authorization is requested;

(3) That it is equipped and able to conduct operations over, and use the navigational facilities associated with, the Federal airways, foreign airways, or advisory routes (ADR's) to be used; and

(4) That it will conduct all IFR and night VFR operations over Federal airways, foreign airways, controlled airspace, or advisory routes (ADR's).

(b) Notwithstanding paragraph (a)(4) of this section, the Administrator may approve a route outside of controlled airspace if the certificate holder conducting supplemental operations shows the route is safe for operations and the Administrator finds that traffic density is such that an adequate level of safety can be assured. The certificate holder may not use such a route unless it is approved by the Administrator and is listed in the certificate holder's operations specifications.

[Doc. No. 6258, 29 FR 19195, Dec. 31, 1964, as amended by Amdt. 121–253, 61 FR 2610, Jan. 26, 1996]

§ 121.115 Route width.

(a) Routes and route segments over Federal airways, foreign airways, or advisory routes have a width equal to the designated width of those airways or advisory routes. Whenever the Administrator finds it necessary to determine the width of other routes, he considers the following:

(1) Terrain clearance.

(2) Minimum en route altitudes.

(3) Ground and airborne navigation aids.

(4) Air traffic density.

(5) ATC procedures.

(b) Any route widths of other routes determined by the Administrator are specified in the certificate holder's operations specifications.

[Doc. No. 6258, 29 FR 19195, Dec. 31, 1964, as amended by Amdt. 121–253, 61 FR 2610, Jan. 26, 1996]

§ 121.117 Airports: Required data.

(a) No certificate holder conducting supplemental operations may use any airport unless it is properly equipped and adequate for the proposed operation, considering such items as size, surface, obstructions, facilities, public protection, lighting, navigational and communications aids, and ATC.

(b) Each certificate holder conducting supplemental operations must show that it has an approved system for obtaining, maintaining, and distributing to appropriate personnel current aeronautical data for each airport it uses to ensure a safe operation at that airport. The aeronautical data must include the following:

(1) Airports.

(i) Facilities.

(ii) Public protection.

(iii) Navigational and communications aids.

(iv) Construction affecting takeoff, landing, or ground operations.

(v) Air traffic facilities.

(2) Runways, clearways, and stopways.

(i) Dimensions.

(ii) Surface.

(iii) Marking and lighting systems.

(iv) Elevation and gradient.

(3) Displaced thresholds.

(i) Location.

(ii) Dimensions.

(iii) Takeoff or landing or both.

(4) Obstacles.

(i) Those affecting takeoff and landing performance computations in accordance with Subpart I of this part.

(ii) Controlling obstacles.

(5) Instrument flight procedures.

(i) Departure procedure.

(ii) Approach procedure.

(iii) Missed approach procedure.

(6) Special information.

(i) Runway visual range measurement equipment.

(ii) Prevailing winds under low visibility conditions.

(c) If the certificate-holding district office charged with the overall inspection of the certificate holder's operations finds that revisions are necessary for the continued adequacy of the certificate holder's system for collection, dissemination, and usage of aeronautical data that has been granted approval, the certificate holder shall, after notification by the certificate-holding district office, make those revisions in the system. Within 30 days after the certificate holder receives such notice, the certificate holder may file a petition to reconsider the notice with the Director, Flight Standards Service. This filing of a petition to reconsider stays the notice pending a decision by the Director, Flight Standards Service. However, if the certificate-holding district office finds that there is an emergency that requires immediate action in the interest of safety in air transportation, the Director, Flight Standards Service may, upon a statement of the reasons, require a change effective without stay.

[Doc. No. 6258, 29 FR 19195, Dec. 31, 1964, as amended by Amdt. 121–162, 45 FR 46738, July 10, 1980; Amdt. 121–207, 54 FR 39293, Sept. 25, 1989; Amdt. 121–253, 61 FR 2610, Jan. 26, 1996]

§ 121.119 Weather reporting facilities.

(a) No certificate holder conducting supplemental operations may use any weather report to control flight unless it was prepared and released by the U.S. National Weather Service or a source approved by the Weather Bureau. For operations outside the U.S., or at U.S. Military airports, where those reports are not available, the certificate holder must show that its weather reports are prepared by a

source found satisfactory by the Administrator.

(b) Each certificate holder conducting supplemental operations that uses forecasts to control flight movements shall use forecasts prepared from weather reports specified in paragraph (a) of this section.

[Doc. No. 6258, 29 FR 19195, Dec. 31, 1964, as amended by Amdt. 121–76, 36 FR 13911, July 28, 1971; Amdt. 121–253, 61 FR 2611, Jan. 26, 1996]

§ 121.121 En route navigation facilities.

(a) Except as provided in paragraph (b) of this section, no certificate holder conducting supplemental operations may conduct any operation over a route (including to any destination, refueling or alternate airports) unless suitable navigation aids are available to navigate the airplane along the route within the degree of accuracy required for ATC. Navigation aids required for routes outside of controlled airspace are listed in the certificate holder's operations specifications except for those aids required for routes to alternate airports.

(b) Navigation aids are not required for any of the following operations—

(1) Day VFR operations that the certificate holder shows can be conducted safely by pilotage because of the characteristics of the terrain;

(2) Night VFR operations on routes that the certificate holder shows have reliably lighted landmarks adequate for safe operation; and

(3) Other operations approved by the certificate holding district office.

[Doc. No. FAA–2002–14002, 72 FR 31681, June 7, 2007]

§ 121.122 Communications facilities—supplemental operations.

(a) Each certificate holder conducting supplemental operations other than all-cargo operations in an airplane with more than two engines must show that a two-way radio communication system or other means of communication approved by the FAA is available. It must ensure reliable and rapid communications under normal operating conditions over the entire route (either direct or via approved point-to-point circuits) between each airplane and the certificate holder, and between each airplane and the appropriate air traffic services, except as specified in §121.351(c).

(b) Except as provided in paragraph (d) of this section, each certificate holder conducting supplemental operations other than all-cargo operations in an airplane with more than two engines must provide voice communications for ETOPS where voice communication facilities are available. In determining whether facilities are available, the certificate holder must consider potential routes and altitudes needed for diversion to ETOPS Alternate Airports. Where facilities are not available or are of such poor quality that voice communication is not possible, another communication system must be substituted.

(c) Except as provided in paragraph (d) of this section, for ETOPS beyond 180 minutes each certificate holder conducting supplemental operations other than all-cargo operations in an airplane with more than two engines must have a second communication system in addition to that required by paragraph (b) of this section. That system must be able to provide immediate satellite-based voice communications of landline telephone-fidelity. The system must provide communication capabilities between the flight crew and air traffic services and the flight crew and the certificate holder. In determining whether such communications are available, the certificate holder must consider potential routes and altitudes needed for diversion to ETOPS Alternate Airports. Where immediate, satellite-based voice communications are not available, or are of such poor quality that voice communication is not possible, another communication system must be substituted.

(d) Operators of turbine engine powered airplanes do not need to meet the requirements of paragraphs (b) and (c) of this section until February 15, 2008.

[Doc. No. FAA–2002–6717, 72 FR 1879, Jan. 16, 2007]

§ 121.123 Servicing maintenance facilities.

Each certificate holder conducting supplemental operations must show that competent personnel and adequate

facilities and equipment (including spare parts, supplies, and materials) are available for the proper servicing, maintenance, and preventive maintenance of aircraft and auxiliary equipment.

[Doc. No. 28154, 61 FR 2611, Jan. 26, 1996]

§ 121.125 Flight following system.

(a) Each certificate holder conducting supplemental operations must show that it has—

(1) An approved flight following system established in accordance with subpart U of this part and adequate for the proper monitoring of each flight, considering the operations to be conducted; and

(2) Flight following centers located at those points necessary—

(i) To ensure the proper monitoring of the progress of each flight with respect to its departure at the point of origin and arrival at its destination, including intermediate stops and diversions therefrom, and maintenance or mechanical delays encountered at those points or stops; and

(ii) To ensure that the pilot in command is provided with all information necessary for the safety of the flight.

(b) A certificate holder conducting supplemental operations may arrange to have flight following facilities provided by persons other than its employees, but in such a case the certificate holder continues to be primarily responsible for operational control of each flight.

(c) A flight following system need not provide for in-flight monitoring by a flight following center.

(d) The certificate holder's operations specifications specify the flight following system it is authorized to use and the location of the centers.

[Doc. No. 6258, 29 FR 19195, Dec. 31, 1964, as amended by Amdt. 121–253, 61 FR 2611, Jan. 26, 1996]

§ 121.127 Flight following system; requirements.

(a) Each certificate holder conducting supplemental operations using a flight following system must show that—

(1) The system has adequate facilities and personnel to provide the information necessary for the initiation and safe conduct of each flight to—

(i) The flight crew of each aircraft; and

(ii) The persons designated by the certificate holder to perform the function of operational control of the aircraft; and

(2) The system has a means of communication by private or available public facilities (such as telephone, telegraph, or radio) to monitor the progress of each flight with respect to its departure at the point of origin and arrival at its destination, including intermediate stops and diversions therefrom, and maintenance or mechanical delays encountered at those points or stops.

(b) The certificate holder conducting supplemental operations must show that the personnel specified in paragraph (a) of this section, and those it designates to perform the function of operational control of the aircraft, are able to perform their required duties.

[Doc. No. 6258, 29 FR 19195, Dec. 31, 1964, as amended by Amdt. 121–253, 61 FR 2611, Jan. 26, 1996]

Subpart G—Manual Requirements

§ 121.131 Applicability.

This subpart prescribes requirements for preparing and maintaining manuals by all certificate holders.

[Doc. No. 6258, 29 FR 19196, Dec. 31, 1964]

§ 121.133 Preparation.

(a) Each certificate holder shall prepare and keep current a manual for the use and guidance of flight, ground operations, and management personnel in conducting its operations.

(b) For the purpose of this subpart, the certificate holder may prepare that part of the manual containing maintenance information and instructions, in whole or in part, in printed form or other form acceptable to the Administrator.

[Doc. No. 28154, 60 FR 65926, Dec. 20, 1995]

§ 121.135 Manual contents.

(a) Each manual required by §121.133 must—

(1) Include instructions and information necessary to allow the personnel

concerned to perform their duties and responsibilities with a high degree of safety;

(2) Be in a form that is easy to revise;

(3) Have the date of last revision on each page concerned; and

(4) Not be contrary to any applicable Federal regulation and, in the case of a flag or supplemental operation, any applicable foreign regulation, or the certificate holder's operations specifications or operating certificate.

(b) The manual may be in two or more separate parts, containing together all of the following information, but each part must contain that part of the information that is appropriate for each group of personnel:

(1) General policies.

(2) Duties and responsibilities of each crewmember, appropriate members of the ground organization, and management personnel.

(3) Reference to appropriate Federal Aviation Regulations.

(4) Flight dispatching and operational control, including procedures for coordinated dispatch or flight control or flight following procedures, as applicable.

(5) En route flight, navigation, and communication procedures, including procedures for the dispatch or release or continuance of flight if any item of equipment required for the particular type of operation becomes inoperative or unserviceable en route.

(6) For domestic or flag operations, appropriate information from the en route operations specifications, including for each approved route the types of airplanes authorized, the type of operation such as VFR, IFR, day, night, etc., and any other pertinent information.

(7) For supplemental operations, appropriate information from the operations specifications, including the area of operations authorized, the types of airplanes authorized, the type of operation such as VFR, IFR, day, night, etc., and any other pertinent information.

(8) Appropriate information from the airport operations specifications, including for each airport—

(i) Its location (domestic and flag operations only);

(ii) Its designation (regular, alternate, provisional, etc.) (domestic and flag operations only);

(iii) The types of airplanes authorized (domestic and flag operations only);

(iv) Instrument approach procedures;

(v) Landing and takeoff minimums; and

(vi) Any other pertinent information.

(9) Takeoff, en route, and landing weight limitations.

(10) For ETOPS, airplane performance data to support all phases of these operations.

(11) Procedures for familiarizing passengers with the use of emergency equipment, during flight.

(12) Emergency equipment and procedures.

(13) The method of designating succession of command of flight crewmembers.

(14) Procedures for determining the usability of landing and takeoff areas, and for disseminating pertinent information thereon to operations personnel.

(15) Procedures for operating in periods of ice, hail, thunderstorms, turbulence, or any potentially hazardous meteorological condition.

(16) Each training program curriculum required by § 121.403.

(17) Instructions and procedures for maintenance, preventive maintenance, and servicing.

(18) Time limitations, or standards for determining time limitations, for overhauls, inspections, and checks of airframes, engines, propellers, appliances and emergency equipment.

(19) Procedures for refueling aircraft, eliminating fuel contamination, protection from fire (including electrostatic protection), and supervising and protecting passengers during refueling.

(20) Airworthiness inspections, including instructions covering procedures, standards, responsibilities, and authority of inspection personnel.

(21) Methods and procedures for maintaining the aircraft weight and center of gravity within approved limits.

(22) Where applicable, pilot and dispatcher route and airport qualification procedures.

(23) Accident notification procedures.

(24) After February 15, 2008, for passenger flag operations and for those supplemental operations that are not all-cargo operations outside the 48 contiguous States and Alaska,

(i) For ETOPS greater than 180 minutes a specific passenger recovery plan for each ETOPS Alternate Airport used in those operations, and

(ii) For operations in the North Polar Area and South Polar Area a specific passenger recovery plan for each diversion airport used in those operations.

(25)(i) Procedures and information, as described in paragraph (b)(25)(ii) of this section, to assist each crewmember and person performing or directly supervising the following job functions involving items for transport on an aircraft:

(A) Acceptance;

(B) Rejection;

(C) Handling;

(D) Storage incidental to transport;

(E) Packaging of company material; or

(F) Loading.

(ii) Ensure that the procedures and information described in this paragraph are sufficient to assist the person in identifying packages that are marked or labeled as containing hazardous materials or that show signs of containing undeclared hazardous materials. The procedures and information must include:

(A) Procedures for rejecting packages that do not conform to the Hazardous Materials Regulations in 49 CFR parts 171 through 180 or that appear to contain undeclared hazardous materials;

(B) Procedures for complying with the hazardous materials incident reporting requirements of 49 CFR 171.15 and 171.16 and discrepancy reporting requirements of 49 CFR 175.31

(C) The certificate holder's hazmat policies and whether the certificate holder is authorized to carry, or is prohibited from carrying, hazardous materials; and

(D) If the certificate holder's operations specifications permit the transport of hazardous materials, procedures and information to ensure the following:

(*1*) That packages containing hazardous materials are properly offered and accepted in compliance with 49 CFR parts 171 through 180;

(*2*) That packages containing hazardous materials are properly handled, stored, packaged, loaded, and carried on board an aircraft in compliance with 49 CFR parts 171 through 180;

(*3*) That the requirements for Notice to the Pilot in Command (49 CFR 175.33) are complied with; and

(*4*) That aircraft replacement parts, consumable materials or other items regulated by 49 CFR parts 171 through 180 are properly handled, packaged, and transported.

(26) Other information or instructions relating to safety.

(c) Each certificate holder shall maintain at least one complete copy of the manual at its principal base of operations.

[Doc. No. 6258, 29 FR 19196, Dec. 31, 1964, as amended by Amdt. 121–104, 38 FR 14915, June 7, 1973; Amdt. 121–106, 38 FR 22377, Aug. 20, 1973; Amdt. 121–143, 43 FR 22641, May 25, 1978; Amdt. 121–162, 45 FR 46739, July 10, 1980; Amdt. 121–251, 60 FR 65926, Dec. 20, 1995; Amdt. 121–250, 60 FR 65948, Dec. 20, 1995; Amdt. 121–316, 70 FR 58823, Oct. 7, 2005; Amdt. 121–329, 72 FR 1879, Jan. 16, 2007]

§ 121.137 Distribution and availability.

(a) Each certificate holder shall furnish copies of the manual required by § 121.133 (and the changes and additions thereto) or appropriate parts of the manual to—

(1) Its appropriate ground operations and maintenance personnel;

(2) Crewmembers; and

(3) Representatives of the Administrator assigned to it.

(b) Each person to whom a manual or appropriate parts of it are furnished under paragraph (a) of this section shall keep it up-to-date with the changes and additions furnished to that person and shall have the manual or appropriate parts of it accessible when performing assigned duties.

(c) For the purpose of complying with paragraph (a) of this section, a certificate holder may furnish the persons listed therein the maintenance part of the manual in printed form or other form, acceptable to the Administrator,

that is retrievable in the English language.

[Doc. No. 6258, 29 FR 19196, Dec. 31, 1964, as amended by Amdt. 121–71, 35 FR 17176, Nov. 7, 1970; Amdt. 121–162, 45 FR 46739, July 10, 1980; Amdt. 121–262, 62 FR 13256, Mar. 19, 1997]

§ 121.139 Requirements for manual aboard aircraft: Supplemental operations.

(a) Except is provided in paragraph (b) of this section, each certificate holder conducting supplemental operations shall carry appropriate parts of the manual on each airplane when away from the principal base of operations. The appropriate parts must be available for use by ground or flight personnel. If the certificate holder carries aboard an airplane all or any portion of the maintenance part of its manual in other than printed form, it must carry a compatible reading device that produces a legible image of the maintenance information and instructions or a system that is able to retrieve the maintenance information and instructions in the English language.

(b) If a certificate holder conducting supplemental operations is able to perform all scheduled maintenance at specified stations where it keeps maintenance parts of the manual, it does not have to carry those parts of the manual aboard the aircraft en route to those stations.

[Doc. No. 6258, 29 FR 19196, Dec. 31, 1964, as amended by Amdt. 12–71, 35 FR 17176, Nov. 7, 1970; Amdt. 121–253, 61 FR 2611, Jan. 26, 1996; Amdt. 121–262, 62 FR 13256, Mar. 19, 1997; 62 FR 15570, Apr. 1, 1997]

§ 121.141 Airplane flight manual.

(a) Each certificate holder shall keep a current approved airplane flight manual for each type of airplane that it operates except for nontransport category airplanes certificated before January 1, 1965.

(b) In each airplane required to have an airplane flight manual in paragraph (a) of this section, the certificate holder shall carry either the manual required by § 121.133, if it contains the information required for the applicable flight manual and this information is clearly identified as flight manual requirements, or an approved Airplane Manual. If the certificate holder elects to carry the manual required by § 121.133, the certificate holder may revise the operating procedures sections and modify the presentation of performance data from the applicable flight manual if the revised operating procedures and modified performance date presentation are—

(1) Approved by the Administrator; and

(2) Clearly identified as airplane flight manual requirements.

[Doc. No. 28154, 60 FR 65927, Dec. 20, 1995]

Subpart H—Aircraft Requirements

SOURCE: Docket No. 6258, 29 FR 19197, Dec. 31, 1964, unless otherwise noted.

§ 121.151 Applicability.

This subpart prescribes aircraft requirements for all certificate holders.

§ 121.153 Aircraft requirements: General.

(a) Except as provided in paragraph (c) of this section, no certificate holder may operate an aircraft unless that aircraft—

(1) Is registered as a civil aircraft of the United States and carries an appropriate current airworthiness certificate issued under this chapter; and

(2) Is in an airworthy condition and meets the applicable airworthiness requirements of this chapter, including those relating to identification and equipment.

(b) A certificate holder may use an approved weight and balance control system based on average, assumed, or estimated weight to comply with applicable airworthiness requirements and operating limitations.

(c) A certificate holder may operate in common carriage, and for the carriage of mail, a civil aircraft which is leased or chartered to it without crew and is registered in a country which is a party to the Convention on International Civil Aviation if—

(1) The aircraft carries an appropriate airworthiness certificate issued by the country of registration and meets the registration and identification requirements of that country;

(2) The aircraft is of a type design which is approved under a U.S. type certificate and complies with all of the requirements of this chapter (14 CFR Chapter 1) that would be applicable to that aircraft were it registered in the United States, including the requirements which must be met for issuance of a U.S. standard airworthiness certificate (including type design conformity, condition for safe operation, and the noise, fuel venting, and engine emission requirements of this chapter), except that a U.S. registration certificate and a U.S. standard airworthiness certificate will not be issued for the aircraft;

(3) The aircraft is operated by U.S.-certificated airmen employed by the certificate holder; and

(4) The certificate holder files a copy of the aircraft lease or charter agreement with the FAA Aircraft Registry, Department of Transportation, 6400 South MacArthur Boulevard, Oklahoma City, OK (Mailing address: P.O. Box 25504, Oklahoma City, OK 73125).

[Doc. No. 6258, 29 FR 19197, Dec. 31, 1964, as amended by Amdt. 121–165, 45 FR 68649, Oct. 16, 1980]

§ 121.155 [Reserved]

§ 121.157 Aircraft certification and equipment requirements.

(a) *Airplanes certificated before July 1, 1942.* No certificate holder may operate an airplane that was type certificated before July 1, 1942, unless—

(1) That airplane meets the requirements of § 121.173(c), or

(2) That airplane and all other airplanes of the same or related type operated by that certificate holder meet the performance requirements of sections 4a.737–T through 4a.750–T of the Civil Air Regulations as in effect on January 31, 1965; or §§ 25.45 through 25.75 and § 121.173(a), (b), (d), and (e) of this title.

(b) *Airplanes certificated after June 30, 1942.* Except as provided in paragraphs (c), (d), (e), and (f) of this section, no certificate holder may operate an airplane that was type certificated after June 30, 1942, unless it is certificated as a transport category airplane and meets the requirements of § 121.173(a), (b), (d), and (e).

(c) *C–46 type airplanes: passenger-carrying operations.* No certificate holder may operate a C–46 airplane in passenger-carrying operations unless that airplane is operated in accordance with the operating limitations for transport category airplanes and meets the requirements of paragraph (b) of this section or meets the requirements of part 4b, as in effect July 20, 1950, and the requirements of § 121.173 (a), (b), (d) and (e), except that—

(1) The requirements of sections 4b.0 through 4b.19 as in effect May 18, 1954, must be complied with;

(2) The birdproof windshield requirements of section 4b.352 need not be complied with;

(3) The provisions of sections 4b.480 through 4b.490 (except sections 4b.484(a)(1) and 4b.487(e)), as in effect May 16, 1953, must be complied with; and

(4) The provisions of paragraph 4b.484(a)(1), as in effect July 20, 1950, must be complied with.

In determining the takeoff path in accordance with section 4b.116 and the one-engine inoperative climb in accordance with section 4b.120 (a) and (b), the propeller of the inoperative engine may be assumed to be feathered if the airplane is equipped with either an approved means for automatically indicating when the particular engine has failed or an approved means for automatically feathering the propeller of the inoperative engine. The Administrator may authorize deviations from compliance with the requirements of sections 4b.130 through 4b.190 and subparts C, D, E, and F of part 4b (as designated in this paragraph) if he finds that (considering the effect of design changes) compliance is extremely difficult to accomplish and that service experience with the C–46 airplane justifies the deviation.

(d) *C–46 type airplanes: cargo operations.* No certificate holder may use a nontransport category C–46 type airplane in cargo operations unless—

(1) It is certificated at a maximum gross weight that is not greater than 48,000 pounds;

(2) It meets the requirements of §§ 121.199 through 121.205 using the performance data in appendix C to this part;

(3) Before each flight, each engine contains at least 25 gallons of oil; and

(4) After December 31, 1964—

(i) It is powered by a type and model engine as set forth in appendix C of this part, when certificated at a maximum gross takeoff weight greater than 45,000 pounds; and

(ii) It complies with the special airworthiness requirement set forth in §§ 121.213 through 121.287 of this part or in appendix C of this part.

(e) *Commuter category airplanes.* Except as provided in paragraph (f) of this section, no certificate holder may operate under this part a nontransport category airplane type certificated after December 31, 1964, and before March 30, 1995, unless it meets the applicable requirements of § 121.173 (a), (b), (d), and (e), and was type certificated in the commuter category.

(f) *Other nontransport category airplanes.* No certificate holder may operate under this part a nontransport category airplane type certificated after December 31, 1964, unless it meets the applicable requirements of § 121.173 (a), (b), (d), and (e), was manufactured before March 20, 1997, and meets one of the following:

(1) Until December 20, 2010:

(i) The airplane was type certificated in the normal category before July 1, 1970, and meets special conditions issued by the Administrator for airplanes intended for use in operations under part 135 of this chapter.

(ii) The airplane was type certificated in the normal category before July 19, 1970, and meets the additional airworthiness standards in SFAR No. 23, 14 CFR part 23.

(iii) The airplane was type certificated in the normal category and meets the additional airworthiness standards in appendix A of part 135 of this chapter.

(iv) The airplane was type certificated in the normal category and complies with either section 1.(a) or 1.(b) of SFAR No. 41 of 14 CFR part 21.

(2) The airplane was type certificated in the normal category, meets the additional requirements described in paragraphs (f)(1)(i) through (f)(1)(iv) of this section, and meets the performance requirements in appendix K of this part.

(g) *Certain newly manufactured airplanes.* No certificate holder may operate an airplane under this part that was type certificated as described in paragraphs (f)(1)(i) through (f)(1)(iv) of this section and that was manufactured after March 20, 1997, unless it meets the performance requirements in appendix K of this part.

(h) *Newly type certificated airplanes.* No person may operate under this part an airplane for which the application for a type certificate is submitted after March 29, 1995, unless the airplane is type certificated under part 25 of this chapter.

[Doc. No. 6258, 29 FR 19197, Dec. 31, 1964, as amended by Amdt. 121–251, 60 FR 65927, Dec. 20, 1995; Amdt. 121–256, 61 FR 30434, June 14, 1996]

§ 121.159 Single-engine airplanes prohibited.

No certificate holder may operate a single-engine airplane under this part.

[Doc. No. 28154, 60 FR 65927, Dec. 20, 1995]

§ 121.161 Airplane limitations: Type of route.

(a) Except as provided in paragraph (e) of this section, unless approved by the Administrator in accordance with Appendix P of this part and authorized in the certificate holder's operations specifications, no certificate holder may operate a turbine-engine-powered airplane over a route that contains a point—

(1) Farther than a flying time from an Adequate Airport (at a one-engine-inoperative cruise speed under standard conditions in still air) of 60 minutes for a two-engine airplane or 180 minutes for a passenger-carrying airplane with more than two engines;

(2) Within the North Polar Area; or

(3) Within the South Polar Area.

(b) Except as provided in paragraph (c) of this section, no certificate holder may operate a land airplane (other than a DC–3, C–46, CV–240, CV–340, CV–440, CV–580, CV–600, CV–640, or Martin 404) in an extended overwater operation unless it is certificated or approved as adequate for ditching under the ditching provisions of part 25 of this chapter.

(c) Until December 20, 2010, a certificate holder may operate, in an extended overwater operation, a nontransport category land airplane type certificated after December 31, 1964, that was not certificated or approved as adequate for ditching under the ditching provisions of part 25 of this chapter.

(d) Unless authorized by the Administrator based on the character of the terrain, the kind of operation, or the performance of the airplane to be used, no certificate holder may operate a reciprocating-engine-powered airplane over a route that contains a point farther than 60 minutes flying time (at a one-engine-inoperative cruise speed under standard conditions in still air) from an Adequate Airport.

(e) Operators of turbine-engine powered airplanes with more than two engines do not need to meet the requirements of paragraph (a)(1) of this section until February 15, 2008.

[Doc. No. 7329, 31 FR 13078, Oct. 8, 1966 as amended by Amdt. 121–162, 45 FR 46739, July 10, 1980; Amdt. 121–251, 60 FR 65927, Dec. 20, 1995; Amdt. 121–329, 72 FR 1879, Jan. 16, 2007]

§ 121.162 ETOPS Type Design Approval Basis.

Except for a passenger-carrying airplane with more than two engines manufactured prior to February 17, 2015 and except for a two-engine airplane that, when used in ETOPS, is only used for ETOPS of 75 minutes or less, no certificate holder may conduct ETOPS unless the airplane has been type design approved for ETOPS and each airplane used in ETOPS complies with its CMP document as follows:

(a) For a two-engine airplane, that is of the same model airplane-engine combination that received FAA approval for ETOPS up to 180 minutes prior to February 15, 2007, the CMP document for that model airplane-engine combination in effect on February 14, 2007.

(b) For a two-engine airplane, that is not of the same model airplane-engine combination that received FAA approval for ETOPS up to 180 minutes before February 15, 2007, the CMP document for that new model airplane-engine combination issued in accordance with §25.3(b)(1) of this chapter.

(c) For a two-engine airplane approved for ETOPS beyond 180 minutes, the CMP document for that model airplane-engine combination issued in accordance with §25.3(b)(2) of this chapter.

(d) For an airplane with more than 2 engines manufactured on or after February 17, 2015, the CMP document for that model airplane-engine combination issued in accordance with §25.3(c) of this chapter.

[Doc. No. FAA–2002–6717, 72 FR 1879, Jan. 16, 2007]

§ 121.163 Aircraft proving tests.

(a) *Initial airplane proving tests.* No person may operate an airplane not before proven for use in a kind of operation under this part or part 135 of this chapter unless an airplane of that type has had, in addition to the airplane certification tests, at least 100 hours of proving tests acceptable to the Administrator, including a representative number of flights into en route airports. The requirement for at least 100 hours of proving tests may be reduced by the Administrator if the Administrator determines that a satisfactory level of proficiency has been demonstrated to justify the reduction. At least 10 hours of proving flights must be flown at night; these tests are irreducible.

(b) *Proving tests for kinds of operations.* Unless otherwise authorized by the Administrator, for each type of airplane, a certificate holder must conduct at least 50 hours of proving tests acceptable to the Administrator for each kind of operation it intends to conduct, including a representative number of flights into en route airports.

(c) *Proving tests for materially altered airplanes.* Unless otherwise authorized by the Administrator, for each type of airplane that is materially altered in design, a certificate holder must conduct at least 50 hours of proving tests acceptable to the Administrator for each kind of operation it intends to conduct with that airplane, including a representative number of flights into en route airports.

(d) *Definition of materially altered.* For the purposes of paragraph (c) of this section, a type of airplane is considered

to be materially altered in design if the alteration includes—

(1) The installation of powerplants other than those of a type similar to those with which it is certificated; or

(2) Alterations to the aircraft or its components that materially affect flight characteristics.

(e) No certificate holder may carry passengers in an aircraft during proving tests, except for those needed to make the test and those designated by the Administrator. However, it may carry mail, express, or other cargo, when approved.

[Doc. No. 6258, 29 FR 19197, Dec. 31, 1964, as amended by Amdt. 121–42, 33 FR 10330, July 19, 1968; 34 FR 13468, Aug. 21, 1969; Amdt. 121–162, 45 FR 46739, July 10, 1980; Amdt. 121–251, 60 FR 65927, Dec. 20, 1995]

Subpart I—Airplane Performance Operating Limitations

SOURCE: Docket No. 6258, 29 FR 19198, Dec. 31, 1964; 30 FR 130, Jan. 7, 1965, unless otherwise noted.

EDITORIAL NOTE: Nomenclature changes to subpart I appear at 60 FR 65928, Dec. 20, 1995.

§ 121.171 Applicability.

(a) This subpart prescribes airplane performance operating limitations for all certificate holders.

(b) For purposes of this part, *effective length of the runway* for landing means the distance from the point at which the obstruction clearance plane associated with the approach end of the runway intersects the centerline of the runway to the far end thereof.

(c) For the purposes of this subpart, *obstruction clearance plane* means a plane sloping upward from the runway at a slope of 1:20 to the horizontal, and tangent to or clearing all obstructions within a specified area surrounding the runway as shown in a profile view of that area. In the plan view, the centerline of the specified area coincides with the centerline of the runway, beginning at the point where the obstruction clearance plane intersects the centerline of the runway and proceeding to a point at least 1,500 feet from the beginning point. Thereafter the centerline coincides with the takeoff path over the ground for the runway (in the case of takeoffs) or with the instrument approach counterpart (for landings), or, where the applicable one of these paths has not been established, it proceeds consistent with turns of at least 4,000 foot radius until a point is reached beyond which the obstruction clearance plane clears all obstructions. This area extends laterally 200 feet on each side of the centerline at the point where the obstruction clearance plane intersects the runway and continues at this width to the end of the runway; then it increases uniformly to 500 feet on each side of the centerline at a point 1,500 feet from the intersection of the obstruction clearance plane with the runway; thereafter it extends laterally 500 feet on each side of the centerline.

[Doc. No. 6258, 29 FR 19198, Dec. 31, 1964, as amended by Amdt. 121–132, 41 FR 55475, Dec. 20, 1976]

§ 121.173 General.

(a) Except as provided in paragraph (c) of this section, each certificate holder operating a reciprocating-engine-powered airplane shall comply with §§ 121.175 through 121.187.

(b) Except as provided in paragraph (c) of this section, each certificate holder operating a turbine-engine-powered airplane shall comply with the applicable provisions of §§ 121.189 through 121.197, except that when it operates—

(1) A turbo-propeller-powered airplane type certificated after August 29, 1959, but previously type certificated with the same number of reciprocating engines, the certificate holder may comply with §§ 121.175 through 121.187; or

(2) Until December 20, 2010, a turbo-propeller-powered airplane described in § 121.157(f), the certificate holder may comply with the applicable performance requirements of appendix K of this part.

(c) Each certificate holder operating a large nontransport category airplane type certificated before January 1, 1965, shall comply with §§ 121.199 through 121.205 and any determination of compliance must be based only on approved performance data.

(d) The performance data in the Airplane Flight Manual applies in determining compliance with §§ 121.175 through 121.197. Where conditions are

different from those on which the performance data is based, compliance is determined by interpolation or by computing the effects of changes in the specific variables if the results of the interpolation or computations are substantially as accurate as the results of direct tests.

(e) Except as provided in paragraph (c) of this section, no person may take off a reciprocating-engine-powered airplane at a weight that is more than the allowable weight for the runway being used (determined under the runway takeoff limitations of the operating rules of 14 CFR part 121, subpart I) after taking into account the temperature operating correction factors in the applicable Airplane Flight Manual.

(f) The Administrator may authorize in the operations specifications deviations from the requirements in the subpart if special circumstances make a literal observance of a requirement unnecessary for safety.

(g) The ten-mile width specified in §§121.179 through 121.183 may be reduced to five miles, for not more than 20 miles, when operating VFR or where navigation facilities furnish reliable and accurate identification of high ground and obstructions located outside of five miles, but within ten miles, on each side of the intended track.

[Doc. No. 6258, 29 FR 19198, Dec. 31, 1964, as amended by Amdt. 121–251, 60 FR 65928, Dec. 20, 1995]

§ 121.175 Airplanes: Reciprocating engine-powered: Weight limitations.

(a) No person may take off a reciprocating engine powered airplane from an airport located at an elevation outside of the range for which maximum takeoff weights have been determined for that airplane.

(b) No person may take off a reciprocating engine powered airplane for an airport of intended destination that is located at an elevation outside of the range for which maximum landing weights have been determined for that airplane.

(c) No person may specify, or have specified, an alternate airport that is located at an elevation outside of the range for which maximum landing weights have been determined for the reciprocating engine powered airplane concerned.

(d) No person may take off a reciprocating engine powered airplane at a weight more than the maximum authorized takeoff weight for the elevation of the airport.

(e) No person may take off a reciprocating engine powered airplane if its weight on arrival at the airport of destination will be more than the maximum authorized landing weight for the elevation of that airport, allowing for normal consumption of fuel and oil en route.

(f) This section does not apply to large nontransport category airplanes operated under §121.173(c).

[Doc. No. 6258, 29 FR 19198, Dec. 31, 1964, as amended by Amdt. 121–251, 60 FR 65928, Dec. 20, 1995]

§ 121.177 Airplanes: Reciprocating engine-powered: Takeoff limitations.

(a) No person operating a reciprocating engine powered airplane may takeoff that airplane unless it is possible—

(1) To stop the airplane safely on the runway, as shown by the accelerate stop distance data, at any time during takeoff until reaching critical-engine failure speed;

(2) If the critical engine fails at any time after the airplane reaches critical-engine failure speed V_1, to continue the takeoff and reach a height of 50 feet, as indicated by the takeoff path data, before passing over the end of the runway; and

(3) To clear all obstacles either by at least 50 feet vertically (as shown by the takeoff path data) or 200 feet horizontally within the airport boundaries and 300 feet horizontally beyond the boundaries, without banking before reaching a height of 50 feet (as shown by the takeoff path data) and thereafter without banking more than 15 degrees.

(b) In applying this section, corrections must be made for the effective runway gradient. To allow for wind effect, takeoff data based on still air may be corrected by taking into account not more than 50 percent of any reported headwind component and not less than 150 percent of any reported tailwind component.

(c) This section does not apply to large nontransport category airplanes operated under § 121.173(c).

[Doc. No. 6258, 29 FR 19198, Dec. 31, 1964, as amended by Amdt. 121–159, 45 FR 41593, June 19, 1980; Amdt. 121–251, 60 FR 65928, Dec. 20, 1995]

§ 121.179 Airplanes: Reciprocating engine-powered: En route limitations: All engines operating.

(a) No person operating a reciprocating engine powered airplane may take off that airplane at a weight, allowing for normal consumption of fuel and oil, that does not allow a rate of climb (in feet per minute), with all engines operating, of at least 6.90 V_{So} (that is, the number of feet per minute is obtained by multiplying the number of knots by 6.90) at an altitude of at least 1,000 feet above the highest ground or obstruction within ten miles of each side of the intended track.

(b) This section does not apply to airplanes certificated under part 4a of the Civil Air Regulations.

(c) This section does not apply to large nontransport category airplanes operated under § 121.173(c).

[Doc. No. 6258, 29 FR 19198, Dec. 31, 1964, as amended by Amdt. 121–251, 60 FR 65928, Dec. 20, 1995]

§ 121.181 Airplanes: Reciprocating engine-powered: En route limitations: One engine inoperative.

(a) Except as provided in paragraph (b) of this section, no person operating a reciprocating engine powered airplane may take off that airplane at a weight, allowing for normal consumption of fuel and oil, that does not allow a rate of climb (in feet per minute), with one engine inoperative, of at least

$(0.079–0.106/N)\ V_{so}2$

(where N is the number of engines installed and V_{So} is expressed in knots) at an altitude of at least 1,000 feet above the highest ground or obstruction within 10 miles of each side of the intended track. However, for the purposes of this paragraph the rate of climb for airplanes certificated under part 4a of the Civil Air Regulations is $0.026\ V_{so}2$.

(b) In place of the requirements of paragraph (a) of this section, a person may, under an approved procedure, operate a reciprocating engine powered airplane, at an all-engines-operating altitude that allows the airplane to continue, after an engine failure, to an alternate airport where a landing can be made in accordance with § 121.187, allowing for normal consumption of fuel and oil. After the assumed failure, the flight path must clear the ground and any obstruction within five miles on each side of the intended track by at least 2,000 feet.

(c) If an approved procedure under paragraph (b) of this section is used, the certificate holder shall comply with the following:

(1) The rate of climb (as prescribed in the Airplane Flight Manual for the appropriate weight and altitude) used in calculating the airplane's flight path shall be diminished by an amount, in feet per minute, equal to

$(0.079–0.106/N)\ V_{so}2$

(when N is the number of engines installed and V_{So} is expressed in knots) for airplanes certificated under part 25 of this chapter and by $0.026\ V_{so}2$ for airplanes certificated under part 4a of the Civil Air Regulations.

(2) The all-engines-operating altitude shall be sufficient so that in the event the critical engine becomes inoperative at any point along the route, the flight will be able to proceed to a predetermined alternate airport by use of this procedure. In determining the takeoff weight, the airplane is assumed to pass over the critical obstruction following engine failure at a point no closer to the critical obstruction than the nearest approved radio navigational fix, unless the Administrator approves a procedure established on a different basis upon finding that adequate operational safeguards exist.

(3) The airplane must meet the provisions of paragraph (a) of this section at 1,000 feet above the airport used as an alternate in this procedure.

(4) The procedure must include an approved method of accounting for winds and temperatures that would otherwise adversely affect the flight path.

(5) In complying with this procedure fuel jettisoning is allowed if the certificate holder shows that it has an adequate training program, that proper instructions are given to the flight crew, and all other precautions are taken to insure a safe procedure.

(6) The certificate holder shall specify in the dispatch or flight release an alternate airport that meets the requirements of §121.625.

(d) This section does not apply to large nontransport category airplanes operated under §121.173(c).

[Doc. No. 6258, 29 FR 19198, Dec. 31, 1964; 30 FR 130, Jan. 7, 1965, as amended by Amdt. 121–251, 60 FR 65928, Dec. 20, 1995]

§121.183 Part 25 airplanes with four or more engines: Reciprocating engine powered: En route limitations: Two engines inoperative.

(a) No person may operate an airplane certificated under part 25 and having four or more engines unless—

(1) There is no place along the intended track that is more than 90 minutes (with all engines operating at cruising power) from an airport that meets the requirements of §121.187; or

(2) It is operated at a weight allowing the airplane, with the two critical engines inoperative, to climb at 0.013 $V_{so}2$ feet per minute (that is, the number of feet per minute is obtained by multiplying the number of knots squared by 0.013) at an altitude of 1,000 feet above the highest ground or obstruction within 10 miles on each side of the intended track, or at an altitude of 5,000 feet, whichever is higher.

(b) For the purposes of paragraph (a)(2) of this section, it is assumed that—

(1) The two engines fail at the point that is most critical with respect to the takeoff weight:

(2) Consumption of fuel and oil is normal with all engines operating up to the point where the two engines fail and with two engines operating beyond that point;

(3) Where the engines are assumed to fail at an altitude above the prescribed minimum altitude, compliance with the prescribed rate of climb at the prescribed minimum altitude need not be shown during the descent from the cruising altitude to the prescribed minimum altitude, if those requirements can be met once the prescribed minimum altitude is reached, and assuming descent to be along a net flight path and the rate of descent to be 0.013 $V_{so}2$ greater than the rate in the approved performance data; and

(4) If fuel jettisoning is provided, the airplane's weight at the point where the two engines fail is considered to be not less than that which would include enough fuel to proceed to an airport meeting the requirements of §121.187 and to arrive at an altitude of at least 1,000 feet directly over that airport.

[Doc. No. 6258, 29 FR 19198, Dec. 31, 1964; 30 FR 130, Jan. 7, 1965, as amended by Amdt. 121–251, 60 FR 65928, Dec. 20, 1995]

§121.185 Airplanes: Reciprocating engine-powered: Landing limitations: Destination airport.

(a) Except as provided in paragraph (b) of this section no person operating a reciprocating engine powered airplane may take off that airplane, unless its weight on arrival, allowing for normal consumption of fuel and oil in flight, would allow a full stop landing at the intended destination within 60 percent of the effective length of each runway described below from a point 50 feet directly above the intersection of the obstruction clearance plane and the runway. For the purposes of determining the allowable landing weight at the destination airport the following is assumed:

(1) The airplane is landed on the most favorable runway and in the most favorable direction in still air.

(2) The airplane is landed on the most suitable runway considering the probable wind velocity and direction (forecast for the expected time of arrival), the ground handling characteristics of the type of airplane, and other conditions such as landing aids and terrain, and allowing for the effect of the landing path and roll of not more than 50 percent of the headwind component or not less than 150 percent of the tailwind component.

(b) An airplane that would be prohibited from being taken off because it could not meet the requirements of paragraph (a)(2) of this section may be taken off if an alternate airport is

specified that meets all of the requirements of this section except that the airplane can accomplish a full stop landing within 70 percent of the effective length of the runway.

(c) This section does not apply to large nontransport category airplanes operated under §121.173(c).

[Doc. No. 6258, 29 FR 19198, Dec. 31, 1964; 30 FR 130, Jan. 7, 1965, as amended by Amdt. 121–251, 60 FR 65928, Dec. 20, 1995]

§121.187 Airplanes: Reciprocating engine-powered: Landing limitations: Alternate airport.

(a) No person may list an airport as an alternate airport in a dispatch or flight release unless the airplane (at the weight anticipated at the time of arrival at the airport), based on the assumptions in §121.185, can be brought to a full stop landing, within 70 percent of the effective length of the runway.

(b) This section does not apply to large nontransport category airplanes operated under §121.173(c).

[Doc. No. 6258, 29 FR 19198, Dec. 31, 1964; 30 FR 130, Jan. 7, 1965, as amended by Amdt. 121–251, 60 FR 65928, Dec. 20, 1995]

§121.189 Airplanes: Turbine engine powered: Takeoff limitations.

(a) No person operating a turbine engine powered airplane may take off that airplane at a weight greater than that listed in the Airplane Flight Manual for the elevation of the airport and for the ambient temperature existing at takeoff.

(b) No person operating a turbine engine powered airplane certificated after August 26, 1957, but before August 30, 1959 (SR422, 422A), may take off that airplane at a weight greater than that listed in the Airplane Flight Manual for the minimum distances required for takeoff. In the case of an airplane certificated after September 30, 1958 (SR422A, 422B), the takeoff distance may include a clearway distance but the clearway distance included may not be greater than ½ of the takeoff run.

(c) No person operating a turbine engine powered airplane certificated after August 29, 1959 (SR422B), may take off that airplane at a weight greater than that listed in the Airplane Flight Manual at which compliance with the following may be shown:

(1) The accelerate-stop distance must not exceed the length of the runway plus the length of any stopway.

(2) The takeoff distance must not exceed the length of the runway plus the length of any clearway except that the length of any clearway included must not be greater than one-half the length of the runway.

(3) The takeoff run must not be greater than the length of the runway.

(d) No person operating a turbine engine powered airplane may take off that airplane at a weight greater than that listed in the Airplane Flight Manual—

(1) In the case of an airplane certificated after August 26, 1957, but before October 1, 1958 (SR422), that allows a takeoff path that clears all obstacles either by at least (35+0.01D) feet vertically (D is the distance along the intended flight path from the end of the runway in feet), or by at least 200 feet horizontally within the airport boundaries and by at least 300 feet horizontally after passing the boundaries; or

(2) In the case of an airplane certificated after September 30, 1958 (SR 422A, 422B), that allows a net takeoff flight path that clears all obstacles either by a height of at least 35 feet vertically, or by at least 200 feet horizontally within the airport boundaries and by at least 300 feet horizontally after passing the boundaries.

(e) In determining maximum weights, minimum distances, and flight paths under paragraphs (a) through (d) of this section, correction must be made for the runway to be used, the elevation of the airport, the effective runway gradient, the ambient temperature and wind component at the time of takeoff, and, if operating limitations exist for the minimum distances required for takeoff from wet runways, the runway surface condition (dry or wet). Wet runway distances associated with grooved or porous friction course runways, if provided in the Airplane Flight Manual, may be used only for runways that are grooved or treated with a porous friction course (PFC) overlay, and that the operator determines are designed, constructed, and

maintained in a manner acceptable to the Administrator.

(f) For the purposes of this section, it is assumed that the airplane is not banked before reaching a height of 50 feet, as shown by the takeoff path or net takeoff flight path data (as appropriate) in the Airplane Flight Manual, and thereafter that the maximum bank is not more than 15 degrees.

(g) For the purposes of this section the terms, *takeoff distance*, *takeoff run*, *net takeoff flight path* and *takeoff path* have the same meanings as set forth in the rules under which the airplane was certificated.

[Doc. No. 6258, 29 FR 19198, Dec. 31, 1964, as amended by Amdt. 121–268, 63 FR 8321, Feb. 18, 1998]

§ 121.191 Airplanes: Turbine engine powered: En route limitations: One engine inoperative.

(a) No person operating a turbine engine powered airplane may take off that airplane at a weight, allowing for normal consumption of fuel and oil, that is greater than that which (under the approved, one engine inoperative, en route net flight path data in the Airplane Flight Manual for that airplane) will allow compliance with paragraph (a) (1) or (2) of this section, based on the ambient temperatures expected en route:

(1) There is a positive slope at an altitude of at least 1,000 feet above all terrain and obstructions within five statute miles on each side of the intended track, and, in addition, if that airplane was certificated after August 29, 1959 (SR 422B) there is a positive slope at 1,500 feet above the airport where the airplane is assumed to land after an engine fails.

(2) The net flight path allows the airplane to continue flight from the cruising altitude to an airport where a landing can be made under § 121.197, clearing all terrain and obstructions within five statute miles of the intended track by at least 2,000 feet vertically and with a positive slope at 1,000 feet above the airport where the airplane lands after an engine fails, or, if that airplane was certificated after September 30, 1958 (SR 422A, 422B), with a positive slope at 1,500 feet above the airport where the airplane lands after an engine fails.

(b) For the purposes of paragraph (a)(2) of this section, it is assumed that—

(1) The engine fails at the most critical point en route;

(2) The airplane passes over the critical obstruction, after engine failure at a point that is no closer to the obstruction than the nearest approved radio navigation fix, unless the Administrator authorizes a different procedure based on adequate operational safeguards;

(3) An approved method is used to allow for adverse winds:

(4) Fuel jettisoning will be allowed if the certificate holder shows that the crew is properly instructed, that the training program is adequate, and that all other precautions are taken to insure a safe procedure;

(5) The alternate airport is specified in the dispatch or flight release and meets the prescribed weather minimums; and

(6) The consumption of fuel and oil after engine failure is the same as the consumption that is allowed for in the approved net flight path data in the Airplane Flight Manual.

[Doc. No. 6258, 29 FR 19198, Dec. 31, 1964; 30 FR 130, Jan. 7, 1965, as amended by Amdt. 121–143, 43 FR 22641, May 25, 1978]

§ 121.193 Airplanes: Turbine engine powered: En route limitations: Two engines inoperative.

(a) *Airplanes certificated after August 26, 1957, but before October 1, 1958* (SR 422). No person may operate a turbine engine powered airplane along an intended route unless he complies with either of the following:

(1) There is no place along the intended track that is more than 90 minutes (with all engines operating at cruising power) from an airport that meets the requirements of § 121.197.

(2) Its weight, according to the two-engine-inoperative, en route, net flight path data in the Airplane Flight Manual, allows the airplane to fly from the point where the two engines are assumed to fail simultaneously to an airport that meets the requirements of

§ 121.197, with a net flight path (considering the ambient temperature anticipated along the track) having a positive slope at an altitude of at least 1,000 feet above all terrain and obstructions within five miles on each side of the intended track, or at an altitude of 5,000 feet, whichever is higher.

For the purposes of paragraph (a)(2) of this section, it is assumed that the two engines fail at the most critical point en route, that if fuel jettisoning is provided, the airplane's weight at the point where the engines fail includes enough fuel to continue to the airport and to arrive at an altitude of at least 1,000 feet directly over the airport, and that the fuel and oil consumption after engine failure is the same as the consumption allowed for in the net flight path data in the Airplane Flight Manual.

(b) *Aircraft certificated after September 30, 1958, but before August 30, 1959* (SR 422A). No person may operate a turbine engine powered airplane along an intended route unless he complies with either of the following:

(1) There is no place along the intended track that is more than 90 minutes (with all engines operating at cruising power) from an airport that meets the requirements of § 121.197.

(2) Its weight, according to the two-engine-inoperative, en route, net flight path data in the Airplane Flight Manual, allows the airplane to fly from the point where the two engines are assumed to fail simultaneously to an airport that meets the requirements of § 121.197, with a net flight path (considering the ambient temperatures anticipated along the track) having a positive slope at an altitude of at least 1,000 feet above all terrain and obstructions within 5 miles on each side of the intended track, or at an altitude of 2,000 feet, whichever is higher.

For the purposes of paragraph (b)(2) of this section, it is assumed that the two engines fail at the most critical point en route, that the airplane's weight at the point where the engines fail includes enough fuel to continue to the airport, to arrive at an altitude of at least 1,500 feet directly over the airport, and thereafter to fly for 15 minutes at cruise power or thrust, or both, and that the consumption of fuel and oil after engine failure is the same as the consumption allowed for in the net flight path data in the Airplane Flight Manual.

(c) *Aircraft certificated after August 29, 1959* (SR 422B). No person may operate a turbine engine powered airplane along an intended route unless he complies with either of the following:

(1) There is no place along the intended track that is more than 90 minutes (with all engines operating at cruising power) from an airport that meets the requirements of § 121.197.

(2) Its weight, according to the two-engine inoperative, en route, net flight path data in the Airplane Flight Manual, allows the airplane to fly from the point where the two engines are assumed to fail simultaneously to an airport that meets the requirements of § 121.197, with the net flight path (considering the ambient temperatures anticipated along the track) clearing vertically by at least 2,000 feet all terrain and obstructions within five statute miles (4.34 nautical miles) on each side of the intended track. For the purposes of this subparagraph, it is assumed that—

(i) The two engines fail at the most critical point en route;

(ii) The net flight path has a positive slope at 1,500 feet above the airport where the landing is assumed to be made after the engines fail;

(iii) Fuel jettisoning will be approved if the certificate holder shows that the crew is properly instructed, that the training program is adequate, and that all other precautions are taken to ensure a safe procedure;

(iv) The airplane's weight at the point where the two engines are assumed to fail provides enough fuel to continue to the airport, to arrive at an altitude of at least 1,500 feet directly over the airport, and thereafter to fly for 15 minutes at cruise power or thrust, or both; and

(v) The consumption of fuel and oil after the engine failure is the same as the consumption that is allowed for in the net flight path data in the Airplane Flight Manual.

§ 121.195 Airplanes: Turbine engine powered: Landing limitations: Destination airports.

(a) No person operating a turbine engine powered airplane may take off that airplane at such a weight that (allowing for normal consumption of fuel and oil in flight to the destination or alternate airport) the weight of the airplane on arrival would exceed the landing weight set forth in the Airplane Flight Manual for the elevation of the destination or alternate airport and the ambient temperature anticipated at the time of landing.

(b) Except as provided in paragraph (c), (d), or (e) of this section, no person operating a turbine engine powered airplane may take off that airplane unless its weight on arrival, allowing for normal consumption of fuel and oil in flight (in accordance with the landing distance set forth in the Airplane Flight Manual for the elevation of the destination airport and the wind conditions anticipated there at the time of landing), would allow a full stop landing at the intended destination airport within 60 percent of the effective length of each runway described below from a point 50 feet above the intersection of the obstruction clearance plane and the runway. For the purpose of determining the allowable landing weight at the destination airport the following is assumed:

(1) The airplane is landed on the most favorable runway and in the most favorable direction, in still air.

(2) The airplane is landed on the most suitable runway considering the probable wind velocity and direction and the ground handling characteristics of the airplane, and considering other conditions such as landing aids and terrain.

(c) A turbopropeller powered airplane that would be prohibited from being taken off because it could not meet the requirements of paragraph (b)(2) of this section, may be taken off if an alternate airport is specified that meets all the requirements of this section except that the airplane can accomplish a full stop landing within 70 percent of the effective length of the runway.

(d) Unless, based on a showing of actual operating landing techniques on wet runways, a shorter landing distance (but never less than that required by paragraph (b) of this section) has been approved for a specific type and model airplane and included in the Airplane Flight Manual, no person may takeoff a turbojet powered airplane when the appropriate weather reports and forecasts, or a combination thereof, indicate that the runways at the destination airport may be wet or slippery at the estimated time of arrival unless the effective runway length at the destination airport is at least 115 percent of the runway length required under paragraph (b) of this section.

(e) A turbojet powered airplane that would be prohibited from being taken off because it could not meet the requirements of paragraph (b)(2) of this section may be taken off if an alternate airport is specified that meets all the requirements of paragraph (b) of this section.

[Doc. No. 6258, 29 FR 19198, Dec. 31, 1964, as amended by Amdt. 121–9, 30 FR 8572, July 7, 1965]

§ 121.197 Airplanes: Turbine engine powered: Landing limitations: Alternate airports.

No person may list an airport as an alternate airport in a dispatch or flight release for a turbine engine powered airplane unless (based on the assumptions in § 121.195 (b)) that airplane at the weight anticipated at the time of arrival can be brought to a full stop landing within 70 percent of the effective length of the runway for turbopropeller powered airplanes and 60 percent of the effective length of the runway for turbojet powered airplanes, from a point 50 feet above the intersection of the obstruction clearance plane and the runway. In the case of an alternate airport for departure, as provided in § 121.617, allowance may be made for fuel jettisoning in addition to normal consumption of fuel and oil when determining the weight anticipated at the time of arrival.

[Doc. No. 6258, 29 FR 19198, Dec. 31, 1964, as amended by Amdt. 121–9, 30 FR 8572, July 7, 1965; Amdt. 121–179, 47 FR 33390, Aug. 2, 1982]

§ 121.198 Cargo service airplanes: Increased zero fuel and landing weights.

(a) Notwithstanding the applicable structural provisions of the airworthiness regulations but subject to paragraphs (b) through (g) of this section, a certificate holder may operate (for cargo service only) any of the following airplanes (certificated under part 4b of the Civil Air Regulations effective before March 13, 1956) at increased zero fuel and landing weights—

(1) DC–6A, DC–6B, DC–7B, and DC–7C; and

(2) L1049B, C, D, E, F, G, and H, and the L1649A when modified in accordance with supplemental type certificate SA 4–1402.

(b) The zero fuel weight (maximum weight of the airplane with no disposable fuel and oil) and the structural landing weight may be increased beyond the maximum approved in full compliance with applicable regulations only if the Administrator finds that—

(1) The increase is not likely to reduce seriously the structural strength;

(2) The probability of sudden fatigue failure is not noticeably increased;

(3) The flutter, deformation, and vibration characteristics do not fall below those required by applicable regulations; and

(4) All other applicable weight limitations will be met.

(c) No zero fuel weight may be increased by more than five percent, and the increase in the structural landing weight may not exceed the amount, in pounds, of the increase in zero fuel weight.

(d) Each airplane must be inspected in accordance with the approved special inspection procedures, for operations at increased weights, established and issued by the manufacturer of the type of airplane.

(e) Each airplane operated under this section must be operated in accordance with the passenger-carrying performance operating limitations prescribed in this part.

(f) The Airplane Flight Manual for each airplane operated under this section must be appropriately revised to include the operating limitations and information needed for operation at the increased weights.

(g) Except as provided for the carrying of persons under § 121.583 each airplane operated at an increased weight under this section must, before it is used in passenger service, be inspected under the special inspection procedures for return to passenger service established and issued by the manufacturer and approved by the Administrator.

§ 121.199 Nontransport category airplanes: Takeoff limitations.

(a) No person operating a nontransport category airplane may take off that airplane at a weight greater than the weight that would allow the airplane to be brought to a safe stop within the effective length of the runway, from any point during the takeoff before reaching 105 percent of minimum control speed (the minimum speed at which an airplane can be safely controlled in flight after an engine becomes inoperative) or 115 percent of the power off stalling speed in the takeoff configuration, whichever is greater.

(b) For the purposes of this section—

(1) It may be assumed that takeoff power is used on all engines during the acceleration;

(2) Not more than 50 percent of the reported headwind component, or not less than 150 percent of the reported tailwind component, may be taken into account;

(3) The average runway gradient (the difference between the elevations of the endpoints of the runway divided by the total length) must be considered if it is more than one-half of 1 percent;

(4) It is assumed that the airplane is operating in standard atmosphere; and

(5) The *effective length of the runway* for takeoff means the distance from the end of the runway at which the takeoff is started to a point at which the obstruction clearance plane associated with the other end of the runway intersects the runway centerline.

[Doc. No. 6258, 29 FR 19198, Dec. 31, 1964, as amended by Amdt. 121–132, 41 FR 55475, Dec. 20, 1976]

§ 121.201 Nontransport category airplanes: En route limitations: One engine inoperative.

(a) Except as provided in paragraph (b) of this section, no person operating a nontransport category airplane may take off that airplane at a weight that does not allow a rate of climb of at least 50 feet a minute, with the critical engine inoperative, at an altitude of at least 1,000 feet above the highest obstruction within five miles on each side of the intended track, or 5,000 feet, whichever is higher.

(b) Notwithstanding paragraph (a) of this section, if the Administrator finds that safe operations are not impaired, a person may operate the airplane at an altitude that allows the airplane, in case of engine failure, to clear all obstructions within 5 miles on each side of the intended track by 1,000 feet. If this procedure is used, the rate of descent for the appropriate weight and altitude is assumed to be 50 feet a minute greater than the rate in the approved performance data. Before approving such a procedure, the Administrator considers the following for the route, route segment, or area concerned:

(1) The reliability of wind and weather forecasting.

(2) The location and kinds of navigation aids.

(3) The prevailing weather conditions, particularly the frequency and amount of turbulence normally encountered.

(4) Terrain features.

(5) Air traffic control problems.

(6) Any other operational factors that affect the operation.

(c) For the purposes of this section, it is assumed that—

(1) The critical engine is inoperative;

(2) The propeller of the inoperative engine is in the minimum drag position;

(3) The wing flaps and landing gear are in the most favorable position;

(4) The operating engines are operating at the maximum continuous power available;

(5) The airplane is operating in standard atmosphere; and

(6) The weight of the airplane is progressively reduced by the anticipated consumption of fuel and oil.

§ 121.203 Nontransport category airplanes: Landing limitations: Destination airport.

(a) No person operating a nontransport category airplane may take off that airplane at a weight that—

(1) Allowing for anticipated consumption of fuel and oil, is greater than the weight that would allow a full stop landing within 60 percent of the effective length of the most suitable runway at the destination airport; and

(2) Is greater than the weight allowable if the landing is to be made on the runway—

(i) With the greatest effective length in still air; and

(ii) Required by the probable wind, taking into account not more than 50 percent of the headwind component or not less than 150 percent of the tailwind component.

(b) For the purposes of this section, it is assumed that—

(1) The airplane passes directly over the intersection of the obstruction clearance plane and the runway at a height of 50 feet in a steady gliding approach at a true indicated airspeed of at least 1.3 V_{So};

(2) The landing does not require exceptional pilot skill; and

(3) The airplane is operating in standard atmosphere.

§ 121.205 Nontransport category airplanes: Landing limitations: Alternate airport.

No person may list an airport as an alternate airport in a dispatch or flight release for a nontransport category airplane unless that airplane (at the weight anticipated at the time of arrival) based on the assumptions contained in § 121.203, can be brought to a full stop landing within 70 percent of the effective length of the runway.

§ 121.207 Provisionally certificated airplanes: Operating limitations.

In addition to the limitations in § 91.317 of this chapter, the following limitations apply to the operation of provisionally certificated airplanes by certificate holders:

(a) In addition to crewmembers, each certificate holder may carry on such an airplane only those persons who are

listed in §121.547(c) or who are specifically authorized by both the certificate holder and the Administrator.

(b) Each certificate holder shall keep a log of each flight conducted under this section and shall keep accurate and complete records of each inspection made and all maintenance performed on the airplane. The certificate holder shall make the log and records made under this section available to the manufacturer and the Administrator.

[Doc. No. 28154, 61 FR 2611, Jan. 26, 1996]

Subpart J—Special Airworthiness Requirements

SOURCE: Docket No. 6258, 29 FR 19202, Dec. 31, 1964, unless otherwise noted.

§ 121.211 Applicability.

(a) This subpart prescribes special airworthiness requirements applicable to certificate holders as stated in paragraphs (b) through (e) of this section.

(b) Except as provided in paragraph (d) of this section, each airplane type certificated under Aero Bulletin 7A or part 04 of the Civil Air Regulations in effect before November 1, 1946 must meet the special airworthiness requirements in §§121.215 through 121.283.

(c) Each certificate holder must comply with the requirements of §§121.285 through 121.291.

(d) If the Administrator determines that, for a particular model of airplane used in cargo service, literal compliance with any requirement under paragraph (b) of this section would be extremely difficult and that compliance would not contribute materially to the objective sought, he may require compliance only with those requirements that are necessary to accomplish the basic objectives of this part.

(e) No person may operate under this part a nontransport category airplane type certificated after December 31, 1964, unless the airplane meets the special airworthiness requirements in §121.293.

[Doc. No. 28154, 60 FR 65928, Dec. 20, 1995]

§ 121.213 [Reserved]

§ 121.215 Cabin interiors.

(a) Except as provided in §121.312, each compartment used by the crew or passengers must meet the requirements of this section.

(b) Materials must be at least flash resistant.

(c) The wall and ceiling linings and the covering of upholstering, floors, and furnishings must be flame resistant.

(d) Each compartment where smoking is to be allowed must be equipped with self-contained ash trays that are completely removable and other compartments must be placarded against smoking.

(e) Each receptacle for used towels, papers, and wastes must be of fire-resistant material and must have a cover or other means of containing possible fires started in the receptacles.

[Doc. No. 6258, 29 FR 19202, Dec. 31, 1964, as amended by Amdt. 121–84, 37 FR 3974, Feb. 24, 1972]

§ 121.217 Internal doors.

In any case where internal doors are equipped with louvres or other ventilating means, there must be a means convenient to the crew for closing the flow of air through the door when necessary.

§ 121.219 Ventilation.

Each passenger or crew compartment must be suitably ventilated. Carbon monoxide concentration may not be more than one part in 20,000 parts of air, and fuel fumes may not be present. In any case where partitions between compartments have louvres or other means allowing air to flow between compartments, there must be a means convenient to the crew for closing the flow of air through the partitions, when necessary.

§ 121.221 Fire precautions.

(a) Each compartment must be designed so that, when used for storing cargo or baggage, it meets the following requirements:

(1) No compartment may include controls, wiring, lines, equipment, or accessories that would upon damage or

failure, affect the safe operation of the airplane unless the item is adequately shielded, isolated, or otherwise protected so that it cannot be damaged by movement of cargo in the compartment and so that damage to or failure of the item would not create a fire hazard in the compartment.

(2) Cargo or baggage may not interfere with the functioning of the fire-protective features of the compartment.

(3) Materials used in the construction of the compartments, including tie-down equipment, must be at least flame resistant.

(4) Each compartment must include provisions for safeguarding against fires according to the classifications set forth in paragraphs (b) through (f) of this section.

(b) *Class A.* Cargo and baggage compartments are classified in the ''A'' category if—

(1) A fire therein would be readily discernible to a member of the crew while at his station; and

(2) All parts of the compartment are easily accessible in flight.

There must be a hand fire extinguisher available for each Class A compartment.

(c) *Class B.* Cargo and baggage compartments are classified in the ''B'' category if enough access is provided while in flight to enable a member of the crew to effectively reach all of the compartment and its contents with a hand fire extinguisher and the compartment is so designed that, when the access provisions are being used, no hazardous amount of smoke, flames, or extinguishing agent enters any compartment occupied by the crew or passengers. Each Class B compartment must comply with the following:

(1) It must have a separate approved smoke or fire detector system to give warning at the pilot or flight engineer station.

(2) There must be a hand fire extinguisher available for the compartment.

(3) It must be lined with fire-resistant material, except that additional service lining of flame-resistant material may be used.

(d) *Class C.* Cargo and baggage compartments are classified in the ''C'' category if they do not conform with the requirements for the ''A'', ''B'', ''D'', or ''E'' categories. Each Class C compartment must comply with the following:

(1) It must have a separate approved smoke or fire detector system to give warning at the pilot or flight engineer station.

(2) It must have an approved built-in fire-extinguishing system controlled from the pilot or flight engineer station.

(3) It must be designed to exclude hazardous quantities of smoke, flames, or extinguishing agents from entering into any compartment occupied by the crew or passengers.

(4) It must have ventilation and draft controlled so that the extinguishing agent provided can control any fire that may start in the compartment.

(5) It must be lined with fire-resistant material, except that additional service lining of flame-resistant material may be used.

(e) *Class D.* Cargo and baggage compartments are classified in the ''D'' category if they are so designed and constructed that a fire occurring therein will be completely confined without endangering the safety of the airplane or the occupants. Each Class D compartment must comply with the following:

(1) It must have a means to exclude hazardous quantities of smoke, flames, or noxious gases from entering any compartment occupied by the crew or passengers.

(2) Ventilation and drafts must be controlled within each compartment so that any fire likely to occur in the compartment will not progress beyond safe limits.

(3) It must be completely lined with fire-resistant material.

(4) Consideration must be given to the effect of heat within the compartment on adjacent critical parts of the airplane.

(f) *Class E.* On airplanes used for the carriage of cargo only, the cabin area may be classified as a Class ''E'' compartment. Each Class E compartment must comply with the following:

(1) It must be completely lined with fire-resistant material.

(2) It must have a separate system of an approved type smoke or fire detector to give warning at the pilot or flight engineer station.

(3) It must have a means to shut off the ventilating air flow to or within the compartment and the controls for that means must be accessible to the flight crew in the crew compartment.

(4) It must have a means to exclude hazardous quantities of smoke, flames, or noxious gases from entering the flight crew compartment.

(5) Required crew emergency exits must be accessible under all cargo loading conditions.

§ 121.223 Proof of compliance with § 121.221.

Compliance with those provisions of § 121.221 that refer to compartment accessibility, the entry of hazardous quantities of smoke or extinguishing agent into compartments occupied by the crew or passengers, and the dissipation of the extinguishing agent in Class ''C'' compartments must be shown by tests in flight. During these tests it must be shown that no inadvertent operation of smoke or fire detectors in other compartments within the airplane would occur as a result of fire contained in any one compartment, either during the time it is being extinguished, or thereafter, unless the extinguishing system floods those compartments simultaneously.

§ 121.225 Propeller deicing fluid.

If combustible fluid is used for propeller deicing, the certificate holder must comply with § 121.255.

§ 121.227 Pressure cross-feed arrangements.

(a) Pressure cross-feed lines may not pass through parts of the airplane used for carrying persons or cargo unless—

(1) There is a means to allow crewmembers to shut off the supply of fuel to these lines; or

(2) The lines are enclosed in a fuel and fume-proof enclosure that is ventilated and drained to the exterior of the airplane.

However, such an enclosure need not be used if those lines incorporate no fittings on or within the personnel or cargo areas and are suitably routed or protected to prevent accidental damage.

(b) Lines that can be isolated from the rest of the fuel system by valves at each end must incorporate provisions for relieving excessive pressures that may result from exposure of the isolated line to high temperatures.

§ 121.229 Location of fuel tanks.

(a) Fuel tanks must be located in accordance with § 121.255.

(b) No part of the engine nacelle skin that lies immediately behind a major air outlet from the engine compartment may be used as the wall of an integral tank.

(c) Fuel tanks must be isolated from personnel compartments by means of fume- and fuel-proof enclosures.

§ 121.231 Fuel system lines and fittings.

(a) Fuel lines must be installed and supported so as to prevent excessive vibration and so as to be adequate to withstand loads due to fuel pressure and accelerated flight conditions.

(b) Lines connected to components of the airplanes between which there may be relative motion must incorporate provisions for flexibility.

(c) Flexible connections in lines that may be under pressure and subject to axial loading must use flexible hose assemblies rather than hose clamp connections.

(d) Flexible hose must be of an acceptable type or proven suitable for the particular application.

§ 121.233 Fuel lines and fittings in designated fire zones.

Fuel lines and fittings in each designated fire zone must comply with § 121.259.

§ 121.235 Fuel valves.

Each fuel valve must—

(a) Comply with § 121.257;

(b) Have positive stops or suitable index provisions in the ''on'' and ''off'' positions; and

(c) Be supported so that loads resulting from its operation or from accelerated flight conditions are not transmitted to the lines connected to the valve.

§ 121.237 Oil lines and fittings in designated fire zones.

Oil line and fittings in each designated fire zone must comply with § 121.259.

§ 121.239 Oil valves.

(a) Each oil valve must—

(1) Comply with § 121.257;

(2) Have positive stops or suitable index provisions in the ''on'' and ''off'' positions; and

(3) Be supported so that loads resulting from its operation or from accelerated flight conditions are not transmitted to the lines attached to the valve.

(b) The closing of an oil shutoff means must not prevent feathering the propeller, unless equivalent safety provisions are incorporated.

§ 121.241 Oil system drains.

Accessible drains incorporating either a manual or automatic means for positive locking in the closed position, must be provided to allow safe drainage of the entire oil system.

§ 121.243 Engine breather lines.

(a) Engine breather lines must be so arranged that condensed water vapor that may freeze and obstruct the line cannot accumulate at any point.

(b) Engine breathers must discharge in a location that does not constitute a fire hazard in case foaming occurs and so that oil emitted from the line does not impinge upon the pilots' windshield.

(c) Engine breathers may not discharge into the engine air induction system.

§ 121.245 Fire walls.

Each engine, auxiliary power unit, fuel-burning heater, or other item of combustion equipment that is intended for operation in flight must be isolated from the rest of the airplane by means of firewalls or shrouds, or by other equivalent means.

§ 121.247 Fire-wall construction.

Each fire wall and shroud must—

(a) Be so made that no hazardous quantity of air, fluids, or flame can pass from the engine compartment to other parts of the airplane;

(b) Have all openings in the fire wall or shroud sealed with close-fitting fireproof grommets, bushings, or firewall fittings;

(c) Be made of fireproof material; and

(d) Be protected against corrosion.

§ 121.249 Cowling.

(a) Cowling must be made and supported so as to resist the vibration inertia, and air loads to which it may be normally subjected.

(b) Provisions must be made to allow rapid and complete drainage of the cowling in normal ground and flight attitudes. Drains must not discharge in locations constituting a fire hazard. Parts of the cowling that are subjected to high temperatures because they are near exhaust system parts or because of exhaust gas impingement must be made of fireproof material. Unless otherwise specified in these regulations all other parts of the cowling must be made of material that is at least fire resistant.

§ 121.251 Engine accessory section diaphragm.

Unless equivalent protection can be shown by other means, a diaphragm that complies with § 121.247 must be provided on air-cooled engines to isolate the engine power section and all parts of the exhaust system from the engine accessory compartment.

§ 121.253 Powerplant fire protection.

(a) Designated fire zones must be protected from fire by compliance with §§ 121.255 through 121.261.

(b) Designated fire zones are—

(1) Engine accessory sections;

(2) Installations where no isolation is provided between the engine and accessory compartment; and

(3) Areas that contain auxiliary power units, fuel-burning heaters, and other combustion equipment.

§ 121.255 Flammable fluids.

(a) No tanks or reservoirs that are a part of a system containing flammable fluids or gases may be located in designated fire zones, except where the fluid contained, the design of the system, the materials used in the tank,

the shutoff means, and the connections, lines, and controls provide equivalent safety.

(b) At least one-half inch of clear airspace must be provided between any tank or reservoir and a firewall or shroud isolating a designated fire zone.

§ 121.257 Shutoff means.

(a) Each engine must have a means for shutting off or otherwise preventing hazardous amounts of fuel, oil, deicer, and other flammable fluids from flowing into, within, or through any designated fire zone. However, means need not be provided to shut off flow in lines that are an integral part of an engine.

(b) The shutoff means must allow an emergency operating sequence that is compatible with the emergency operation of other equipment, such as feathering the propeller, to facilitate rapid and effective control of fires.

(c) Shutoff means must be located outside of designated fire zones, unless equivalent safety is provided, and it must be shown that no hazardous amount of flammable fluid will drain into any designated fire zone after a shut off.

(d) Adequate provisions must be made to guard against inadvertent operation of the shutoff means and to make it possible for the crew to reopen the shutoff means after it has been closed.

§ 121.259 Lines and fittings.

(a) Each line, and its fittings, that is located in a designated fire zone, if it carries flammable fluids or gases under pressure, or is attached directly to the engine, or is subject to relative motion between components (except lines and fittings forming an integral part of the engine), must be flexible and fire-resistant with fire-resistant, factory-fixed, detachable, or other approved fire-resistant ends.

(b) Lines and fittings that are not subject to pressure or to relative motion between components must be of fire-resistant materials.

§ 121.261 Vent and drain lines.

All vent and drain lines and their fittings, that are located in a designated fire zone must, if they carry flammable fluids or gases, comply with § 121.259, if the Administrator finds that the rupture or breakage of any vent or drain line may result in a fire hazard.

§ 121.263 Fire-extinguishing systems.

(a) Unless the certificate holder shows that equivalent protection against destruction of the airplane in case of fire is provided by the use of fireproof materials in the nacelle and other components that would be subjected to flame, fire-extinguishing systems must be provided to serve all designated fire zones.

(b) Materials in the fire-extinguishing system must not react chemically with the extinguishing agent so as to be a hazard.

§ 121.265 Fire-extinguishing agents.

Only methyl bromide, carbon dioxide, or another agent that has been shown to provide equivalent extinguishing action may be used as a fire-extinguishing agent. If methyl bromide or any other toxic extinguishing agent is used, provisions must be made to prevent harmful concentrations of fluid or fluid vapors from entering any personnel compartment either because of leakage during normal operation of the airplane or because of discharging the fire extinguisher on the ground or in flight when there is a defect in the extinguishing system. If a methyl bromide system is used, the containers must be charged with dry agent and sealed by the fire-extinguisher manufacturer or some other person using satisfactory recharging equipment. If carbon dioxide is used, it must not be possible to discharge enough gas into the personnel compartments to create a danger of suffocating the occupants.

§ 121.267 Extinguishing agent container pressure relief.

Extinguishing agent containers must be provided with a pressure relief to prevent bursting of the container because of excessive internal pressures. The discharge line from the relief connection must terminate outside the airplane in a place convenient for inspection on the ground. An indicator must be provided at the discharge end

of the line to provide a visual indication when the container has discharged.

§ 121.269 Extinguishing agent container compartment temperature.

Precautions must be taken to insure that the extinguishing agent containers are installed in places where reasonable temperatures can be maintained for effective use of the extinguishing system.

§ 121.271 Fire-extinguishing system materials.

(a) Except as provided in paragraph (b) of this section, each component of a fire-extinguishing system that is in a designated fire zone must be made of fireproof materials.

(b) Connections that are subject to relative motion between components of the airplane must be made of flexible materials that are at least fire-resistant and be located so as to minimize the probability of failure.

§ 121.273 Fire-detector systems.

Enough quick-acting fire detectors must be provided in each designated fire zone to assure the detection of any fire that may occur in that zone.

§ 121.275 Fire detectors.

Fire detectors must be made and installed in a manner that assures their ability to resist, without failure, all vibration, inertia, and other loads to which they may be normally subjected. Fire detectors must be unaffected by exposure to fumes, oil, water, or other fluids that may be present.

§ 121.277 Protection of other airplane components against fire.

(a) Except as provided in paragraph (b) of this section, all airplane surfaces aft of the nacelles in the area of one nacelle diameter on both sides of the nacelle centerline must be made of material that is at least fire resistant.

(b) Paragraph (a) of this section does not apply to tail surfaces lying behind nacelles unless the dimensional configuration of the airplane is such that the tail surfaces could be affected readily by heat, flames, or sparks emanating from a designated fire zone or from the engine compartment of any nacelle.

§ 121.279 Control of engine rotation.

(a) Except as provided in paragraph (b) of this section, each airplane must have a means of individually stopping and restarting the rotation of any engine in flight.

(b) In the case of turbine engine installations, a means of stopping the rotation need be provided only if the Administrator finds that rotation could jeopardize the safety of the airplane.

§ 121.281 Fuel system independence.

(a) Each airplane fuel system must be arranged so that the failure of any one component does not result in the irrecoverable loss of power of more than one engine.

(b) A separate fuel tank need not be provided for each engine if the certificate holder shows that the fuel system incorporates features that provide equivalent safety.

§ 121.283 Induction system ice prevention.

A means for preventing the malfunctioning of each engine due to ice accumulation in the engine air induction system must be provided for each airplane.

§ 121.285 Carriage of cargo in passenger compartments.

(a) Except as provided in paragraph (b), (c), or (d) or this section, no certificate holder may carry cargo in the passenger compartment of an airplane.

(b) Cargo may be carried anywhere in the passenger compartment if it is carried in an approved cargo bin that meets the following requirements:

(1) The bin must withstand the load factors and emergency landing conditions applicable to the passenger seats of the airplane in which the bin is installed, multiplied by a factor of 1.15, using the combined weight of the bin and the maximum weight of cargo that may be carried in the bin.

(2) The maximum weight of cargo that the bin is approved to carry and any instructions necessary to insure proper weight distribution within the bin must be conspicuously marked on the bin.

(3) The bin may not impose any load on the floor or other structure of the airplane that exceeds the load limitations of that structure.

(4) The bin must be attached to the seat tracks or to the floor structure of the airplane, and its attachment must withstand the load factors and emergency landing conditions applicable to the passenger seats of the airplane in which the bin is installed, multiplied by either the factor 1.15 or the seat attachment factor specified for the airplane, whichever is greater, using the combined weight of the bin and the maximum weight of cargo that may be carried in the bin.

(5) The bin may not be installed in a position that restricts access to or use of any required emergency exit, or of the aisle in the passenger compartment.

(6) The bin must be fully enclosed and made of material that is at least flame resistant.

(7) Suitable safeguards must be provided within the bin to prevent the cargo from shifting under emergency landing conditions.

(8) The bin may not be installed in a position that obscures any passenger's view of the ''seat belt'' sign ''no smoking'' sign, or any required exit sign, unless an auxiliary sign or other approved means for proper notification of the passenger is provided.

(c) Cargo may be carried aft of a bulkhead or divider in any passenger compartment provided the cargo is restrained to the load factors in §25.561(b)(3) and is loaded as follows:

(1) It is properly secured by a safety belt or other tiedown having enough strength to eliminate the possibility of shifting under all normally anticipated flight and ground conditions.

(2) It is packaged or covered in a manner to avoid possible injury to passengers and passenger compartment occupants.

(3) It does not impose any load on seats or the floor structure that exceeds the load limitation for those components.

(4) Its location does not restrict access to or use of any required emergency or regular exit, or of the aisle in the passenger compartment.

(5) Its location does not obscure any passenger's view of the ''seat belt'' sign, ''no smoking'' sign, or required exit sign, unless an auxiliary sign or other approved means for proper notification of the passenger is provided.

(d) Cargo, including carry-on baggage, may be carried anywhere in the passenger compartment of a nontransport category airplane type certificated after December 31, 1964, if it is carried in an approved cargo rack, bin, or compartment installed in or on the airplane, if it is secured by an approved means, or if it is carried in accordance with each of the following:

(1) For cargo, it is properly secured by a safety belt or other tie-down having enough strength to eliminate the possibility of shifting under all normally anticipated flight and ground conditions, or for carry-on baggage, it is restrained so as to prevent its movement during air turbulence.

(2) It is packaged or covered to avoid possible injury to occupants.

(3) It does not impose any load on seats or in the floor structure that exceeds the load limitation for those components.

(4) It is not located in a position that obstructs the access to, or use of, any required emergency or regular exit, or the use of the aisle between the crew and the passenger compartment, or is located in a position that obscures any passenger's view of the ''seat belt'' sign, ''no smoking'' sign or placard, or any required exit sign, unless an auxiliary sign or other approved means for proper notification of the passengers is provided.

(5) It is not carried directly above seated occupants.

(6) It is stowed in compliance with this section for takeoff and landing.

(7) For cargo-only operations, paragraph (d)(4) of this section does not apply if the cargo is loaded so that at least one emergency or regular exit is available to provide all occupants of the airplane a means of unobstructed exit from the airplane if an emergency occurs.

[Doc. No. 6258, 29 FR 19202, Dec. 31, 1964, as amended by Amdt. 121–179, 47 FR 33390, Aug. 2, 1982; Amdt. 121–251, 60 FR 65928, Dec. 20, 1995]

§ 121.287 Carriage of cargo in cargo compartments.

When cargo is carried in cargo compartments that are designed to require the physical entry of a crewmember to extinguish any fire that may occur during flight, the cargo must be loaded so as to allow a crewmember to effectively reach all parts of the compartment with the contents of a hand fire extinguisher.

§ 121.289 Landing gear: Aural warning device.

(a) Except for airplanes that comply with the requirements of § 25.729 of this chapter on or after January 6, 1992, each airplane must have a landing gear aural warning device that functions continuously under the following conditions:

(1) For airplanes with an established approach wing-flap position, whenever the wing flaps are extended beyond the maximum certificated approach climb configuration position in the Airplane Flight Manual and the landing gear is not fully extended and locked.

(2) For airplanes without an established approach climb wing-flap position, whenever the wing flaps are extended beyond the position at which landing gear extension is normally performed and the landing gear is not fully extended and locked.

(b) The warning system required by paragraph (a) of this section—

(1) May not have a manual shutoff;

(2) Must be in addition to the throttle-actuated device installed under the type certification airworthiness requirements; and

(3) May utilize any part of the throttle-actuated system including the aural warning device.

(c) The flap position sensing unit may be installed at any suitable place in the airplane.

[Doc. No. 6258, 29 FR 19202, Dec. 31, 1964, as amended by Amdt. 121–3, 30 FR 3638, Mar. 19, 1965; Amdt. 121–130, 41 FR 47229, Oct. 28, 1976; Amdt. 121–227, 56 FR 63762, Dec. 5, 1991; Amdt. 121–251, 60 FR 65929, Dec. 20, 1995]

§ 121.291 Demonstration of emergency evacuation procedures.

(a) Except as provided in paragraph (a)(1) of this section, each certificate holder must conduct an actual demonstration of emergency evacuation procedures in accordance with paragraph (a) of appendix D to this part to show that each type and model of airplane with a seating capacity of more than 44 passengers to be used in its passenger-carrying operations allows the evacuation of the full capacity, including crewmembers, in 90 seconds or less.

(1) An actual demonstration need not be conducted if that airplane type and model has been shown to be in compliance with this paragraph in effect on or after October 24, 1967, or, if during type certification, with § 25.803 of this chapter in effect on or after December 1, 1978.

(2) Any actual demonstration conducted after September 27, 1993, must be in accordance with paragraph (a) of appendix D to this part in effect on or after that date or with § 25.803 in effect on or after that date.

(b) Each certificate holder conducting operations with airplanes with a seating capacity of more than 44 passengers must conduct a partial demonstration of emergency evacuation procedures in accordance with paragraph (c) of this section upon:

(1) Initial introduction of a type and model of airplane into passenger-carrying operation;

(2) Changing the number, location, or emergency evacuation duties or procedures of flight attendants who are required by § 121.391; or

(3) Changing the number, location, type of emergency exits, or type of opening mechanism on emergency exits available for evacuation.

(c) In conducting the partial demonstration required by paragraph (b) of this section, each certificate holder must:

(1) Demonstrate the effectiveness of its crewmember emergency training and evacuation procedures by conducting a demonstration, not requiring passengers and observed by the Administrator, in which the flight attendants for that type and model of airplane, using that operator's line operating procedures, open 50 percent of the required floor-level emergency exits and 50 percent of the required non-floor-level emergency exits whose opening by a flight attendant is defined as an emergency evacuation duty under

§121.397, and deploy 50 percent of the exit slides. The exits and slides will be selected by the administrator and must be ready for use within 15 seconds;

(2) Apply for and obtain approval from the certificate-holding district office before conducting the demonstration;

(3) Use flight attendants in this demonstration who have been selected at random by the Administrator, have completed the certificate holder's FAA-approved training program for the type and model of airplane, and have passed a written or practical examination on the emergency equipment and procedures; and

(4) Apply for and obtain approval from the certificate-holding district office before commencing operations with this type and model airplane.

(d) Each certificate holder operating or proposing to operate one or more landplanes in extended overwater operations, or otherwise required to have certain equipment under §121.339, must show, by simulated ditching conducted in accordance with paragraph (b) of appendix D to this part, that it has the ability to efficiently carry out its ditching procedures. For certificate holders subject to §121.2(a)(1), this paragraph applies only when a new type or model airplane is introduced into the certificate holder's operations after January 19, 1996.

(e) For a type and model airplane for which the simulated ditching specified in paragraph (d) has been conducted by a part 121 certificate holder, the requirements of paragraphs (b)(2), (b)(4), and (b)(5) of appendix D to this part are complied with if each life raft is removed from stowage, one life raft is launched and inflated (or one slide life raft is inflated) and crewmembers assigned to the inflated life raft display and describe the use of each item of required emergency equipment. The life raft or slide life raft to be inflated will be selected by the Administrator.

[Doc. No. 21269, 46 FR 61453, Dec. 17, 1981, as amended by Amdt. 121–233, 58 FR 45230, Aug. 26, 1993; Amdt. 121–251, 60 FR 65929, Dec. 20, 1995; Amdt. 121–307, 69 FR 67499, Nov. 17, 2004]

§121.293 Special airworthiness requirements for nontransport category airplanes type certificated after December 31, 1964.

No certificate holder may operate a nontransport category airplane manufactured after December 20, 1999 unless the airplane contains a takeoff warning system that meets the requirements of 14 CFR 25.703. However, the takeoff warning system does not have to cover any device for which it has been demonstrated that takeoff with that device in the most adverse position would not create a hazardous condition.

[Doc. No. 28154, 60 FR 65929, Dec. 20, 1995]

Subpart K—Instrument and Equipment Requirements

SOURCE: Docket No. 6258, 29 FR 19205, Dec. 31, 1964, unless otherwise noted.

§121.301 Applicability.

This subpart prescribes instrument and equipment requirements for all certificate holders.

§121.303 Airplane instruments and equipment.

(a) Unless otherwise specified, the instrument and equipment requirements of this subpart apply to all operations under this part.

(b) Instruments and equipment required by §§121.305 through 121.359 and 121.803 must be approved and installed in accordance with the airworthiness requirements applicable to them.

(c) Each airspeed indicator must be calibrated in knots, and each airspeed limitation and item of related information in the Airplane Flight Manual and pertinent placards must be expressed in knots.

(d) Except as provided in §§121.627(b) and 121.628, no person may take off any airplane unless the following instruments and equipment are in operable condition:

(1) Instruments and equipment required to comply with airworthiness requirements under which the airplane is type certificated and as required by §§121.213 through 121.283 and 121.289.

(2) Instruments and equipment specified in §§121.305 through 121.321, 121.359, 121.360, and 121.803 for all operations,

and the instruments and equipment specified in §§ 121.323 through 121.351 for the kind of operation indicated, wherever these items are not already required by paragraph (d)(1) of this section.

[Doc. No. 6258, 29 FR 19202, Dec. 31, 1964, as amended by Amdt. 121–44, 33 FR 14406, Sept. 25, 1968; Amdt. 121–65, 35 FR 12709, Aug. 11, 1970; Amdt. 121–114, 39 FR 44440, Dec. 24, 1974; Amdt. 121–126, 40 FR 55314, Nov. 28, 1975; Amdt. 121–222, 56 FR 12310, Mar. 22, 1991; Amdt. 121–253, 61 FR 2611, Jan. 26, 1996; Amdt. 121–281, 66 FR 19043, Apr. 12, 2001]

§ 121.305 Flight and navigational equipment.

No person may operate an airplane unless it is equipped with the following flight and navigational instruments and equipment:

(a) An airspeed indicating system with heated pitot tube or equivalent means for preventing malfunctioning due to icing.

(b) A sensitive altimeter.

(c) A sweep-second hand clock (or approved equivalent).

(d) A free-air temperature indicator.

(e) A gyroscopic bank and pitch indicator (artificial horizon).

(f) A gyroscopic rate-of-turn indicator combined with an integral slip-skid indicator (turn-and-bank indicator) except that only a slip-skid indicator is required when a third attitude instrument system usable through flight attitudes of 360° of pitch and roll is installed in accordance with paragraph (k) of this section.

(g) A gyroscopic direction indicator (directional gyro or equivalent).

(h) A magnetic compass.

(i) A vertical speed indicator (rate-of-climb indicator).

(j) On the airplane described in this paragraph, in addition to two gyroscopic bank and pitch indicators (artificial horizons) for use at the pilot stations, a third such instrument is installed in accordance with paragraph (k) of this section:

(1) On each turbojet powered airplane.

(2) On each turbopropeller powered airplane having a passenger-seat configuration of more than 30 seats, excluding each crewmember seat, or a payload capacity of more than 7,500 pounds.

(3) On each turbopropeller powered airplane having a passenger-seat configuration of 30 seats or fewer, excluding each crewmember seat, and a payload capacity of 7,500 pounds or less that is manufactured on or after March 20, 1997.

(4) After December 20, 2010, on each turbopropeller powered airplane having a passenger seat configuration of 10–30 seats and a payload capacity of 7,500 pounds or less that was manufactured before March 20, 1997.

(k) When required by paragraph (j) of this section, a third gyroscopic bank-and-pitch indicator (artificial horizon) that:

(1) Is powered from a source independent of the electrical generating system;

(2) Continues reliable operation for a minimum of 30 minutes after total failure of the electrical generating system;

(3) Operates independently of any other attitude indicating system;

(4) Is operative without selection after total failure of the electrical generating system;

(5) Is located on the instrument panel in a position acceptable to the Administrator that will make it plainly visible to and usable by each pilot at his or her station; and

(6) Is appropriately lighted during all phases of operation.

[Doc. No. 6258, 29 FR 19205, Dec. 31, 1964, as amended by Amdt. 121–57, 35 FR 304, Jan. 8, 1970; Amdt. 121–60, 35 FR 7108, May 6, 1970; Amdt. 121–81, 36 FR 23050, Dec. 3, 1971; Amdt. 121–130, 41 FR 47229, Oct. 28, 1976; Amdt. 121–230, 58 FR 12158, Mar. 3, 1993; Amdt. 121–251, 60 FR 65929, Dec. 20, 1995; Amdt. 121–262, 62 FR 13256, Mar. 19, 1997]

§ 121.306 Portable electronic devices.

(a) Except as provided in paragraph (b) of this section, no person may operate, nor may any operator or pilot in command of an aircraft allow the operation of, any portable electronic device on any U.S.-registered civil aircraft operating under this part.

(b) Paragraph (a) of this section does not apply to—

(1) Portable voice recorders;

(2) Hearing aids;

(3) Heart pacemakers;

(4) Electric shavers; or

(5) Any other portable electronic device that the part 119 certificate holder

has determined will not cause interference with the navigation or communication system of the aircraft on which it is to be used.

(c) The determination required by paragraph (b)(5) of this section shall be made by that part 119 certificate holder operating the particular device to be used.

[Doc. No. FAA–1998–4954, 64 FR 1080, Jan. 7, 1999]

§ 121.307 Engine instruments.

Unless the Administrator allows or requires different instrumentation for turbine engine powered airplanes to provide equivalent safety, no person may conduct any operation under this part without the following engine instruments:

(a) A carburetor air temperature indicator for each engine.

(b) A cylinder head temperature indicator for each air-cooled engine.

(c) A fuel pressure indicator for each engine.

(d) A fuel flowmeter or fuel mixture indicator for each engine not equipped with an automatic altitude mixture control.

(e) A means for indicating fuel quantity in each fuel tank to be used.

(f) A manifold pressure indicator for each engine.

(g) An oil pressure indicator for each engine.

(h) An oil quantity indicator for each oil tank when a transfer or separate oil reserve supply is used.

(i) An oil-in temperature indicator for each engine.

(j) A tachometer for each engine.

(k) An independent fuel pressure warning device for each engine or a master warning device for all engines with a means for isolating the individual warning circuits from the master warning device.

(l) A device for each reversible propeller, to indicate to the pilot when the propeller is in reverse pitch, that complies with the following:

(1) The device may be actuated at any point in the reversing cycle between the normal low pitch stop position and full reverse pitch, but it may not give an indication at or above the normal low pitch stop position.

(2) The source of indication must be actuated by the propeller blade angle or be directly responsive to it.

§ 121.308 Lavatory fire protection.

(a) Except as provided in paragraphs (c) and (d) of this section, no person may operate a passenger-carrying airplane unless each lavatory in the airplane is equipped with a smoke detector system or equivalent that provides a warning light in the cockpit or provides a warning light or audio warning in the passenger cabin which would be readily detected by a flight attendant, taking into consideration the positioning of flight attendants throughout the passenger compartment during various phases of flight.

(b) Except as provided in paragraph (c) of this section, no person may operate a passenger-carrying airplane unless each lavatory in the airplane is equipped with a built-in fire extinguisher for each disposal receptacle for towels, paper, or waste located within the lavatory. The built-in fire extinguisher must be designed to discharge automatically into each disposal receptacle upon occurrence of a fire in the receptacle.

(c) Until December 22, 1997, a certificate holder described in §121.2(a) (1) or (2) may operate an airplane with a passenger seat configuration of 30 or fewer seats that does not comply with the smoke detector system requirements described in paragraph (a) of this section and the fire extinguisher requirements described in paragraph (b) of this section.

(d) After December 22, 1997, no person may operate a nontransport category airplane type certificated after December 31, 1964, with a passenger seat configuration of 10–19 seats unless that airplane complies with the smoke detector system requirements described in paragraph (a) of this section, except that the smoke detector system or equivalent must provide a warning light in the cockpit or an audio warning that would be readily detected by the flightcrew.

[Doc. No. 28154, 60 FR 65929, Dec. 20, 1995]

§ 121.309 Emergency equipment.

(a) *General:* No person may operate an airplane unless it is equipped with

the emergency equipment listed in this section and in §121.310.

(b) Each item of emergency and flotation equipment listed in this section and in §§121.310, 121.339, and 121.340—

(1) Must be inspected regularly in accordance with inspection periods established in the operations specifications to ensure its condition for continued serviceability and immediate readiness to perform its intended emergency purposes;

(2) Must be readily accessible to the crew and, with regard to equipment located in the passenger compartment, to passengers;

(3) Must be clearly identified and clearly marked to indicate its method of operation; and

(4) When carried in a compartment or container, must be carried in a compartment or container marked as to contents and the compartment or container, or the item itself, must be marked as to date of last inspection.

(c) *Hand fire extinguishers for crew, passenger, cargo, and galley compartments.* Hand fire extinguishers of an approved type must be provided for use in crew, passenger, cargo, and galley compartments in accordance with the following:

(1) The type and quantity of extinguishing agent must be suitable for the kinds of fires likely to occur in the compartment where the extinguisher is intended to be used and, for passenger compartments, must be designed to minimize the hazard of toxic gas concentrations.

(2) *Cargo compartments.* At least one hand fire extinguisher must be conveniently located for use in each class E cargo compartment that is accessible to crewmembers during flight.

(3) *Galley compartments.* At least one hand fire extinguisher must be conveniently located for use in each galley located in a compartment other than a passenger, cargo, or crew compartment.

(4) *Flightcrew compartment.* At least one hand fire extinguisher must be conveniently located on the flight deck for use by the flightcrew.

(5) *Passenger compartments.* Hand fire extinguishers for use in passenger compartments must be conveniently located and, when two or more are required, uniformly distributed throughout each compartment. Hand fire extinguishers shall be provided in passenger compartments as follows:

(i) For airplanes having passenger seats accommodating more than 6 but fewer than 31 passengers, at least one.

(ii) For airplanes having passenger seats accommodating more than 30 but fewer than 61 passengers, at least two.

(iii) For airplanes having passenger seats accommodating more than 60 passengers, there must be at least the following number of hand fire extinguishers:

MINIMUM NUMBER OF HAND FIRE EXTINGUISHERS

Passenger seating accommodations:	
61 through 200	3
201 through 300	4
301 through 400	5
401 through 500	6
501 through 600	7
601 or more	8

(6) Notwithstanding the requirement for uniform distribution of hand fire extinguishers as prescribed in paragraph (c)(5) of this section, for those cases where a galley is located in a passenger compartment, at least one hand fire extinguisher must be conveniently located and easily accessible for use in the galley.

(7) At least two of the required hand fire extinguisher installed in passenger-carrying airplanes must contain Halon 1211 (bromochlorofluoromethane) or equivalent as the extinguishing agent. At least one hand fire extinguisher in the passenger compartment must contain Halon 1211 or equivalent.

(d) [Reserved]

(e) *Crash ax.* Except for nontransport category airplanes type certificated after December 31, 1964, each airplane must be equipped with a crash ax.

(f) *Megaphones.* Each passenger-carrying airplane must have a portable battery-powered megaphone or megaphones readily accessible to the crewmembers assigned to direct emergency evacuation, installed as follows:

(1) One megaphone on each airplane with a seating capacity of more than 60 and less than 100 passengers, at the most rearward location in the passenger cabin where it would be readily accessible to a normal flight attendant

seat. However, the Administrator may grant a deviation from the requirements of this subparagraph if he finds that a different location would be more useful for evacuation of persons during an emergency.

(2) Two megaphones in the passenger cabin on each airplane with a seating capacity of more than 99 passengers, one installed at the forward end and the other at the most rearward location where it would be readily accessible to a normal flight attendant seat.

[Doc. No. 6258, 29 FR 19205, Dec. 31, 1964, as amended by Amdt. 121–30, 32 FR 13267, Sept. 20, 1967; Amdt. 121–48, 34 FR 11489, July 11, 1969; Amdt. 121–106, 38 FR 22377, Aug. 20, 1973; Amdt. 121–185, 50 FR 12733, Mar. 29, 1985; 50 FR 14373, Apr. 12, 1985; Amdt. 121–188, 51 FR 1223, Jan. 9, 1986; Amdt. 121–230, 57 FR 42672, Sept. 15, 1992; Amdt. 121–242, 59 FR 52642, Oct. 18, 1994; 59 FR 55208, Nov. 4, 1994; Amdt. 121–251, 60 FR 65930, Dec. 20, 1995; Amdt. 121–281, 66 FR 19043, Apr. 12, 2001]

§ 121.310 Additional emergency equipment.

(a) *Means for emergency evacuation.* Each passenger-carrying landplane emergency exit (other than over-the-wing) that is more than 6 feet from the ground with the airplane on the ground and the landing gear extended, must have an approved means to assist the occupants in descending to the ground. The assisting means for a floor-level emergency exit must meet the requirements of § 25.809(f)(1) of this chapter in effect on April 30, 1972, except that, for any airplane for which the application for the type certificate was filed after that date, it must meet the requirements under which the airplane was type certificated. An assisting means that deploys automatically must be armed during taxiing, takeoffs, and landings. However, if the Administrator finds that the design of the exit makes compliance impractical, he may grant a deviation from the requirement of automatic deployment if the assisting means automatically erects upon deployment and, with respect to required emergency exits, if an emergency evacuation demonstration is conducted in accordance with § 121.291(a). This paragraph does not apply to the rear window emergency exit of DC–3 airplanes operated with less than 36 occupants, including crewmembers and less than five exits authorized for passenger use.

(b) *Interior emergency exit marking.* The following must be complied with for each passenger-carrying airplane:

(1) Each passenger emergency exit, its means of access, and its means of opening must be conspicuously marked. The identity and location of each passenger emergency exit must be recognizable from a distance equal to the width of the cabin. The location of each passenger emergency exit must be indicated by a sign visible to occupants approaching along the main passenger aisle. There must be a locating sign—

(i) Above the aisle near each over-the-wing passenger emergency exit, or at another ceiling location if it is more practical because of low headroom;

(ii) Next to each floor level passenger emergency exit, except that one sign may serve two such exits if they both can be seen readily from that sign; and

(iii) On each bulkhead or divider that prevents fore and aft vision along the passenger cabin, to indicate emergency exits beyond and obscured by it, except that if this is not possible the sign may be placed at another appropriate location.

(2) Each passenger emergency exit marking and each locating sign must meet the following:

(i) Except as provided in paragraph (b)(2)(iii) of this section, for an airplane for which the application for the type certificate was filed prior to May 1, 1972, each passenger emergency exit marking and each locating sign must be manufactured to meet the requirements of § 25.812(b) of this chapter in effect on April 30, 1972. On these airplanes, no sign may continue to be used if its luminescence (brightness) decreases to below 100 microlamberts. The colors may be reversed if it increases the emergency illumination of the passenger compartment. However, the Administrator may authorize deviation from the 2-inch background requirements if he finds that special circumstances exist that make compliance impractical and that the proposed deviation provides an equivalent level of safety.

(ii) For a transport category airplane for which the application for the type certificate was filed on or after May 1,

1972, each passenger emergency exit marking and each locating sign must be manufactured to meet the interior emergency exit marking requirements under which the airplane was type certificated. On these airplanes, no sign may continue to be used if its luminescence (brightness) decreases to below 250 microlamberts.

(iii) For a nontransport category turbopropeller powered airplane type certificated after December 31, 1964, each passenger emergency exit marking and each locating sign must be manufactured to meet the requirements of §23.811(b) of this chapter. On these airplanes, no sign may continue to be used if its luminescence (brightness) decreases to below 100 microlamberts.

(c) *Lighting for interior emergency exit markings.* Except for nontransport category airplanes type certificated after December 31, 1964, each passenger-carrying airplane must have an emergency lighting system, independent of the main lighting system. However, sources of general cabin illumination may be common to both the emergency and the main lighting systems if the power supply to the emergency lighting system is independent of the power supply to the main lighting system.

The emergency lighting system must—

(1) Illuminate each passenger exit marking and locating sign;

(2) Provide enough general lighting in the passenger cabin so that the average illumination when measured at 40-inch intervals at seat armrest height, on the centerline of the main passenger aisle, is at least 0.05 foot-candles; and

(3) For airplanes type certificated after January 1, 1958, after November 26, 1986, include floor proximity emergency escape path marking which meets the requirements of §25.812(e) of this chapter in effect on November 26, 1984.

(d) *Emergency light operation.* Except for lights forming part of emergency lighting subsystems provided in compliance with §25.812(h) of this chapter (as prescribed in paragraph (h) of this section) that serve no more than one assist means, are independent of the airplane's main emergency lighting systems, and are automatically activated when the assist means is deployed, each light required by paragraphs (c) and (h) of this section must comply with the following:

(1) Each light must—

(i) Be operable manually both from the flightcrew station and, for airplanes on which a flight attendant is required, from a point in the passenger compartment that is readily accessible to a normal flight attendant seat;

(ii) Have a means to prevent inadvertent operation of the manual controls; and

(iii) When armed or turned on at either station, remain lighted or become lighted upon interruption of the airplane's normal electric power.

(2) Each light must be armed or turned on during taxiing, takeoff, and landing. In showing compliance with this paragraph a transverse vertical separation of the fuselage need not be considered.

(3) Each light must provide the required level of illumination for at least 10 minutes at the critical ambient conditions after emergency landing.

(4) Each light must have a cockpit control device that has an ''on,'' ''off,'' and ''armed'' position.

(e) *Emergency exit operating handles.* (1) For a passenger-carrying airplane for which the application for the type certificate was filed prior to May 1, 1972, the location of each passenger emergency exit operating handle, and instructions for opening the exit, must be shown by a marking on or near the exit that is readable from a distance of 30 inches. In addition, for each Type I and Type II emergency exit with a locking mechanism released by rotary motion of the handle, the instructions for opening must be shown by—

(i) A red arrow with a shaft at least three-fourths inch wide and a head twice the width of the shaft, extending along at least 70° of arc at a radius approximately equal to three-fourths of the handle length; and

(ii) The word ''open'' in red letters 1 inch high placed horizontally near the head of the arrow.

(2) For a passenger-carrying airplane for which the application for the type certificate was filed on or after May 1, 1972, the location of each passenger emergency exit operating handle and instructions for opening the exit must

be shown in accordance with the requirements under which the airplane was type certificated. On these airplanes, no operating handle or operating handle cover may continue to be used if its luminescence (brightness) decreases to below 100 microlamberts.

(f) *Emergency exit access.* Access to emergency exits must be provided as follows for each passenger-carrying transport category airplane:

(1) Each passage way between individual passenger areas, or leading to a Type I or Type II emergency exit, must be unobstructed and at least 20 inches wide.

(2) For each Type I or Type II emergency exit equipped with an assist means, there must be enough space next to the exit to allow a crewmember to assist in the evacuation of passengers without reducing the unobstructed width of the passageway below that required in paragraph (f)(1) of this section. In addition, all airplanes manufactured on or after November 26, 2008 must comply with the provisions of §§25.813(b)(1), (b)(2), (b)(3) and (b)(4) in effect on November 26, 2004. However, a deviation from this requirement may be authorized for an airplane certificated under the provisions of part 4b of the Civil Air Regulations in effect before December 20, 1951, if the Administrator finds that special circumstances exist that provide an equivalent level of safety.

(3) There must be access from the main aisle to each Type III and Type IV exit. The access from the aisle to these exits must not be obstructed by seats, berths, or other protrusions in a manner that would reduce the effectiveness of the exit. In addition—

(i) For an airplane for which the application for the type certificate was filed prior to May 1, 1972, the access must meet the requirements of §25.813(c) of this chapter in effect on April 30, 1972; and

(ii) For an airplane for which the application for the type certificate was filed on or after May 1, 1972, the access must meet the emergency exit access requirements under which the airplane was type certificated; except that,

(iii) After December 3, 1992, the access for an airplane type certificated after January 1, 1958, must meet the requirements of §25.813(c) of this chapter, effective June 3, 1992.

(iv) Contrary provisions of this section notwithstanding, the Manager of the Transport Airplane Directorate, Aircraft Certification Service, Federal Aviation Administration, may authorize deviation from the requirements of paragraph (f)(3)(iii) of this section if it is determined that special circumstances make compliance impractical. Such special circumstances include, but are not limited to, the following conditions when they preclude achieving compliance with §25.813(c)(1)(i) or (ii) without a reduction in the total number of passenger seats: emergency exits located in close proximity to each other; fixed installations such as lavatories, galleys, etc.; permanently mounted bulkheads; an insufficient number of rows ahead of or behind the exit to enable compliance without a reduction in the seat row pitch of more than one inch; or an insufficient number of such rows to enable compliance without a reduction in the seat row pitch to less than 30 inches. A request for such grant of deviation must include credible reasons as to why literal compliance with §25.813(c)(1)(i) or (ii) is impractical and a description of the steps taken to achieve a level of safety as close to that intended by §25.813(c)(1)(i) or (ii) as is practical.

(v) The Manager of the Transport Airplane Directorate, Aircraft Certification Service, Federal Aviation Administration, may also authorize a compliance date later than December 3, 1992, if it is determined that special circumstances make compliance by that date impractical. A request for such grant of deviation must outline the airplanes for which compliance will be achieved by December 3, 1992, and include a proposed schedule for incremental compliance of the remaining airplanes in the operator's fleet. In addition, the request must include credible reasons why compliance cannot be achieved earlier.

(4) If it is necessary to pass through a passageway between passenger compartments to reach any required emergency exit from any seat in the passenger cabin, the passageway must not be obstructed. However, curtains may

be used if they allow free entry through the passageway.

(5) No door may be installed in any partition between passenger compartments.

(6) No person may operate an airplane manufactured after November 27, 2006, that incorporates a door installed between any passenger seat occupiable for takeoff and landing and any passenger emergency exit, such that the door crosses any egress path (including aisles, crossaisles and passageways).

(7) If it is necessary to pass through a doorway separating the passenger cabin from other areas to reach required emergency exit from any passenger seat, the door must have a means to latch it in open position, and the door must be latched open during each takeoff and landing. The latching means must be able to withstand the loads imposed upon it when the door is subjected to the ultimate inertia forces, relative to the surrounding structure, listed in §25.561(b) of this chapter.

(g) *Exterior exit markings.* Each passenger emergency exit and the means of opening that exit from the outside must be marked on the outside of the airplane. There must be a 2-inch colored band outlining each passenger emergency exit on the side of the fuselage. Each outside marking, including the band, must be readily distinguishable from the surrounding fuselage area by contrast in color. The markings must comply with the following:

(1) If the reflectance of the darker color is 15 percent or less, the reflectance of the lighter color must be at least 45 percent.

(2) If the reflectance of the darker color is greater than 15 percent, at least a 30 percent difference between its reflectance and the reflectance of the lighter color must be provided.

(3) Exits that are not in the side of the fuselage must have the external means of opening and applicable instructions marked conspicuously in red or, if red is inconspicuous against the background color, in bright chrome yellow and, when the opening means for such an exit is located on only one side of the fuselage, a conspicuous marking to that effect must be provided on the other side. *Reflectance* is the ratio of the luminous flux reflected by a body to the luminous flux it receives.

(h) *Exterior emergency lighting and escape route.* (1) Except for nontransport category airplanes certificated after December 31, 1964, each passenger-carrying airplane must be equipped with exterior lighting that meets the following requirements:

(i) For an airplane for which the application for the type certificate was filed prior to May 1, 1972, the requirements of §25.812 (f) and (g) of this chapter in effect on April 30, 1972.

(ii) For an airplane for which the application for the type certificate was filed on or after May 1, 1972, the exterior emergency lighting requirements under which the airplane was type certificated.

(2) Each passenger-carrying airplane must be equipped with a slip-resistant escape route that meets the following requirements:

(i) For an airplane for which the application for the type certificate was filed prior to May 1, 1972, the requirements of §25.803(e) of this chapter in effect on April 30, 1972.

(ii) For an airplane for which the application for the type certificate was filed on or after May 1, 1972, the slip-resistant escape route requirements under which the airplane was type certificated.

(i) *Floor level exits.* Each floor level door or exit in the side of the fuselage (other than those leading into a cargo or baggage compartment that is not accessible from the passenger cabin) that is 44 or more inches high and 20 or more inches wide, but not wider than 46 inches, each passenger ventral exit (except the ventral exits on M–404 and CV–240 airplanes), and each tail cone exit, must meet the requirements of this section for floor level emergency exits. However, the Administrator may grant a deviation from this paragraph if he finds that circumstances make full compliance impractical and that an acceptable level of safety has been achieved.

(j) *Additional emergency exits.* Approved emergency exits in the passenger compartments that are in excess of the minimum number of required emergency exits must meet all

of the applicable provisions of this section except paragraphs (f)(1), (2), and (3) of this section and must be readily accessible.

(k) On each large passenger-carrying turbojet-powered airplane, each ventral exit and tailcone exit must be—

(1) Designed and constructed so that it cannot be opened during flight; and

(2) Marked with a placard readable from a distance of 30 inches and installed at a conspicuous location near the means of opening the exit, stating that the exit has been designed and constructed so that it cannot be opened during flight.

(l) *Emergency exit features.* (1) Each transport category airplane manufactured after *November 26, 2007* must comply with the provisions of §25.809(i) and

(2) After November 26, 2007 each transport category airplane must comply with the provisions of §25.813(b)(6)(ii) in effect on November 26, 2007.

(m) Except for an airplane used in operations under this part on October 16, 1987, and having an emergency exit configuration installed and authorized for operation prior to October 16, 1987, for an airplane that is required to have more than one passenger emergency exit for each side of the fuselage, no passenger emergency exit shall be more than 60 feet from any adjacent passenger emergency exit on the same side of the same deck of the fuselage, as measured parallel to the airplane's longitudinal axis between the nearest exit edges.

(n) *Portable lights.* No person may operate a passenger-carrying airplane unless it is equipped with flashlight stowage provisions accessible from each flight attendant seat.

[Doc. No. 2033, 30 FR 3205, Mar. 9, 1965]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting §121.310, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and on GPO Access.

§121.311 Seats, safety belts, and shoulder harnesses.

(a) No person may operate an airplane unless there are available during the takeoff, en route flight, and landing—

(1) An approved seat or berth for each person on board the airplane who has reached his second birthday; and

(2) An approved safety belt for separate use by each person on board the airplane who has reached his second birthday, except that two persons occupying a berth may share one approved safety belt and two persons occupying a multiple lounge or divan seat may share one approved safety belt during en route flight only.

(b) Except as provided in this paragraph, each person on board an airplane operated under this part shall occupy an approved seat or berth with a separate safety belt properly secured about him or her during movement on the surface, takeoff, and landing. A safety belt provided for the occupant of a seat may not be used by more than one person who has reached his or her second birthday. Notwithstanding the preceding requirements, a child may:

(1) Be held by an adult who is occupying an approved seat or berth, provided the child has not reached his or her second birthday and the child does not occupy or use any restraining device; or

(2) Notwithstanding any other requirement of this chapter, occupy an approved child restraint system furnished by the certificate holder or one of the persons described in paragraph (b)(2)(i) of this section, provided:

(i) The child is accompanied by a parent, guardian, or attendant designated by the child's parent or guardian to attend to the safety of the child during the flight;

(ii) Except as provided in paragraph (b)(2)(ii)(D) of this section, the approved child restraint system bears one or more labels as follows:

(A) Seats manufactured to U.S. standards between January 1, 1981, and February 25, 1985, must bear the label: ''This child restraint system conforms to all applicable Federal motor vehicle safety standards.''

(B) Seats manufactured to U.S. standards on or after February 26, 1985, must bear two labels:

(*1*) ''This child restraint system conforms to all applicable Federal motor vehicle safety standards''; and

(*2*) ''THIS RESTRAINT IS CERTIFIED FOR USE IN MOTOR VEHICLES AND AIRCRAFT'' in red lettering;

(C) Seats that do not qualify under paragraphs (B)(2)(ii)(A) and (b)(2)(ii)(B) of this section must bear a label or markings showing:

(*1*) That the seat was approved by a foreign government;

(*2*) That the seat was manufactured under the standards of the United Nations; or

(*3*) That the seat or child restraint device furnished by the certificate holder was approved by the FAA through Type Certificate or Supplemental Type Certificate.

(*4*) That the seat or child restraint device furnished by the certificate holder, or one of the persons described in paragraph (b) (2) (i) of this section, was approved by the FAA in accordance with §21.305(d) or Technical Standard Order C–100b, or a later version.

(D) Except as provided in §121.311(b)(2)(ii)(C)(*3*) and §121.311(b)(2)(ii)(C)(*4*), booster-type child restraint systems (as defined in Federal Motor Vehicle Safety Standard No. 213 (49 CFR 571.213)), vest- and harness-type child restraint systems, and lap held child restraints are not approved for use in aircraft; and

(iii) The certificate holder complies with the following requirements:

(A) The restraint system must be properly secured to an approved forward-facing seat or berth;

(B) The child must be properly secured in the restraint system and must not exceed the specified weight limit for the restraint system; and

(C) The restraint system must bear the appropriate label(s).

(c) Except as provided in paragraph (c)(3) of this section, the following prohibitions apply to certificate holders:

(1) Except as provided in §121.311(b)(2)(ii)(C)(*3*) and §121.311(b)(2)(ii)(C)(*4*), no certificate holder may permit a child, in an aircraft, to occupy a booster-type child restraint system, a vest-type child restraint system, a harness-type child restraint system, or a lap held child restraint system during take off, landing, and movement on the surface.

(2) Except as required in paragraph (c)(1) of this section, no certificate holder may prohibit a child, if requested by the child's parent, guardian, or designated attendant, from occupying a child restraint system furnished by the child's parent, guardian, or designated attendant provided—

(i) The child holds a ticket for an approved seat or berth or such seat or berth is otherwise made available by the certificate holder for the child's use;

(ii) The requirements of paragraph (b)(2)(i) of this section are met;

(iii) The requirements of paragraph (b)(2)(iii) of this section are met; and

(iv) The child restraint system has one or more of the labels described in paragraphs (b)(2)(ii)(A) through (b)(2)(ii)(C) of this section.

(3) This section does not prohibit the certificate holder from providing child restraint systems authorized by this section or, consistent with safe operating practices, determining the most appropriate passenger seat location for the child restraint system.

(d) Each sideward facing seat must comply with the applicable requirements of §25.785(c) of this chapter.

(e) Except as provided in paragraphs (e)(1) through (e)(3) of this section, no certificate holder may take off or land an airplane unless each passenger seat back is in the upright position. Each passenger shall comply with instructions given by a crewmember in compliance with this paragraph.

(1) This paragraph does not apply to seat backs placed in other than the upright position in compliance with §121.310(f)(3).

(2) This paragraph does not apply to seats on which cargo or persons who are unable to sit erect for a medical reason are carried in accordance with procedures in the certificate holder's manual if the seat back does not obstruct any passenger's access to the aisle or to any emergency exit.

(3) On airplanes with no flight attendant, the certificate holder may take off or land as long as the flightcrew instructs each passenger to place his or her seat back in the upright position for takeoff and landing.

(f) No person may operate a transport category airplane that was type certificated after January 1, 1958, or a nontransport category airplane manufactured after March 20, 1997, unless it is equipped at each flight deck station with a combined safety belt and shoulder harness that meets the applicable requirements specified in § 25.785 of this chapter, effective March 6, 1980, except that—

(1) Shoulder harnesses and combined safety belt and shoulder harnesses that were approved and installed before March 6, 1980, may continue to be used; and

(2) Safety belt and shoulder harness restraint systems may be designed to the inertia load factors established under the certification basis of the airplane.

(g) Each flight attendant must have a seat for takeoff and landing in the passenger compartment that meets the requirements of § 25.785 of this chapter, effective March 6, 1980, except that—

(1) Combined safety belt and shoulder harnesses that were approved and installed before March, 6, 1980, may continue to be used; and

(2) Safety belt and shoulder harness restraint systems may be designed to the inertia load factors established under the certification basis of the airplane.

(3) The requirements of § 25.785(h) do not apply to passenger seats occupied by flight attendants not required by § 121.391.

(h) Each occupant of a seat equipped with a shoulder harness or with a combined safety belt and shoulder harness must have the shoulder harness or combined safety belt and shoulder harness properly secured about that occupant during takeoff and landing, except that a shoulder harness that is not combined with a safety belt may be unfastened if the occupant cannot perform the required duties with the shoulder harness fastened.

(i) At each unoccupied seat, the safety belt and shoulder harness, if installed, must be secured so as not to interfere with crewmembers in the performance of their duties or with the rapid egress of occupants in an emergency.

(j) After October 27, 2009, no person may operate a transport category airplane type certificated after January 1, 1958 and manufactured on or after October 27, 2009 in passenger-carrying operations under this part unless all passenger and flight attendant seats on the airplane meet the requirements of § 25.562 in effect on or after June 16, 1988.

[Doc No. 7522, 32 FR 13267, Sept. 20, 1967; as amended by Amdt. 121–41, 33 FR 9067, June 20, 1968; Amdt. 121–75, 36 FR 12512, July 1, 1971; Amdt. 121–133, 42 FR 18394, Apr. 7, 1977; Amdt. 121–155, 45 FR 7756, Feb. 4, 1980; Amdt. 121–170, 46 FR 15482, Mar. 5, 1981; Amdt. 121–177, 47 FR 10516, Mar. 11, 1982; Amdt. 121–230, 57 FR 42673, Sept. 15, 1992; Amdt. 121–251, 60 FR 65930, Dec. 20, 1995; Amdt. 121–255, 61 FR 28421, June 4, 1996; Amdt. 121–314, 70 FR 50907, Aug. 26, 2005; Amdt. 121–315, 70 FR 56559, Sept. 27, 2005; Amdt. 121–326, 71 FR 40009, July 14, 2006]

§ 121.312 Materials for compartment interiors.

(a) *All interior materials; transport category airplanes and nontransport category airplanes type certificated before January 1, 1965.* Except for the materials covered by paragraph (b) of this section, all materials in each compartment of a transport category airplane, or a nontransport category airplane type certificated before January 1, 1965, used by the crewmembers and passengers, must meet the requirements of § 25.853 of this chapter in effect as follows, or later amendment thereto:

(1) *Airplane with passenger seating capacity of 20 or more*—(i) *Manufactured after August 19, 1988, but prior to August 20, 1990.* Except as provided in paragraph (a)(3)(ii) of this section, each airplane with a passenger capacity of 20 or more and manufactured after August 19, 1988, but prior to August 20, 1990, must comply with the heat release rate testing provisions of § 25.853(d) in effect March 6, 1995 (formerly § 25.853(a–1) in effect on August 20, 1986) (see App. L of this part), except that the total heat release over the first 2 minutes of sample exposure must not exceed 100 kilowatt minutes per square meter and the peak heat release rate must not exceed 100 kilowatts per square meter.

(ii) *Manufactured after August 19, 1990.* Each airplane with a passenger capacity of 20 or more and manufactured

after August 19, 1990, must comply with the heat release rate and smoke testing provisions of §25.853(d) in effect March 6, 1995 (formerly §25.853(a–1)(see app. L of this part) in effect on September 26, 1988).

(2) *Substantially complete replacement of the cabin interior on or after May 1, 1972*—(i) *Airplane for which the application for type certificate was filed prior to May 1, 1972.* Except as provided in paragraph (a)(3)(i) or (a)(3)(ii) of this section, each airplane for which the application for type certificate was filed prior to May 1, 1972, must comply with the provisions of §25.853 in effect on April 30, 1972, regardless of passenger capacity, if there is a substantially complete replacement of the cabin interior after April 30, 1972.

(ii) *Airplane for which the application for type certificate was filed on or after May 1, 1972.* Except as provided in paragraph (a)(3)(i) or (a)(3)(ii) of this section, each airplane for which the application for type certificate was filed on or after May 1, 1972, must comply with the material requirements under which the airplane was type certificated, regardless of passenger capacity, if there is a substantially complete replacement of the cabin interior on or after that date.

(3) *Airplane type certificated after January 1, 1958, with passenger capacity of 20 or more*—(i) *Substantially complete replacement of the cabin interior on or after March 6, 1995.* Except as provided in paragraph (a)(3)(ii) of this section, each airplane that was type certificated after January 1, 1958, and has a passenger capacity of 20 or more, must comply with the heat release rate testing provisions of §25.853(d) in effect March 6, 1995 (formerly §25.853(a–1) in effect on August 20, 1986)(see app. L of this part), if there is a substantially complete replacement of the cabin interior components identified in §25.853(d), on or after that date, except that the total heat release over the first 2 minutes of sample exposure shall not exceed 100 kilowatt-minutes per square meter and the peak heat release rate must not exceed 100 kilowatts per square meter.

(ii) *Substantially complete replacement of the cabin interior on or after August 20, 1990.* Each airplane that was type certificated after January 1, 1958, and has a passenger capacity of 20 or more, must comply with the heat release rate and smoke testing provisions of §25.853(d) in effect March 6, 1995 (formerly §25.853(a–1) in effect on September 26, 1988)(see app. L of this part), if there is a substantially complete replacement of the cabin interior components identified in §25.853(d), on or after August 20, 1990.

(4) Contrary provisions of this section notwithstanding, the Manager of the Transport Airplane Directorate, Aircraft Certification Service, Federal Aviation Administration, may authorize deviation from the requirements of paragraph (a)(1)(i), (a)(1)(ii), (a)(3)(i), or (a)(3)(ii) of this section for specific components of the cabin interior that do not meet applicable flammability and smoke emission requirements, if the determination is made that special circumstances exist that make compliance impractical. Such grants of deviation will be limited to those airplanes manufactured within 1 year after the applicable date specified in this section and those airplanes in which the interior is replaced within 1 year of that date. A request for such grant of deviation must include a thorough and accurate analysis of each component subject to §25.853(a–1), the steps being taken to achieve compliance, and, for the few components for which timely compliance will not be achieved, credible reasons for such noncompliance.

(5) Contrary provisions of this section notwithstanding, galley carts and galley standard containers that do not meet the flammability and smoke emission requirements of §25.853(d) in effect March 6, 1995 (formerly §25.853(a–1)) (see app. L of this part) may be used in airplanes that must meet the requirements of paragraphs (a)(1)(i), (a)(1)(ii), (a)(3)(i), or (a)(3)(ii) of this section, provided the galley carts or standard containers were manufactured prior to March 6, 1995.

(b) *Seat cushions.* Seat cushions, except those on flight crewmember seats, in each compartment occupied by crew or passengers, must comply with the requirements pertaining to seat cushions in §25.853(c) effective on November 26, 1984, on each airplane as follows:

(1) Each transport category airplane type certificated after January 1, 1958; and

(2) On or after December 20, 2010, each nontransport category airplane type certificated after December 31, 1964.

(c) *All interior materials; airplanes type certificated in accordance with SFAR No. 41 of 14 CFR part 21.* No person may operate an airplane that conforms to an amended or supplemental type certificate issued in accordance with SFAR No. 41 of 14 CFR part 21 for a maximum certificated takeoff weight in excess of 12,500 pounds unless the airplane meets the compartment interior requirements set forth in §25.853(a) in effect March 6, 1995 (formerly §25.853(a), (b), (b–1), (b–2), and (b–3) of this chapter in effect on September 26, 1978)(see app. L of this part).

(d) *All interior materials; other airplanes.* For each material or seat cushion to which a requirement in paragraphs (a), (b), or (c) of this section does not apply, the material and seat cushion in each compartment used by the crewmembers and passengers must meet the applicable requirement under which the airplane was type certificated.

(e) Thermal/acoustic insulation materials. For transport category airplanes type certificated after January 1, 1958:

(1) For airplanes manufactured before September 2, 2005, when thermal/acoustic insulation is installed in the fuselage as replacements after September 2, 2005, the insulation must meet the flame propagation requirements of §25.856 of this chapter, effective September 2, 2003, if it is:

(i) Of a blanket construction or

(ii) Installed around air ducting.

(2) For airplanes manufactured after September 2, 2005, thermal/acoustic insulation materials installed in the fuselage must meet the flame propagation requirements of §25.856 of this chapter, effective September 2, 2003.

(3) For airplanes with a passenger capacity of 20 or greater, manufactured after September 2, 2009, thermal/acoustic insulation materials installed in the lower half of the fuselage must meet the flame penetration resistance requirements of §25.856 of this chapter, effective September 2, 2003.

[Doc. No. 28154, 60 FR 65930, Dec. 20, 1995, as amended by Amdt. 121–301, 68 FR 45083, July 31, 2003; Amdt. 121–320, 70 FR 77752, Dec. 30, 2005; Amdt. 121–330, 72 FR 1442, Jan. 12, 2007]

§ 121.313 Miscellaneous equipment.

No person may conduct any operation unless the following equipment is installed in the airplane:

(a) If protective fuses are installed on an airplane, the number of spare fuses approved for that airplane and appropriately described in the certificate holder's manual.

(b) A windshield wiper or equivalent for each pilot station.

(c) A power supply and distribution system that meets the requirements of §§25.1309, 25.1331, 25.1351(a) and (b)(1) through (4), 25.1353, 25.1355, and 25.1431(b) or that is able to produce and distribute the load for the required instruments and equipment, with use of an external power supply if any one power source or component of the power distribution system fails. The use of common elements in the system may be approved if the Administrator finds that they are designed to be reasonably protected against malfunctioning. Engine-driven sources of energy, when used, must be on separate engines.

(d) A means for indicating the adequacy of the power being supplied to required flight instruments.

(e) Two independent static pressure systems, vented to the outside atmospheric pressure so that they will be least affected by air flow variation or moisture or other foreign matter, and installed so as to be airtight except for the vent. When a means is provided for transferring an instrument from its primary operating system to an alternate system, the means must include a positive positioning control and must be marked to indicate clearly which system is being used.

(f) A door between the passenger and pilot compartments (i.e., flightdeck door), with a locking means to prevent passengers from opening it without the pilot's permission, except that nontransport category airplanes certificated after December 31, 1964, are not

required to comply with this paragraph. For airplanes equipped with a crew rest area having separate entries from the flightdeck and the passenger compartment, a door with such a locking means must be provided between the crew rest area and the passenger compartment.

(g) A key for each door that separates a passenger compartment from another compartment that has emergency exit provisions. Except for flightdeck doors, a key must be readily available for each crewmember. Except as provided below, no person other than a person who is assigned to perform duty on the flightdeck may have a key to the flightdeck door. Before April 22, 2003, any crewmember may have a key to the flightdeck door but only if the flightdeck door has an internal flightdeck locking device installed, operative, and in use. Such ''internal flightdeck locking device'' has to be designed so that it can only be unlocked from inside the flightdeck.

(h) A placard on each door that is the means of access to a required passenger emergency exit, to indicate that it must be open during takeoff and landing.

(i) A means for the crew, in an emergency to unlock each door that leads to a compartment that is normally accessible to passengers and that can be locked by passengers.

(j) After April 9, 2003, for airplanes required by paragraph (f) of this section to have a door between the passenger and pilot or crew rest compartments, and for transport category, all-cargo airplanes that have a door installed between the pilot compartment and any other occupied compartment on January 15, 2002;

(1) After April 9, 2003, for airplanes required by paragraph (f) of this section to have a door between the passenger and pilot or crew rest compartments,

(i) Each such door must meet the requirements of §25.795(a)(1) and (2) in effect on January 15, 2002; and

(ii) Each operator must establish methods to enable a flight attendant to enter the pilot compartment in the event that a flightcrew member becomes incapacitated. Any associated signal or confirmation system must be operable by each flightcrew member from that flightcrew member's duty station.

(2) After October 1, 2003, for transport category, all-cargo airplanes that had a door installed between the pilot compartment and any other occupied compartment on or after January 15, 2002, each such door must meet the requirements of §25.795(a)(1) and (2) in effect on January 15, 2002; or the operator must implement a security program approved by the Transportation Security Administration (TSA) for the operation of all airplanes in that operator's fleet.

(k) Except for all-cargo operations as defined in §119.3 of this chapter, for all passenger-carrying airplanes that require a lockable flightdeck door in accordance with paragraph (f) of this section, a means to monitor from the flightdeck side of the door the area outside the flightdeck door to identify persons requesting entry and to detect suspicious behavior and potential threats.

[Doc. No. 6258, 29 FR 19205, Dec. 31, 1964, as amended by Amdt. 121–5, 30 FR 6113, Apr. 30, 1965; Amdt. 121–251, 60 FR 65931, Dec. 20, 1995; Amdt. 121–288, 67 FR 2127, Jan. 15, 2002; Amdt. 121–299, 68 FR 42881, July 18, 2003; Amdt. 121–334, 72 FR 45635, Aug. 15, 2007]

§121.314 Cargo and baggage compartments.

For each transport category airplane type certificated after January 1, 1958:

(a) Each Class C or Class D compartment, as defined in §25.857 of this Chapter in effect on June 16, 1986 (see Appendix L to this part), that is greater than 200 cubic feet in volume must have ceiling and sidewall liner panels which are constructed of:

(1) Glass fiber reinforced resin;

(2) Materials which meet the test requirements of part 25, appendix F, part III of this chapter; or

(3) In the case of liner installations approved prior to March 20, 1989, aluminum.

(b) For compliance with paragraph (a) of this section, the term ''liner'' includes any design feature, such as a joint or fastener, which would affect the capability of the liner to safely contain a fire.

(c) After March 19, 2001, each Class D compartment, regardless of volume, must meet the standards of §§ 25.857(c) and 25.858 of this Chapter for a Class C compartment unless the operation is an all-cargo operation in which case each Class D compartment may meet the standards in § 25.857(e) for a Class E compartment.

(d) *Reports of conversions and retrofits.* (1) Until such time as all Class D compartments in aircraft operated under this part by the certificate have been converted or retrofitted with appropriate detection and suppression systems, each certificate holder must submit written progress reports to the FAA that contain the information specified below.

(i) The serial number of each airplane listed in the operations specifications issued to the certificate holder for operation under this part in which all Class D compartments have been converted to Class C or Class E compartments;

(ii) The serial number of each airplane listed in the operations specification issued to the certificate holder for operation under this part, in which all Class D compartments have been retrofitted to meet the fire detection and suppression requirements for Class C or the fire detection requirements for Class E; and

(iii) The serial number of each airplane listed in the operations specifications issued to the certificate holder for operation under this part that has at least one Class D compartment that has not been converted or retrofitted.

(2) The written report must be submitted to the Certificate Holding District Office by July 1, 1998, and at each three-month interval thereafter.

[Doc. No. 28937, 63 FR 8049, Feb. 17, 1998]

§ 121.315 Cockpit check procedure.

(a) Each certificate holder shall provide an approved cockpit check procedure for each type of aircraft.

(b) The approved procedures must include each item necessary for flight crewmembers to check for safety before starting engines, taking off, or landing, and in engine and systems emergencies. The procedures must be designed so that a flight crewmember will not need to rely upon his memory for items to be checked.

(c) The approved procedures must be readily usable in the cockpit of each aircraft and the flight crew shall follow them when operating the aircraft.

§ 121.316 Fuel tanks.

Each turbine powered transport category airplane operated after October 30, 1991, must meet the requirements of § 25.963(e) of this chapter in effect on October 30, 1989.

[Doc. No. 25614, 54 FR 40354, Sept. 29, 1989]

§ 121.317 Passenger information requirements, smoking prohibitions, and additional seat belt requirements.

(a) Except as provided in paragraph (l) of this section, no person may operate an airplane unless it is equipped with passenger information signs that meet the requirements of § 25.791 of this chapter. Except as provided in paragraph (l) of this section, the signs must be constructed so that the crewmembers can turn them on and off.

(b) Except as provided in paragraph (l) of this section, the ''Fasten Seat Belt'' sign shall be turned on during any movement on the surface, for each takeoff, for each landing, and at any other time considered necessary by the pilot in command.

(c) No person may operate an airplane on a flight on which smoking is prohibited by part 252 of this title unless either the ''No Smoking'' passenger information signs are lighted during the entire flight, or one or more ''No Smoking'' placards meeting the requirements of § 25.1541 of this chapter are posted during the entire flight segment. If both the lighted signs and the placards are used, the signs must remain lighted during the entire flight segment.

(d) No person may operate a passenger-carrying airplane under this part unless at least one legible sign or placard that reads ''Fasten Seat Belt While Seated'' is visible from each passenger seat. These signs or placards need not meet the requirements of paragraph (a) of this section.

(e) No person may operate an airplane unless there is installed in each lavatory a sign or placard that reads:

''Federal law provides for a penalty of up to $2,000 for tampering with the smoke detector installed in this lavatory.'' These signs or placards need not meet the requirements of paragraph (a) of this section.

(f) Each passenger required by §121.311(b) to occupy a seat or berth shall fasten his or her safety belt about him or her and keep it fastened while the ''Fasten Seat Belt'' sign is lighted.

(g) No person may smoke while a ''No Smoking'' sign is lighted or while ''No Smoking'' placards are posted, except as follows:

(1) *Supplemental operations.* The pilot in command of an airplane engaged in a supplemental operation may authorize smoking on the flight deck (if it is physically separated from any passenger compartment), but not in any of the following situations:

(i) During airplane movement on the surface or during takeoff or landing;

(ii) During scheduled passenger-carrying public charter operations conducted under part 380 of this title; or

(iii) During any operation where smoking is prohibited by part 252 of this title or by international agreement.

(2) *Certain intrastate domestic operations.* Except during airplane movement on the surface or during takeoff or landing, a pilot in command of an airplane engaged in a domestic operation may authorize smoking on the flight deck (if it is physically separated from the passenger compartment) if—

(i) Smoking on the flight deck is not otherwise prohibited by part 252 of this title;

(ii) The flight is conducted entirely within the same State of the United States (a flight from one place in Hawaii to another place in Hawaii through the airspace over a place outside of Hawaii is not entirely within the same State); and

(iii) The airplane is either not turbojet-powered or the airplane is not capable of carrying at least 30 passengers.

(h) No person may smoke in any airplane lavatory.

(i) No person may tamper with, disable, or destroy any smoke detector installed in any airplane lavatory.

(j) On flight segments other than those described in paragraph (c) of this section, the ''No Smoking'' sign must be turned on during any movement on the surface, for each takeoff, for each landing, and at any other time considered necessary by the pilot in command.

(k) Each passenger shall comply with instructions given him or her by a crewmember regarding compliance with paragraphs (f), (g), (h), and (l) of this section.

(l) A certificate holder may operate a nontransport category airplane type certificated after December 31, 1964, that is manufactured before December 20, 1997, if it is equipped with at least one placard that is legible to each person seated in the cabin that states ''Fasten Seat Belt,'' and if, during any movement on the surface, for each takeoff, for each landing, and at any other time considered necessary by the pilot in command, a crewmember orally instructs the passengers to fasten their seat belts.

[Doc. No. 25590, 53 FR 12361, Apr. 13, 1988, as amended by Amdt. 121–196, 53 FR 44182, Nov. 2, 1988; Amdt. 121–213, 55 FR 8367, Mar. 7, 1990; Amdt. 121–230, 57 FR 42673, Sept. 15, 1992; Amdt. 121–251, 60 FR 65931, Dec. 20, 1995; Amdt. 121–256, 61 FR 30434, June 14, 1996; Amdt. 121–277, 65 FR 36779, June 9, 2000]

§121.318 Public address system.

No person may operate an airplane with a seating capacity of more than 19 passengers unless it is equipped with a public address system which—

(a) Is capable of operation independent of the crewmember interphone system required by §121.319, except for handsets, headsets, microphones, selector switches, and signaling devices;

(b) Is approved in accordance with §21.305 of this chapter;

(c) Is accessible for immediate use from each of two flight crewmember stations in the pilot compartment;

(d) For each required floor-level passenger emergency exit which has an adjacent flight attendant seat, has a microphone which is readily accessible to the seated flight attendant, except that one microphone may serve more than one exit, provided the proximity of the exits allows unassisted verbal communication between seated flight attendants;

(e) Is capable of operation within 10 seconds by a flight attendant at each of those stations in the passenger compartment from which its use is accessible;

(f) Is audible at all passenger seats, lavatories, and flight attendant seats and work stations; and

(g) For transport category airplanes manufactured on or after November 27, 1990, meets the requirements of § 25.1423 of this chapter.

[Doc. No. 24995, 54 FR 43926, Oct. 27, 1989]

§ 121.319 Crewmember interphone system.

(a) No person may operate an airplane with a seating capacity of more than 19 passengers unless the airplane is equipped with a crewmember interphone system that:

(1) [Reserved]

(2) Is capable of operation independent of the public address system required by § 121.318(a) except for handsets, headsets, microphones, selector switches, and signaling devices; and

(3) Meets the requirements of paragraph (b) of this section.

(b) The crewmember interphone system required by paragraph (a) of this section must be approved in accordance with § 21.305 of this chapter and meet the following requirements:

(1) It must provide a means of two-way communication between the pilot compartment and—

(i) Each passenger compartment; and

(ii) Each galley located on other than the main passenger deck level.

(2) It must be accessible for immediate use from each of two flight crewmember stations in the pilot compartment;

(3) It must be accessible for use from at least one normal flight attendant station in each passenger compartment;

(4) It must be capable of operation within 10 seconds by a flight attendant at those stations in each passenger compartment from which its use is accessible; and

(5) For large turbojet-powered airplanes:

(i) It must be accessible for use at enough flight attendant stations so that all floor-level emergency exits (or entryways to those exits in the case of exits located within galleys) in each passenger compartment are observable from one or more of those stations so equipped;

(ii) It must have an alerting system incorporating aural or visual signals for use by flight crewmembers to alert flight attendants and for use by flight attendants to alert flight crewmembers;

(iii) The alerting system required by paragraph (b)(5)(ii) of this section must have a means for the recipient of a call to determine whether it is a normal call or an emergency call; and

(iv) When the airplane is on the ground, it must provide a means of two-way communication between ground personnel and either of at least two flight crewmembers in the pilot compartment. The interphone system station for use by ground personnel must be so located that personnel using the system may avoid visible detection from within the airplane.

[Doc. No. 10865, 38 FR 21494, Aug. 9, 1973, as amended by Amdt. 121–121, 40 FR 42186, Sept. 11, 1975; Amdt. 121–149, 43 FR 50602, Oct. 30, 1978; Amdt. 121–178, 47 FR 13316, Mar. 29, 1982; Amdt. 121–253, 61 FR 2611, Jan. 26, 1996]

§ 121.321 [Reserved]

§ 121.323 Instruments and equipment for operations at night.

No person may operate an airplane at night under this part unless it is equipped with the following instruments and equipment in addition to those required by §§ 121.305 through 121.321 and 121.803:

(a) Position lights.

(b) An anti-collision light.

(c) Two landing lights, except that only one landing light is required for nontransport category airplanes type certificated after December 31, 1964.

(d) Instrument lights providing enough light to make each required instrument, switch, or similar instrument, easily readable and installed so that the direct rays are shielded from the flight crewmembers' eyes and that no objectionable reflections are visible to them. There must be a means of controlling the intensity of illumination unless it is shown that nondimming instrument lights are satisfactory.

(e) An airspeed-indicating system with heated pitot tube or equivalent means for preventing malfunctioning due to icing.

(f) A sensitive altimeter.

[Doc. No. 6258, 29 FR 19205, Dec. 31, 1964, as amended by Amdt. 121–251, 60 FR 65932, Dec. 20, 1995; Amdt. 121–281, 66 FR 19043, Apr. 12, 2001]

§ 121.325 Instruments and equipment for operations under IFR or over-the-top.

No person may operate an airplane under IFR or over-the-top conditions under this part unless it is equipped with the following instruments and equipment, in addition to those required by §§ 121.305 through 121.321 and 121.803:

(a) An airspeed indicating system with heated pitot tube or equivalent means for preventing malfunctioning due to icing.

(b) A sensitive altimeter.

(c) Instrument lights providing enough light to make each required instrument, switch, or similar instrument, easily readable and so installed that the direct rays are shielded from the flight crewmembers' eyes and that no objectionable reflections are visible to them, and a means of controlling the intensity of illumination unless it is shown that nondimming instrument lights are satisfactory.

[Doc. No. 6258, 29 FR 19205, Dec. 31, 1964, as amended at Amdt. 121–281, 66 FR 19043, Apr. 12, 2001]

§ 121.327 Supplemental oxygen: Reciprocating engine powered airplanes.

(a) *General.* Except where supplemental oxygen is provided in accordance with § 121.331, no person may operate an airplane unless supplemental oxygen is furnished and used as set forth in paragraphs (b) and (c) of this section. The amount of supplemental oxygen required for a particular operation is determined on the basis of flight altitudes and flight duration, consistent with the operation procedures established for each operation and route.

(b) *Crewmembers.* (1) At cabin pressure altitudes above 10,000 feet up to and including 12,000 feet, oxygen must be provided for, and used by, each member of the flight crew on flight deck duty, and must be provided for other crewmembers, for that part of the flight at those altitudes that is of more than 30 minutes duration.

(2) At cabin pressure altitudes above 12,000 feet, oxygen must be provided for, and used by, each member of the flight crew on flight deck duty, and must be provided for other crewmembers, during the entire flight time at those altitudes.

(3) When a flight crewmember is required to use oxygen, he must use it continuously, except when necessary to remove the oxygen mask or other dispenser in connection with his regular duties. Standby crewmembers who are on call or are definitely going to have flight deck duty before completing the flight must be provided with an amount of supplemental oxygen equal to that provided for crewmembers on duty other than on flight deck duty. If a standby crewmember is not on call and will not be on flight deck duty during the remainder of the flight, he is considered to be a passenger for the purposes of supplemental oxygen requirements.

(c) *Passengers.* Each certificate holder shall provide a supply of oxygen, approved for passenger safety, in accordance with the following:

(1) For flights of more than 30 minutes duration at cabin pressure altitudes above 8,000 feet up to and including 14,000 feet, enough oxygen for 30 minutes for 10 percent of the passengers.

(2) For flights at cabin pressure altitudes above 14,000 feet up to and including 15,000 feet, enough oxygen for that part of the flight at those altitudes for 30 percent of the passengers.

(3) For flights at cabin pressure altitudes above 15,000 feet, enough oxygen for each passenger carried during the entire flight at those altitudes.

(d) For the purposes of this subpart *cabin pressure altitude* means the pressure altitude corresponding with the pressure in the cabin of the airplane, and *flight altitude* means the altitude above sea level at which the airplane is operated. For airplanes without pressurized cabins, ''cabin pressure altitude'' and ''flight altitude'' mean the same thing.

§ 121.329 Supplemental oxygen for sustenance: Turbine engine powered airplanes.

(a) *General.* When operating a turbine engine powered airplane, each certificate holder shall equip the airplane with sustaining oxygen and dispensing equipment for use as set forth in this section:

(1) The amount of oxygen provided must be at least the quantity necessary to comply with paragraphs (b) and (c) of this section.

(2) The amount of sustaining and first-aid oxygen required for a particular operation to comply with the rules in this part is determined on the basis of cabin pressure altitudes and flight duration, consistent with the operating procedures established for each operation and route.

(3) The requirements for airplanes with pressurized cabins are determined on the basis of cabin pressure altitude and the assumption that a cabin pressurization failure will occur at the altitude or point of flight that is most critical from the standpoint of oxygen need, and that after the failure the airplane will descend in accordance with the emergency procedures specified in the Airplane Flight Manual, without exceeding its operating limitations, to a flight altitude that will allow successful termination of the flight.

(4) Following the failure, the cabin pressure altitude is considered to be the same as the flight altitude unless it is shown that no probable failure of the cabin or pressurization equipment will result in a cabin pressure altitude equal to the flight altitude. Under those circumstances, the maximum cabin pressure altitude attained may be used as a basis for certification or determination of oxygen supply, or both.

(b) *Crewmembers.* Each certificate holder shall provide a supply of oxygen for crewmembers in accordance with the following:

(1) At cabin pressure altitudes above 10,000 feet, up to and including 12,000 feet, oxygen must be provided for and used by each member of the flight crew on flight deck duty and must be provided for other crewmembers for that part of the flight at those altitudes that is of more than 30 minutes duration.

(2) At cabin pressure altitudes above 12,000 feet, oxygen must be provided for, and used by, each member of the flight crew on flight deck duty, and must be provided for other crewmembers during the entire flight at those altitudes.

(3) When a flight crewmember is required to use oxygen, he must use it continuously except when necessary to remove the oxygen mask or other dispenser in connection with his regular duties. Standby crewmembers who are on call or are definitely going to have flight deck duty before completing the flight must be provided with an amount of supplemental oxygen equal to that provided for crewmembers on duty other than on flight duty. If a standby crewmember is not on call and will not be on flight deck duty during the remainder of the flight, he is considered to be a passenger for the purposes of supplemental oxygen requirements.

(c) *Passengers.* Each certificate holder shall provide a supply of oxygen for passengers in accordance with the following:

(1) For flights at cabin pressure altitudes above 10,000 feet, up to and including 14,000 feet, enough oxygen for that part of the flight at those altitudes that is of more than 30 minutes duration, for 10 percent of the passengers.

(2) For flights at cabin pressure altitudes above 14,000 feet, up to and including 15,000 feet, enough oxygen for that part of the flight at those altitudes for 30 percent of the passengers.

(3) For flights at cabin pressure altitudes above 15,000 feet, enough oxygen for each passenger carried during the entire flight at those altitudes.

§ 121.331 Supplemental oxygen requirements for pressurized cabin airplanes: Reciprocating engine powered airplanes.

(a) When operating a reciprocating engine powered airplane pressurized cabin, each certificate holder shall equip the airplane to comply with paragraphs (b) through (d) of this section in the event of cabin pressurization failure.

(b) *For crewmembers.* When operating at flight altitudes above 10,000 feet, the certificate holder shall provide enough oxygen for each crewmember for the entire flight at those altitudes and not less than a two-hour supply for each flight crewmember on flight deck duty. The required two hours supply is that quantity of oxygen necessary for a constant rate of descent from the airplane's maximum certificated operating altitude to 10,000 feet in ten minutes and followed by 110 minutes at 10,000 feet. The oxygen required by §121.337 may be considered in determining the supplemental breathing supply required for flight crewmembers on flight deck duty in the event of cabin pressurization failure.

(c) *For passengers.* When operating at flight altitudes above 8,000 feet, the certificate holder shall provide oxygen as follows:

(1) When an airplane is not flown at a flight altitude above flight level 250, enough oxygen for 30 minutes for 10 percent of the passengers, if at any point along the route to be flown the airplane can safely descend to a flight altitude of 14,000 feet or less within four minutes.

(2) If the airplane cannot descend to a flight altitude of 14,000 feet or less within four minutes, the following supply of oxygen must be provided:

(i) For that part of the flight that is more than four minutes duration at flight altitudes above 15,000 feet, the supply required by §121.327(c)(3).

(ii) For that part of the flight at flight altitudes above 14,000 feet, up to and including 15,000 feet, the supply required by §121.327(c)(2).

(iii) For flight at flight altitudes above 8,000 feet up to and including 14,000 feet, enough oxygen for 30 minutes for 10 percent of the passengers.

(3) When an airplane is flown at a flight altitude above flight level 250, enough oxygen for 30 minutes for 10 percent of the passengers for the entire flight (including emergency descent) above 8,000 feet, up to and including 14,000 feet, and to comply with §121.327(c) (2) and (3) for flight above 14,000 feet.

(d) For the purposes of this section it is assumed that the cabin pressurization failure occurs at a time during flight that is critical from the standpoint of oxygen need and that after the failure the airplane will descend, without exceeding its normal operating limitations, to flight altitudes allowing safe flight with respect to terrain clearance.

[Doc. No. 6258, 29 FR 19205, Dec. 31, 1964, as amended by Amdt. 121–132, 41 FR 55475, Dec. 20, 1976]

§121.333 Supplemental oxygen for emergency descent and for first aid; turbine engine powered airplanes with pressurized cabins.

(a) *General.* When operating a turbine engine powered airplane with a pressurized cabin, the certificate holder shall furnish oxygen and dispensing equipment to comply with paragraphs (b) through (e) of this section in the event of cabin pressurization failure.

(b) *Crewmembers.* When operating at flight altitudes above 10,000 feet, the certificate holder shall supply enough oxygen to comply with §121.329, but not less than a two-hour supply for each flight crewmember on flight deck duty. The required two hours supply is that quantity of oxygen necessary for a constant rate of descent from the airplane's maximum certificated operating altitude to 10,000 feet in ten minutes and followed by 110 minutes at 10,000 feet. The oxygen required in the event of cabin pressurization failure by §121.337 may be included in determining the supply required for flight crewmembers on flight deck duty.

(c) *Use of oxygen masks by flight crewmembers.* (1) When operating at flight altitudes above flight level 250, each flight crewmember on flight deck duty must be provided with an oxygen mask so designed that it can be rapidly placed on his face from its ready position, properly secured, sealed, and supplying oxygen upon demand; and so designed that after being placed on the face it does not prevent immediate communication between the flight crewmember and other crewmembers over the airplane intercommunication system. When it is not being used at flight altitudes above flight level 250, the oxygen mask must be kept in condition for ready use and located so as to be within the immediate reach of

the flight crewmember while at his duty station.

(2) When operating at flight altitudes above flight level 250, one pilot at the controls of the airplane shall at all times wear and use an oxygen mask secured, sealed, and supplying oxygen, in accordance with the following:

(i) The one pilot need not wear and use an oxygen mask at or below the following flight levels if each flight crewmember on flight deck duty has a quick-donning type of oxygen mask that the certificate holder has shown can be placed on the face from its ready position, properly secured, sealed, and supplying oxygen upon demand, with one hand and within five seconds:

(A) For airplanes having a passenger seat configuration of more than 30 seats, excluding any required crewmember seat, or a payload capacity of more than 7,500 pounds, at or below flight level 410.

(B) For airplanes having a passenger seat configuration of less than 31 seats, excluding any required crewmember seat, and a payload capacity of 7,500 pounds or less, at or below flight level 350.

(ii) Whenever a quick-donning type of oxygen mask is to be used under this section, the certificate holder shall also show that the mask can be put on without disturbing eye glasses and without delaying the flight crewmember from proceeding with his assigned emergency duties. The oxygen mask after being put on must not prevent immediate communication between the flight crewmember and other crewmembers over the airplane intercommunication system.

(3) Notwithstanding paragraph (c)(2) of this section, if for any reason at any time it is necessary for one pilot to leave his station at the controls of the airplane when operating at flight altitudes above flight level 250, the remaining pilot at the controls shall put on and use his oxygen mask until the other pilot has returned to his duty station.

(4) Before the takeoff of a flight, each flight crewmember shall personally preflight his oxygen equipment to insure that the oxygen mask is functioning, fitted properly, and connected to appropriate supply terminals, and that the oxygen supply and pressure are adequate for use.

(d) *Use of portable oxygen equipment by cabin attendants.* After November 28, 2005 each mask used for portable oxygen equipment must be connected to its oxygen supply. Above flight level 250, one of the following is required:

(1) Each attendant shall carry portable oxygen equipment with a 15 minute supply of oxygen; or

(2) There must be sufficient portable oxygen equipment (including masks and spare outlets) distributed throughout the cabin so that such equipment is immediately available to each attendant, regardless of their location in the cabin; or

(3) There are sufficient spare outlets and masks distributed throughout the cabin to ensure immediate availability of oxygen to each cabin attendant, regardless of their location in the cabin.

(e) *Passenger cabin occupants.* When the airplane is operating at flight altitudes above 10,000 feet, the following supply of oxygen must be provided for the use of passenger cabin occupants:

(1) When an airplane certificated to operate at flight altitudes up to and including flight level 250, can at any point along the route to be flown, descend safely to a flight altitude of 14,000 feet or less within four minutes, oxygen must be available at the rate prescribed by this part for a 30-minute period for at least 10 percent of the passenger cabin occupants.

(2) When an airplane is operated at flight altitudes up to and including flight level 250 and cannot descend safely to a flight altitude of 14,000 feet within four minutes, or when an airplane is operated at flight altitudes above flight level 250, oxygen must be available at the rate prescribed by this part for not less than 10 percent of the passenger cabin occupants for the entire flight after cabin depressurization, at cabin pressure altitudes above 10,000 feet up to and including 14,000 feet and, as applicable, to allow compliance with §121.329(c) (2) and (3), except that there must be not less than a 10-minute supply for the passenger cabin occupants.

(3) For first-aid treatment of occupants who for physiological reasons

might require undiluted oxygen following descent from cabin pressure altitudes above flight level 250, a supply of oxygen in accordance with the requirements of §25.1443(d) must be provided for two percent of the occupants for the entire flight after cabin depressurization at cabin pressure altitudes above 8,000 feet, but in no case to less than one person. An appropriate number of acceptable dispensing units, but in no case less than two, must be provided, with a means for the cabin attendants to use this supply.

(f) *Passenger briefing.* Before flight is conducted above flight level 250, a crewmember shall instruct the passengers on the necessity of using oxygen in the event of cabin depressurization and shall point out to them the location and demonstrate the use of the oxygen-dispensing equipment.

[Doc. No. 6258, 29 FR 19205, Dec. 31, 1964, as amended by Amdt. 121–11, 30 FR 12466, Sept. 30, 1965; Amdt. 121–132, 41 FR 55475, Dec. 20, 1976; Amdt. 121–262, 62 FR 13256, Mar. 19, 1997; 62 FR 15570, Apr. 1, 1997; Amdt. 121–306, 69 FR 62789, Oct. 27, 2004]

§121.335 Equipment standards.

(a) *Reciprocating engine powered airplanes.* The oxygen apparatus, the minimum rates of oxygen flow, and the supply of oxygen necessary to comply with §121.327 must meet the standards established in section 4b.651 of the Civil Air Regulations as in effect on July 20, 1950, except that if the certificate holder shows full compliance with those standards to be impracticable, the Administrator may authorize any change in those standards that he finds will provide an equivalent level of safety.

(b) *Turbine engine powered airplanes.* The oxygen apparatus, the minimum rate of oxygen flow, and the supply of oxygen necessary to comply with §§121.329 and 121.333 must meet the standards established in section 4b.651 of the Civil Air Regulations as in effect on September 1, 1958, except that if the certificate holder shows full compliance with those standards to be impracticable, the Administrator may authorize any changes in those standards that he finds will provide an equivalent level of safety.

§121.337 Protective breathing equipment.

(a) The certificate holder shall furnish approved protective breathing equipment (PBE) meeting the equipment, breathing gas, and communication requirements contained in paragraph (b) of this section.

(b) *Pressurized and nonpressurized cabin airplanes.* Except as provided in paragraph (f) of this section, no person may operate an airplane unless protective breathing equipment meeting the requirements of this section is provided as follows:

(1) *General.* The equipment must protect the flightcrew from the effects of smoke, carbon dioxide or other harmful gases or an oxygen deficient environment caused by other than an airplane depressurization while on flight deck duty and must protect crewmembers from the above effects while combatting fires on board the airplane.

(2) The equipment must be inspected regularly in accordance with inspection guidelines and the inspection periods established by the equipment manufacturer to ensure its condition for continued serviceability and immediate readiness to perform its intended emergency purposes. The inspection periods may be changed upon a showing by the certificate holder that the changes would provide an equivalent level of safety.

(3) That part of the equipment protecting the eyes must not impair the wearer's vision to the extent that a crewmember's duties cannot be accomplished and must allow corrective glasses to be worn without impairment of vision or loss of the protection required by paragraph (b)(1) of this section.

(4) The equipment, while in use, must allow the flightcrew to communicate using the airplane radio equipment and to communicate by interphone with each other while at their assigned duty stations. The equipment, while in use, must also allow crewmember interphone communications between each of two flight crewmember stations in the pilot compartment and at least one normal flight attendant station in each passenger compartment.

(5) The equipment, while in use, must allow any crewmember to use the airplane interphone system at any of the flight attendant stations referred to in paragraph (b)(4) of this section.

(6) The equipment may also be used to meet the supplemental oxygen requirements of this part provided it meets the oxygen equipment standards of § 121.335 of this part.

(7) Protective breathing gas duration and supply system equipment requirements are as follows:

(i) The equipment must supply breathing gas for 15 minutes at a pressure altitude of 8,000 feet for the following:

(A) Flight crewmembers while performing flight deck duties; and

(B) Crewmembers while combatting an in-flight fire.

(ii) The breathing gas system must be free from hazards in itself, in its method of operation, and in its effect upon other components.

(iii) For breathing gas systems other than chemical oxygen generators, there must be a means to allow the crew to readily determine, during the equipment preflight described in paragraph (c) of this section, that the gas supply is fully charged.

(iv) For each chemical oxygen generator, the supply system equipment must meet the requirements of § 25.1450 (b) and (c) of this chapter.

(8) *Smoke and fume protection.* Protective breathing equipment with a fixed or portable breathing gas supply meeting the requirements of this section must be conveniently located on the flight deck and be easily accessible for immediate use by each required flight crewmember at his or her assigned duty station.

(9) *Fire combatting.* Except for nontransport category airplanes type certificated after December 31, 1964, protective breathing equipment with a portable breathing gas supply meeting the requirements of this section must be easily accessible and conveniently located for immediate use by crewmembers in combatting fires as follows:

(i) One PBE is required for each hand fire extinguisher located for use in a galley other than a galley located in a passenger, cargo, or crew compartment.

(ii) One on the flight deck, except that the Administrator may authorize another location for this PBE if special circumstances exist that make compliance impractical and the proposed deviation would provide an equivalent level of safety.

(iii) In each passenger compartment, one for each hand fire extinguisher required by § 121.309 of this part, to be located within 3 feet of each required hand fire extinguisher, except that the Administrator may authorize a deviation allowing locations of PBE more than 3 feet from required hand fire extinguisher locations if special circumstances exist that make compliance impractical and if the proposed deviation provides an equivalent level of safety.

(c) *Equipment preflight.* (1) Before each flight, each item of PBE at flight crewmember duty stations must be checked by the flight crewmember who will use the equipment to ensure that the equipment—

(i) For other than chemical oxygen generator systems, is functioning, is serviceable, fits properly (unless a universal-fit type), and is connected to supply terminals and that the breathing gas supply and pressure are adequate for use; and

(ii) For chemical oxygen generator systems, is serviceable and fits properly (unless a universal-fit type).

(2) Each item of PBE located at other than a flight crewmember duty station must be checked by a designated crewmember to ensure that each is properly stowed and serviceable, and, for other than chemical oxygen generator systems, the breathing gas supply is fully charged. Each certificate holder, in its operations manual, must designate at least one crewmember to perform those checks before he or she takes off in that airplane for his or her first flight of the day.

[Doc. No. 24792, 52 FR 20957, June 3, 1987, as amended by Amdt. 121–204, 54 FR 22271, May 22, 1989; Amdt. 121–212, 55 FR 5551, Feb. 15, 1990; Amdt. 121–218, 55 FR 31565, Aug. 2, 1990; Amdt. 121–230, 57 FR 42674, Sept. 15, 1992; Amdt. 121–251, 60 FR 65932, Dec. 20, 1995; Amdt. 121–261, 61 FR 43921, Aug. 26, 1996]

§ 121.339 Emergency equipment for extended over-water operations.

(a) Except where the Administrator, by amending the operations specifications of the certificate holder, requires the carriage of all or any specific items of the equipment listed below for any overwater operation, or upon application of the certificate holder, the Administrator allows deviation for a particular extended overwater operation, no person may operate an airplane in extended overwater operations without having on the airplane the following equipment:

(1) A life preserver equipped with an approved survivor locator light, for each occupant of the airplane.

(2) Enough life rafts (each equipped with an approved survivor locator light) of a rated capacity and buoyancy to accommodate the occupants of the airplane. Unless excess rafts of enough capacity are provided, the buoyancy and seating capacity beyond the rated capacity of the rafts must accommodate all occupants of the airplane in the event of a loss of one raft of the largest rated capacity.

(3) At least one pyrotechnic signaling device for each life raft.

(4) An approved survival type emergency locator transmitter. Batteries used in this transmitter must be replaced (or recharged, if the battery is rechargeable) when the transmitter has been in use for more than 1 cumulative hour, or when 50 percent of their useful life (or for rechargeable batteries, 50 percent of their useful life of charge) has expired, as established by the transmitter manufacturer under its approval. The new expiration date for replacing (or recharging) the battery must be legibly marked on the outside of the transmitter. The battery useful life (or useful life of charge) requirements of this paragraph do not apply to batteries (such as water-activated batteries) that are essentially unaffected during probable storage intervals.

(b) The required life rafts, life preservers, and survival type emergency locator transmitter must be easily accessible in the event of a ditching without appreciable time for preparatory procedures. This equipment must be installed in conspicuously marked, approved locations.

(c) A survival kit, appropriately equipped for the route to be flown, must be attached to each required life raft.

[Doc. No. 6258, 29 FR 19205, Dec. 31, 1964, as amended by Amdt. 121–53, 34 FR 15244, Sept. 30, 1969; Amdt. 121–79, 36 FR 18724, Sept. 21, 1971; Amdt. 121–93, 37 FR 14294, June 19, 1972 Amdt. 121–106, 38 FR 22378, Aug. 20, 1973; Amdt. 121–149, 43 FR 50603, Oct. 30, 1978; Amdt. 121–158, 45 FR 38348, June 9, 1980; Amdt. 121–239, 59 FR 32057, June 21, 1994]

§ 121.340 Emergency flotation means.

(a) Except as provided in paragraph (b) of this section, no person may operate an airplane in any overwater operation unless it is equipped with life preservers in accordance with §121.339(a)(1) or with an approved flotation means for each occupant. This means must be within easy reach of each seated occupant and must be readily removable from the airplane.

(b) Upon application by the air carrier or commercial operator, the Administrator may approve the operation of an airplane over water without the life preservers or flotation means required by paragraph (a) of this section, if the air carrier or commercial operator shows that the water over which the airplane is to be operated is not of such size and depth that life preservers or flotation means would be required for the survival of its occupants in the event the flight terminates in that water.

[Doc. No. 6713, 31 FR 1147, Jan. 28, 1966, as amended by Amdt. 121–25, 32 FR 3223, Feb. 24, 1967; Amdt. 121–251, 60 FR 65932, Dec. 20, 1995]

§ 121.341 Equipment for operations in icing conditions.

(a) Except as permitted in paragraph (c)(2) of this section, unless an airplane is type certificated under the transport category airworthiness requirements relating to ice protection, or unless an airplane is a non-transport category airplane type certificated after December 31, 1964, that has the ice protection provisions that meet section 34 of appendix A of part 135 of this chapter, no person may operate an airplane in icing conditions unless it is equipped

with means for the prevention or removal of ice on windshields, wings, empennage, propellers, and other parts of the airplane where ice formation will adversely affect the safety of the airplane.

(b) No person may operate an airplane in icing conditions at night unless means are provided for illuminating or otherwise determining the formation of ice on the parts of the wings that are critical from the standpoint of ice accumulation. Any illuminating that is used must be of a type that will not cause glare or reflection that would handicap crewmembers in the performance of their duties.

(c) *Non-transport category airplanes type certificated after December 31, 1964.* Except for an airplane that has ice protection provisions that meet section 34 of appendix A of part 135 of this chapter, or those for transport category airplane type certification, no person may operate—

(1) Under IFR into known or forecast light or moderate icing conditions;

(2) Under VFR into known light or moderate icing conditions; unless the airplane has functioning deicing anti-icing equipment protecting each propeller, windshield, wing, stabilizing or control surface, and each airspeed, altimeter, rate of climb, or flight attitude instrument system; or

(3) Into known or forecast severe icing conditions.

(d) If current weather reports and briefing information relied upon by the pilot in command indicate that the forecast icing condition that would otherwise prohibit the flight will not be encountered during the flight because of changed weather conditions since the forecast, the restrictions in paragraph (c) of this section based on forecast conditions do not apply.

[Doc. No. 6258, 29 FR 18205, Dec. 31, 1964, as amended by Amdt. 121–251, 60 FR 65929, Dec. 20, 1995]

§ 121.342 Pitot heat indication systems.

No person may operate a transport category airplane or, after December 20, 1999, a nontransport category airplane type certificated after December 31, 1964, that is equipped with a flight instrument pitot heating system unless the airplane is also equipped with an operable pitot heat indication system that complies § 25.1326 of this chapter in effect on April 12, 1978.

[Doc. No. 28154, 60 FR 65932, Dec. 20, 1995]

§ 121.343 Flight recorders.

(a) Except as provided in paragraphs (b), (c), (d), (e), and (f) of this section, no person may operate a large airplane that is certificated for operations above 25,000 feet altitude or is turbine-engine powered unless it is equipped with one or more approved flight recorders that record data from which the following may be determined within the ranges, accuracies, and recording intervals specified in appendix B of this part:

(1) Time;
(2) Altitude;
(3) Airspeed;
(4) Vertical acceleration;
(5) Heading; and
(6) Time of each radio transmission either to or from air traffic control.

(b) No person may operate a large airplane type certificated up to and including September 30, 1969, for operations above 25,000 feet altitude, or a turbine-engine powered airplane certificated before the same date, unless it is equipped before May 26, 1989 with one or more approved flight recorders that utilize a digital method of recording and storing data and a method of readily retrieving that data from the storage medium. The following information must be able to be determined within the ranges, accuracies, and recording intervals specified in appendix B of this part:

(1) Time;
(2) Altitude;
(3) Airspeed;
(4) Vertical acceleration;
(5) Heading; and
(6) Time of each radio transmission either to or from air traffic control.

(c) Except as provided in paragraph (l) of this section, no person may operate an airplane specified in paragraph (b) of this section unless it is equipped, before May 26, 1994, with one or more approved flight recorders that utilize a digital method of recording and storing data and a method of readily retrieving that data from the storage medium. The following information must be able to be determined within the

ranges, accuracies and recording intervals specified in appendix B of this part:

(1) Time;
(2) Altitude;
(3) Airspeed;
(4) Vertical acceleration;
(5) Heading;
(6) Time of each radio transmission either to or from air traffic control;
(7) Pitch attitude;
(8) Roll attitude;
(9) Longitudinal acceleration;
(10) Control column or pitch control surface position; and
(11) Thrust of each engine.

(d) No person may operate an airplane specified in paragraph (b) of this section that is manufactured after May 26, 1989, as well as airplanes specified in paragraph (a) of this section that have been type certificated after September 30, 1969, unless it is equipped with one or more approved flight recorders that utlitize a digital method of recording and storing data and a method of readily retrieving that data from the storage medium. The following information must be able to be determined within the ranges, accuracies, and recording intervals specified in appendix B of this part:

(1) Time;
(2) Altitude;
(3) Airspeed;
(4) Vertical acceleration;
(5) Heading;
(6) Time of each radio transmission either to or from air traffic control;
(7) Pitch attitude;
(8) Roll attitude;
(9) Longitudinal acceleration;
(10) Pitch trim position;
(11) Control column or pitch control surface position;
(12) Control wheel or lateral control surface position;
(13) Rudder pedal or yaw control surface position;
(14) Thrust of each engine;
(15) Position of each thrust reverser;
(16) Trailing edge flap or cockpit flap control position; and
(17) Leading edge flap or cockpit flap control position.

For the purpose of this section, *manufactured* means the point in time at which the airplane inspection acceptance records reflect that the airplane is complete and meets the FAA-approved type design data.

(e) After October 11, 1991, no person may operate a large airplane equipped with a digital data bus and ARINC 717 digital flight data acquisition unit (DFDAU) or equivalent unless it is equipped with one or more approved flight recorders that utilize a digital method of recording and storing data and a method of readily retrieving that data from the storage medium. Any parameters specified in appendix B of this part that are available on the digital data bus must be recorded within the ranges, accuracies, resolutions, and sampling intervals specified.

(f) After October 11, 1991, no person may operate an airplane specified in paragraph (b) of this section that is manufactured after October 11, 1991, nor an airplane specified in paragraph (a) of this section that has been type certificated after September 30, 1969, and manufactured after October 11, 1991, unless it is equipped with one or more flight recorders that utilize a digital method of recording and storing data and a method of readily retrieving that data from the storage medium. The parameters specified in appendix B of this part must be recorded within the ranges, accuracies, resolutions, and sampling intervals specified.

(g) Whenever a flight recorder required by this section is installed, it must be operated continuously from the instant the airplane begins the takeoff roll until it has completed the landing roll at an airport.

(h) Except as provided in paragraph (i) of this section, and except for recorded data erased as authorized in this paragraph, each certificate holder shall keep the recorded data prescribed in paragraph (a), (b), (c), or (d) of this section, as appropriate, until the airplane has been operated for at least 25 hours of the operating time specified in §121.359(a). A total of 1 hour of recorded data may be erased for the purpose of testing the flight recorder or the flight recorder system. Any erasure made in accordance with this paragraph must be of the oldest recorded data accumulated at the time of testing. Except as provided in paragraph (i) of this section, no record need be kept more than 60 days.

(i) In the event of an accident or occurrence that requires immediate notification of the National Transportation Safety Board under part 830 of its regulations and that results in termination of the flight, the certificate holder shall remove the recording media from the airplane and keep the recorded data required by paragraph (a), (b), (c), or (d) of this section, as appropriate, for at least 60 days or for a longer period upon the request of the Board or the Administrator.

(j) Each flight recorder required by this section must be installed in accordance with the requirements of §25.1459 of this chapter in effect on August 31, 1977. The correlation required by §25.1459(c) of this chapter need be established only on one airplane of any group of airplanes—

(1) That are of the same type;

(2) On which the model flight recorder and its installation are the same; and

(3) On which there is no difference in the type design with respect to the installation of those first pilot's instruments associated with the flight recorder. The most recent instrument calibration, including the recording medium from which this calibration is derived, and the recorder correlation must be retained by the certificate holder.

(k) Each flight recorder required by this section that records the data specified in paragraph (a), (b), (c), or (d) of this section, as appropriate, must have an approved device to assist in locating that recorder under water.

(l) No person may operate an airplane specified in paragraph (b) of this section that meets the Stage 2 noise levels of part 36 of this chapter and is subject to §91.801(c) of this chapter unless it is equipped with one or more approved flight data recorders that utilize a digital method of recording and storing data and a method of readily retrieving that data from the storage medium. The information specified in paragraphs (c)(1) through (c)(11) of this section must be able to be determined within the ranges, accuracies and recording intervals specified in appendix B of this part. In addition—

(1) This flight data recorder must be installed at the next heavy maintenance check after May 26, 1994, but no later than May 26, 1995. A heavy maintenance check is considered to be any time an aircraft is scheduled to be out of service for 4 or more days.

(2) By June 23, 1994, each carrier must submit to the FAA Flight Standards Service, Air Transportation Division (AFS–200), documentation listing those airplanes covered under this paragraph and evidence that it has ordered a sufficient number of flight data recorders to meet the May 26, 1995, compliance date for all aircraft on that list.

(3) After May 26, 1994, any aircraft that is modified to meet Stage 3 noise levels must have the flight data recorder described in paragraph (c) of this section installed before operating under this part.

[Doc. No. 24418, 52 FR 9636, Mar. 25, 1987, as amended by Amdt. 121–197, 53 FR 26147, July 11, 1988; Amdt. 121–238, 59 FR 26900, May 24, 1994]

§121.344 Digital flight data recorders for transport category airplanes.

(a) Except as provided in paragraph (l) of this section, no person may operate under this part a turbine-engine-powered transport category airplane unless it is equipped with one or more approved flight recorders that use a digital method of recording and storing data and a method of readily retrieving that data from the storage medium. The operational parameters required to be recorded by digital flight data recorders required by this section are as follows: The phrase ''when an information source is installed'' following a parameter indicates that recording of that parameter is not intended to require a change in installed equipment:

(1) Time;

(2) Pressure altitude;

(3) Indicated airspeed;

(4) Heading—primary flight crew reference (if selectable, record discrete, true or magnetic);

(5) Normal acceleration (Vertical);

(6) Pitch attitude;

(7) Roll attitude;

(8) Manual radio transmitter keying, or CVR/DFDR synchronization reference;

(9) Thrust/power of each engine—primary flight crew reference;

(10) Autopilot engagement status;

(11) Longitudinal acceleration;
(12) Pitch control input;
(13) Lateral control input;
(14) Rudder pedal input;
(15) Primary pitch control surface position;
(16) Primary lateral control surface position;
(17) Primary yaw control surface position;
(18) Lateral acceleration;
(19) Pitch trim surface position or parameters of paragraph (a)(82) of this section if currently recorded;
(20) Trailing edge flap or cockpit flap control selection (except when parameters of paragraph (a)(85) of this section apply);
(21) Leading edge flap or cockpit flap control selection (except when parameters of paragraph (a)(86) of this section apply);
(22) Each Thrust reverser position (or equivalent for propeller airplane);
(23) Ground spoiler position or speed brake selection (except when parameters of paragraph (a)(87) of this section apply);
(24) Outside or total air temperature;
(25) Automatic Flight Control System (AFCS) modes and engagement status, including autothrottle;
(26) Radio altitude (when an information source is installed);
(27) Localizer deviation, MLS Azimuth;
(28) Glideslope deviation, MLS Elevation;
(29) Marker beacon passage;
(30) Master warning;
(31) Air/ground sensor (primary airplane system reference nose or main gear);
(32) Angle of attack (when information source is installed);
(33) Hydraulic pressure low (each system);
(34) Ground speed (when an information source is installed);
(35) Ground proximity warning system;
(36) Landing gear position or landing gear cockpit control selection;
(37) Drift angle (when an information source is installed);
(38) Wind speed and direction (when an information source is installed);
(39) Latitude and longitude (when an information source is installed);
(40) Stick shaker/pusher (when an information source is installed);
(41) Windshear (when an information source is installed);
(42) Throttle/power lever position;
(43) Additional engine parameters (as designated in Appendix M of this part);
(44) Traffic alert and collision avoidance system;
(45) DME 1 and 2 distances;
(46) Nav 1 and 2 selected frequency;
(47) Selected barometric setting (when an information source is installed);
(48) Selected altitude (when an information source is installed);
(49) Selected speed (when an information source is installed);
(50) Selected mach (when an information source is installed);
(51) Selected vertical speed (when an information source is installed);
(52) Selected heading (when an information source is installed);
(53) Selected flight path (when an information source is installed);
(54) Selected decision height (when an information source is installed);
(55) EFIS display format;
(56) Multi-function/engine/alerts display format;
(57) Thrust command (when an information source is installed);
(58) Thrust target (when an information source is installed);
(59) Fuel quantity in CG trim tank (when an information source is installed);
(60) Primary Navigation System Reference;
(61) Icing (when an information source is installed);
(62) Engine warning each engine vibration (when an information source is installed);
(63) Engine warning each engine over temp. (when an information source is installed);
(64) Engine warning each engine oil pressure low (when an information source is installed);
(65) Engine warning each engine over speed (when an information source is installed);
(66) Yaw trim surface position;
(67) Roll trim surface position;
(68) Brake pressure (selected system);
(69) Brake pedal application (left and right);

(70) Yaw or sideslip angle (when an information source is installed);

(71) Engine bleed valve position (when an information source is installed);

(72) De-icing or anti-icing system selection (when an information source is installed);

(73) Computed center of gravity (when an information source is installed);

(74) AC electrical bus status;

(75) DC electrical bus status;

(76) APU bleed valve position (when an information source is installed);

(77) Hydraulic pressure (each system);

(78) Loss of cabin pressure;

(79) Computer failure;

(80) Heads-up display (when an information source is installed);

(81) Para-visual display (when an information source is installed);

(82) Cockpit trim control input position—pitch;

(83) Cockpit trim control input position—roll;

(84) Cockpit trim control input position—yaw;

(85) Trailing edge flap and cockpit flap control position;

(86) Leading edge flap and cockpit flap control position;

(87) Ground spoiler position and speed brake selection; and

(88) All cockpit flight control input forces (control wheel, control column, rudder pedal).

(b) For all turbine-engine powered transport category airplanes manufactured on or before October 11, 1991, by August 20, 2001.

(1) For airplanes not equipped as of July 16, 1996, with a flight data acquisition unit (FDAU), the parameters listed in paragraphs (a)(1) through (a)(18) of this section must be recorded within the ranges and accuracies specified in Appendix B of this part, and—

(i) For airplanes with more than two engines, the parameter described in paragraph (a)(18) is not required unless sufficient capacity is available on the existing recorder to record that parameter;

(ii) Parameters listed in paragraphs (a)(12) through (a)(17) each may be recorded from a single source.

(2) For airplanes that were equipped as of July 16, 1996, with a flight data acquisition unit (FDAU), the parameters listed in paragraphs (a)(1) through (a)(22) of this section must be recorded within the ranges, accuracies, and recording intervals specified in Appendix M of this part. Parameters listed in paragraphs (a)(12) through (a)(17) each may be recorded from a single source.

(3) The approved flight recorder required by this section must be installed at the earliest time practicable, but no later than the next heavy maintenance check after August 18, 1999 and no later than August 20, 2001. A heavy maintenance check is considered to be any time an airplane is scheduled to be out of service for 4 or more days and is scheduled to include access to major structural components.

(c) For all turbine-engine powered transport category airplanes manufactured on or before October 11, 1991—

(1) That were equipped as of July 16, 1996, with one or more digital data bus(es) and an ARINC 717 digital flight data acquisition unit (DFDAU) or equivalent, the parameters specified in paragraphs (a)(1) through (a)(22) of this section must be recorded within the ranges, accuracies, resolutions, and sampling intervals specified in Appendix M of this part by August 20, 2001. Parameters listed in paragraphs (a)(12) through (a)(14) each may be recorded from a single source.

(2) Commensurate with the capacity of the recording system (DFDAU or equivalent and the DFDR), all additional parameters for which information sources are installed and which are connected to the recording system must be recorded within the ranges, accuracies, resolutions, and sampling intervals specified in Appendix M of this part by August 20, 2001.

(3) That were subject to §121.343(e) of this part, all conditions of §121.343(e) must continue to be met until compliance with paragraph (c)(1) of this section is accomplished.

(d) For all turbine-engine-powered transport category airplanes that were manufactured after October 11, 1991—

(1) The parameters listed in paragraph (a)(1) through (a)(34) of this section must be recorded within the

ranges, accuracies, resolutions, and recording intervals specified in Appendix M of this part by August 20, 2001. Parameters listed in paragraphs (a)(12) through (a)(14) each may be recorded from a single source.

(2) Commensurate with the capacity of the recording system, all additional parameters for which information sources are installed and which are connected to the recording system must be recorded within the ranges, accuracies, resolutions, and sampling intervals specified in Appendix M of this part by August 20, 2001.

(e) For all turbine-engine-powered transport category airplanes that are manufactured after August 18, 2000—

(1) The parameters listed in paragraph (a)(1) through (57) of this section must be recorded within the ranges, accuracies, resolutions, and recording intervals specified in Appendix M of this part.

(2) Commensurate with the capacity of the recording system, all additional parameters for which information sources are installed and which are connected to the recording system, must be recorded within the ranges, accuracies, resolutions, and sampling intervals specified in Appendix M of this part.

(f) For all turbine-engine-powered transport category airplanes that are manufactured after August 19, 2002 the parameters listed in paragraph (a)(1) through (a)(88) of this section must be recorded within the ranges, accuracies, resolutions, and recording intervals specified in Appendix M of this part.

(g) Whenever a flight data recorder required by this section is installed, it must be operated continuously from the instant the airplane begins its takeoff roll until it has completed its landing roll.

(h) Except as provided in paragraph (i) of this section, and except for recorded data erased as authorized in this paragraph, each certificate holder shall keep the recorded data prescribed by this section, as appropriate, until the airplane has been operated for at least 25 hours of the operating time specified in §121.359(a) of this part. A total of 1 hour of recorded data may be erased for the purpose of testing the flight recorder or the flight recorder system. Any erasure made in accordance with this paragraph must be of the oldest recorded data accumulated at the time of testing. Except as provided in paragraph (i) of this section, no record need be kept more than 60 days.

(i) In the event of an accident or occurrence that requires immediate notification of the National Transportation Safety Board under 49 CFR 830 of its regulations and that results in termination of the flight, the certificate holder shall remove the recorder from the airplane and keep the recorder data prescribed by this section, as appropriate, for at least 60 days or for a longer period upon the request of the Board or the Administrator.

(j) Each flight data recorder system required by this section must be installed in accordance with the requirements of §25.1459 (a), (b), (d), and (e) of this chapter. A correlation must be established between the values recorded by the flight data recorder and the corresponding values being measured. The correlation must contain a sufficient number of correlation points to accurately establish the conversion from the recorded values to engineering units or discrete state over the full operating range of the parameter. Except for airplanes having separate altitude and airspeed sensors that are an integral part of the flight data recorder system, a single correlation may be established for any group of airplanes—

(1) That are of the same type;

(2) On which the flight recorder system and its installation are the same; and

(3) On which there is no difference in the type design with respect to the installation of those sensors associated with the flight data recorder system. Documentation sufficient to convert recorded data into the engineering units and discrete values specified in the applicable appendix must be maintained by the certificate holder.

(k) Each flight data recorder required by this section must have an approved device to assist in locating that recorder under water.

(l) The following airplanes that were manufactured before August 18, 1997 need not comply with this section, but

must continue to comply with applicable paragraphs of §121.343 of this chapter, as appropriate:

(1) Airplanes that meet the State 2 noise levels of part 36 of this chapter and are subject to §91.801(c) of this chapter, until January 1, 2000. On and after January 1, 2000, any Stage 2 airplane otherwise allowed to be operated under Part 91 of this chapter must comply with the applicable flight data recorder requirements of this section for that airplane.

(2) British Aerospace 1–11, General Dynamics Convair 580, General Dynamics Convair 600, General Dynamics Convair 640, deHavilland Aircraft Company Ltd. DHC–7, Fairchild Industries FH 227, Fokker F–27 (except Mark 50), F–28 Mark 1000 and Mark 4000, Gulfstream Aerospace G–159, Jetstream 4100 Series, Lockheed Aircraft Corporation Electra 10–A, Lockheed Aircraft Corporation Electra 10–B, Lockheed Aircraft Corporation Electra 10–E, Lockheed Aircraft Corporation Electra L–188, Lockheed Martin Model 382 (L–100) Hercules, Maryland Air Industries, Inc. F27, Mitsubishi Heavy Industries, Ltd. YS–11, Short Bros. Limited SD3–30, Short Bros. Limited SD3–60.

[Doc. No. 28109, 62 FR 38378, July 17, 1997; 62 FR 48135, Sept. 12, 1997, as amended by Amdt. 121–300, 68 FR 42936, July 18, 2003; 68 FR 50069, Aug. 20, 2003]

§121.344a Digital flight data recorders for 10–19 seat airplanes.

(a) Except as provided in paragraph (f) of this section, no person may operate under this part a turbine-engine-powered airplane having a passenger seating configuration, excluding any required crewmember seat, of 10 to 19 seats, that was brought onto the U.S. register after, or was registered outside the United States and added to the operator's U.S. operations specifications after, October 11, 1991, unless it is equipped with one or more approved flight recorders that use a digital method of recording and storing data and a method of readily retrieving that data from the storage medium. On or before August 20, 2001, airplanes brought onto the U.S. register after October 11, 1991, must comply with either the requirements in this section or the applicable paragraphs in §135.152 of this chapter. In addition, by August 20, 2001.

(1) The parameters listed in §§121.344(a)(1) through 121.344(a)(18) of this part must be recorded with the ranges, accuracies, and resolutions specified in Appendix B of part 135 of this chapter, except that—

(i) Either the parameter listed in §121.344 (a)(12) or (a)(15) of this part must be recorded; either the parameters listed in §121.344(a)(13) or (a)(16) of this part must be recorded; and either the parameter listed in §121.344(a)(14) or (a)(17) of this part must be recorded.

(ii) For airplanes with more than two engines, the parameter described in §121.344(a)(18) of this part must also be recorded if sufficient capacity is available on the existing recorder to record that parameter;

(iii) Parameters listed in §§121.344(a)(12) through 121.344(a)(17) of this part each may be recorded from a single source;

(iv) Any parameter for which no value is contained in Appendix B of part 135 of this chapter must be recorded within the ranges, accuracies, and resolutions specified in Appendix M of this part.

(2) Commensurate with the capacity of the recording system (FDAU or equivalent and the DFDR), the parameters listed in §§121.344(a)(19) through 121.344(a)(22) of this part also must be recorded within the ranges, accuracies, resolutions, and recording intervals specified in Appendix B of part 135 of this chapter.

(3) The approved flight recorder required by this section must be installed as soon as practicable, but no later than the next heavy maintenance check or equivalent after August 18, 1999. A heavy maintenance check is considered to be any time an airplane is scheduled to be out of service for 4 more days and is scheduled to include access to major structural components.

(b) For a turbine-engine-powered airplanes having a passenger seating configuration, excluding any required crewmember seat, of 10 to 19 seats, that are manufactured after August 18, 2000.

(1) The parameters listed in §§121.344(a)(1) through 121.344(a)(57) of this part, must be recorded within the

ranges, accuracies, resolutions, and recording intervals specified in Appendix M of this part.

(2) Commensurate with the capacity of the recording system, all additional parameters listed in §121.344(a) of this part for which information sources are installed and which are connected to the recording system, must be recorded within the ranges, accuracies, resolutions, and sampling intervals specified in Appendix M of this part by August 20, 2001.

(c) For all turbine-engine-powered airplanes having a passenger seating configuration, excluding any required crewmember seats, of 10 to 19 seats, that are manufactured after August 19, 2002, the parameters listed in §121.344(a)(1) through (a)(88) of this part must be recorded within the ranges, accuracies, resolutions, and recording intervals specified in Appendix M of this part.

(d) Each flight data recorder system required by this section must be installed in accordance with the requirements of §23.1459 (a), (b), (d), and (e) of this chapter. A correlation must be established between the values recorded by the flight data recorder and the corresponding values being measured. The correlation must contain a sufficient number of correlation points to accurately establish the conversion from the recorded values to engineering units or discrete state over the full operating range of the parameter. A single correlation may be established for any group of airplanes—

(1) That are of the same type;

(2) On which the flight recorder system and its installation are the same; and

(3) On which there is no difference in the type design with respect to the installation of those sensors associated with the flight data recorder system. Correlation documentation must be maintained by the certificate holder.

(e) All airplanes subject to this section are also subject to the requirements and exceptions stated in §§121.344(g) through 121.344(k) of this part.

(f) For airplanes that were manufactured before August 18, 1997, the following airplane types need not comply with this section, but must continue to comply with applicable paragraphs of §135.152 of this chapter, as appropriate: Beech Aircraft–99 Series, Beech Aircraft 1300, Beech Aircraft 1900C, Construcciones Aeronauticas, S.A. (CASA) C–212, deHavilland DHC–6, Dornier 228, HS–748, Embraer EMB 110, Jetstream 3101, Jetstream 3201, Fairchild Aircraft SA–226, Fairchild Metro SA–227.

[Doc. No. 28109, 62 FR 38380, July 17, 1997; 62 FR 48135, Sept. 12, 1997; 62 FR 65202, Dec. 11, 1997, as amended by Amdt. 121–300, 68 FR 42936, July 18, 2003]

§121.345 Radio equipment.

(a) No person may operate an airplane unless it is equipped with radio equipment required for the kind of operation being conducted.

(b) Where two independent (separate and complete) radio systems are required by §§121.347 and 121.349, each system must have an independent antenna installation except that, where rigidly supported nonwire antennas or other antenna installations of equivalent reliability are used, only one antenna is required.

(c) ATC transponder equipment installed within the time periods indicated below must meet the performance and environmental requirements of the following TSO's:

(1) *Through January 1, 1992:* (i) Any class of TSO-C74b or any class of TSO-C74c as appropriate, provided that the equipment was manufactured before January 1, 1990; or

(ii) The appropriate class of TSO-C112 (Mode S).

(2) *After January 1, 1992:* The appropriate class of TSO-C112 (Mode S). For purposes of paragraph (c) (2) of this section, ''installation'' does not include—

(i) Temporary installation of TSO-C74b or TSO-C74c substitute equipment, as appropriate, during maintenance of the permanent equipment;

(ii) Reinstallation of equipment after temporary removal for maintenance; or

(iii) For fleet operations, installation of equipment in a fleet aircraft after

removal of the equipment for maintenance from another aircraft in the same operator's fleet.

[Doc. No. 6258, 29 FR 19205, Dec. 31, 1964, as amended by Amdt. 121–101, 37 FR 28499, Dec. 27, 1972; Amdt. 121–190, 52 FR 3391, Feb. 3, 1987]

§ 121.347 Communication and navigation equipment for operations under VFR over routes navigated by pilotage.

(a) No person may operate an airplane under VFR over routes that can be navigated by pilotage unless the airplane is equipped with the radio communication equipment necessary under normal operating conditions to fulfill the following:

(1) Communicate with at least one appropriate station from any point on the route;

(2) Communicate with appropriate air traffic control facilities from any point within Class B, Class C, or Class D airspace, or within a Class E surface area designated for an airport in which flights are intended; and

(3) Receive meteorological information from any point en route by either of two independent systems. One of the means provided to comply with this subparagraph may be used to comply with paragraphs (a)(1) and (2) of this section.

(b) No person may operate an airplane at night under VFR over routes that can be navigated by pilotage unless that airplane is equipped with—

(1) Radio communication equipment necessary under normal operating conditions to fulfill the functions specified in paragraph (a) of this section; and

(2) Navigation equipment suitable for the route to be flown.

[Doc. No. 6258, 29 FR 19205, Dec. 31, 1964, as amended by Amdt. 121–226, 56 FR 65663, Dec. 17, 1991; Amdt. 121–333, 72 FR 31681, June 7, 2007]

§ 121.349 Communication and navigation equipment for operations under VFR over routes not navigated by pilotage or for operations under IFR or over the top.

(a) *Navigation equipment requirements—General.* No person may conduct operations under VFR over routes that cannot be navigated by pilotage, or operations conducted under IFR or over the top, unless—

(1) The en route navigation aids necessary for navigating the airplane along the route (e.g., ATS routes, arrival and departure routes, and instrument approach procedures, including missed approach procedures if a missed approach routing is specified in the procedure) are available and suitable for use by the aircraft navigation systems required by this section;

(2) The airplane used in those operations is equipped with at least—

(i) Except as provided in paragraph (c) of this section, two approved independent navigation systems suitable for navigating the airplane along the route to be flown within the degree of accuracy required for ATC;

(ii) One marker beacon receiver providing visual and aural signals; and

(iii) One ILS receiver; and

(3) Any RNAV system used to meet the navigation equipment requirements of this section is authorized in the certificate holder's operations specifications.

(b) *Communication equipment requirements.* No person may operate an airplane under VFR over routes that cannot be navigated by pilotage, and no person may operate an airplane under IFR or over the top, unless the airplane is equipped with—

(1) At least two independent communication systems necessary under normal operating conditions to fulfill the functions specified in § 121.347 (a); and

(2) At least one of the communication systems required by paragraph (b)(1) of this section must have two-way voice communication capability.

(c) *Use of a single independent navigation system for operations under VFR over routes that cannot be navigated by pilotage, or operations conducted under IFR or over the top.* Notwithstanding the requirements of paragraph (a)(2)(i) of this section, the airplane may be equipped with a single independent navigation system suitable for navigating the airplane along the route to be flown within the degree of accuracy required for ATC if:

(1) It can be shown that the airplane is equipped with at least one other

independent navigation system suitable, in the event of loss of the navigation capability of the single independent navigation system permitted by this paragraph at any point along the route, for proceeding safely to a suitable airport and completing an instrument approach; and

(2) The airplane has sufficient fuel so that the flight may proceed safely to a suitable airport by use of the remaining navigation system, and complete an instrument approach and land.

(d) *Use of VOR navigation equipment.* If VOR navigation equipment is used to comply with paragraph (a) or (c) of this section, no person may operate an airplane unless it is equipped with at least one approved DME or suitable RNAV system.

(e) *Additional communication system equipment requirements for operators subject to § 121.2.* In addition to the requirements in paragraph (b) of this section, no person may operate an airplane having a passenger seat configuration of 10 to 30 seats, excluding each crewmember seat, and a maximum payload capacity of 7,500 pounds or less, under IFR, over the top, or in extended over-water operations unless it is equipped with at least—

(1) Two microphones; and

(2) Two headsets, or one headset and one speaker.

[Doc. No. FAA–2002–14002, 72 FR 31681, June 7, 2007]

§ 121.351 Communication and navigation equipment for extended over-water operations and for certain other operations.

(a) Except as provided in paragraph (c) of this section, no person may conduct an extended over-water operation unless the airplane is equipped with at least two independent long-range navigation systems and at least two independent long-range communication systems necessary under normal operating conditions to fulfill the following functions—

(1) Communicate with at least one appropriate station from any point on the route;

(2) Receive meteorological information from any point on the route by either of two independent communication systems. One of the communication systems used to comply with this paragraph may be used to comply with paragraphs (a)(1) and (a)(3) of this section; and

(3) At least one of the communication systems must have two-way voice communication capability.

(b) No certificate holder conducting a flag or supplemental operation or a domestic operation within the State of Alaska may conduct an operation without the equipment specified in paragraph (a) of this section, if the Administrator finds that equipment to be necessary for search and rescue operations because of the nature of the terrain to be flown over.

(c) Notwithstanding the requirements of paragraph (a) of this section, installation and use of a single LRNS and a single LRCS may be authorized by the Administrator and approved in the certificate holder's operations specifications for operations and routes in certain geographic areas. The following are among the operational factors the Administrator may consider in granting an authorization:

(1) The ability of the flightcrew to navigate the airplane along the route within the degree of accuracy required for ATC,

(2) The length of the route being flown, and

(3) The duration of the very high frequency communications gap.

[Doc. No. 6258, 29 FR 19205, Dec. 31, 1964, as amended by Amdt. 121–253, 61 FR 2611, Jan. 26, 1996; Amdt. 121–254, 61 FR 7191, Feb. 26, 1996; Amdt. 121–333, 72 FR 31682, June 7, 2007]

§ 121.353 Emergency equipment for operations over uninhabited terrain areas: Flag, supplemental, and certain domestic operations.

Unless the airplane has the following equipment, no person may conduct a flag or supplemental operation or a domestic operation within the States of Alaska or Hawaii over an uninhabited area or any other area that (in its operations specifications) the Administrator specifies required equipment for search and rescue in case of an emergency:

(a) Suitable pyrotechnic signaling devices.

(b) An approved survival type emergency locator transmitter. Batteries

used in this transmitter must be replaced (or recharged, if the battery is rechargeable) when the transmitter has been in use for more than 1 cumulative hour, or when 50 percent of their useful life (or for rechargeable batteries, 50 percent of their useful life of charge) has expired, as established by the transmitter manufacturer under its approval. The new expiration date for replacing (or recharging) the battery must be legibly marked on the outside of the transmitter. The battery useful life (or useful life of charge) requirements of this paragraph do not apply to batteries (such as water-activated batteries) that are essentially unaffected during probable storage intervals.

(c) Enough survival kits, appropriately equipped for the route to be flown for the number of occupants of the airplane.

[Doc. No. 6258, 29 FR 19205, Dec. 31, 1964, as amended by Amdt. 121–79, 36 FR 18724, Sept. 21, 1971; Amdt. 121–106, 38 FR 22378 Aug. 20, 1973; Amdt. 121–158, 45 FR 38348, June 9, 1980; Amdt. 121–239, 59 FR 32057, June 21, 1994; Amdt. 121–251, 60 FR 65932, Dec. 20, 1995]

§ 121.354 Terrain awareness and warning system.

(a) *Airplanes manufactured after March 29, 2002.* No person may operate a turbine-powered airplane unless that airplane is equipped with an approved terrain awareness and warning system that meets the requirements for Class A equipment in Technical Standard Order (TSO)–C151. The airplane must also include an approved terrain situational awareness display.

(b) *Airplanes manufactured on or before March 29, 2002.* No person may operate a turbine-powered airplane after March 29, 2005, unless that airplane is equipped with an approved terrain awareness and warning system that meets the requirements for Class A equipment in Technical Standard Order (TSO)–C151. The airplane must also include an approved terrain situational awareness display.

(Approved by the Office of Management and Budget under control number 2120–0631)

(c) *Airplane Flight Manual.* The Airplane Flight Manual shall contain appropriate procedures for—

(1) The use of the terrain awareness and warning system; and

(2) Proper flight crew reaction in response to the terrain awareness and warning system audio and visual warnings.

[Doc. No. 29312, 65 FR 16755, Mar. 29, 2000]

§ 121.355 Equipment for operations on which specialized means of navigation are used.

(a) No certificate holder may conduct an operation—

(1) Using Doppler Radar or an Inertial Navigation System outside the 48 contiguous States and the District of Columbia, unless such systems have been approved in accordance with appendix G to this part; or

(2) Using Doppler Radar or an Inertial Navigation System within the 48 contiguous States and the District of Columbia, or any other specialized means of navigation, unless it shows that an adequate airborne system is provided for the specialized navigation authorized for the particular operation.

(b) Notwithstanding paragraph (a) of this section, Doppler Radar and Inertial Navigation Systems, and the training programs, maintenance programs, relevant operations manual material, and minimum equipment lists prepared in accordance therewith, approved before April 29, 1972, are not required to be approved in accordance with that paragraph.

[Doc. No. 10204, 37 FR 6464, Mar. 30, 1972]

§ 121.356 Collision avoidance system.

Effective January 1, 2005, any airplane you operate under this part must be equipped and operated according to the following table:

COLLISION AVOIDANCE SYSTEMS

If you operate any—	Then you must operate that airplane with—
(a) Turbine-powered airplane of more than 33,000 pounds maximum certificated takeoff weight.	(1) An appropriate class of Mode S transponder that meets Technical Standard Order (TSO) C–112, or a later version, and one of the following approved units: (i) TCAS II that meets TSO C–119b (version 7.0), or takeoff weight a later version. (ii) TCAS II that meets TSO C–119a (version 6.04A Enhanced) that was installed in that airplane before May 1, 2003. If that TCAS II version 6.04A Enhanced no longer can be repaired to TSO C–119a standards, it must be replaced with a TCAS II that meets TSO C–119b (version 7.0), or a later version. (iii) A collision avoidance system equivalent to TSO C–119b (version 7.0), or a later version, capable of coordinating with units that meet TSO C–119a (version 6.04A Enhanced), or a later version.
(b) Passenger or combination cargo/passenger (combi) airplane that has a passenger seat configuration of 10–30 seats.	(1) TCAS I that meets TSO C–118, or a later version, or (2) A collision avoidance system equivalent to has a TSO C–118, or a later version, or (3) A collision avoidance system and Mode S transponder that meet paragraph (a)(1) of this section.
(c) Piston-powered airplane of more than 33,000 pounds maximum certificated takeoff weight.	(1) TCAS I that meets TSO C–118, or a later version, or (2) A collision avoidance system equivalent to maximum TSO C–118, or a later version, or (3) A collision avoidance system and Mode S transponder that meet paragraph (a)(1) of this section.

[Doc. No. FAA–2001–10910, 68 FR 15902, Apr. 1, 2003]

§ 121.357 Airborne weather radar equipment requirements.

(a) No person may operate any transport category airplane (except C–46 type airplanes) or a nontransport category airplane certificated after December 31, 1964, unless approved airborne weather radar equipment has been installed in the airplane.

(b) [Reserved]

(c) Each person operating an airplane required to have approved airborne weather radar equipment installed shall, when using it under this part, operate it in accordance with the following:

(1) *Dispatch.* No person may dispatch an airplane (or begin the flight of an airplane in the case of a certificate holder, that does not use a dispatch system) under IFR or night VFR conditions when current weather reports indicate that thunderstorms, or other potentially hazardous weather conditions that can be detected with airborne weather radar, may reasonably be expected along the route to be flown, unless the airborne weather radar equipment is in satisfactory operating condition.

(2) If the airborne weather radar becomes inoperative en route, the airplane must be operated in accordance with the approved instructions and procedures specified in the operations manual for such an event.

(d) This section does not apply to airplanes used solely within the State of Hawaii or within the State of Alaska and that part of Canada west of longitude 130 degrees W, between latitude 70 degrees N, and latitude 53 degrees N, or during any training, test, or ferry flight.

(e) Notwithstanding any other provision of this chapter, an alternate electrical power supply is not required for airborne weather radar equipment.

[Doc. No. 6258, 29 FR 19205, Dec. 31, 1964, as amended by Amdt. 121–18, 31 FR 5825, Apr. 15, 1966; Amdt. 121–130, 41 FR 47229, Oct. 28, 1976; Amdt. 121–251, 60 FR 65932, Dec. 20, 1995]

§ 121.358 Low-altitude windshear system equipment requirements.

(a) *Airplanes manufactured after January 2, 1991.* No person may operate a turbine-powered airplane manufactured after January 2, 1991, unless it is equipped with either an approved airborne windshear warning and flight guidance system, an approved airborne detection and avoidance system, or an approved combination of these systems.

(b) *Airplanes manufactured before January 3, 1991.* Except as provided in paragraph (c) of this section, after January 2, 1991, no person may operate a turbine-powered airplane manufactured before January 3, 1991 unless it meets one of the following requirements as applicable.

(1) The makes/models/series listed below must be equipped with either an approved airborne windshear warning and flight guidance system, an approved airborne detection and avoidance system, or an approved combination of these systems:

(i) A–300–600;

(ii) A–310—all series;

(iii) A–320—all series;

(iv) B–737–300, 400, and 500 series;

(v) B–747–400;

(vi) B–757—all series;

(vii) B–767—all series;

(viii) F–100—all series;

(ix) MD–11—all series; and

(x) MD–80 series equipped with an EFIS and Honeywell-970 digital flight guidance computer.

(2) All other turbine-powered airplanes not listed above must be equipped with as a minimum requirement, an approved airborne windshear warning system. These airplanes may be equipped with an approved airborne windshear detection and avoidance system, or an approved combination of these systems.

(c) *Extension of the compliance date.* A certificate holder may obtain an extension of the compliance date in paragraph (b) of this section if it obtains FAA approval of a retrofit schedule. To obtain approval of a retrofit schedule and show continued compliance with that schedule, a certificate holder must do the following:

(1) Submit a request for approval of a retrofit schedule by June 1, 1990, to the Flight Standards Division Manager in the region of the certificate holding district office.

(2) Show that all of the certificate holder's airplanes required to be equipped in accordance with this section will be equipped by the final compliance date established for TCAS II retrofit.

(3) Comply with its retrofit schedule and submit status reports containing information acceptable to the Administrator. The initial report must be submitted by January 2, 1991, and subsequent reports must be submitted every six months thereafter until completion of the schedule. The reports must be submitted to the certificate holder's assigned Principal Avionics Inspector.

(d) *Definitions.* For the purposes of this section the following definitions apply—

(1) *Turbine-powered airplane* includes, e.g., turbofan-, turbojet-, propfan-, and ultra-high bypass fan-powered airplanes. The definition specifically excludes turbopropeller-powered airplanes.

(2) An airplane is considered manufactured on the date the inspection acceptance records reflect that the airplane is complete and meets the FAA Approved Type Design data.

[Doc. No. 25954, 55 FR 13242, Apr. 9, 1990]

§ 121.359 Cockpit voice recorders.

(a) No certificate holder may operate a large turbine engine powered airplane or a large pressurized airplane with four reciprocating engines unless an approved cockpit voice recorder is installed in that airplane and is operated continuously from the start of the use of the checklist (before starting engines for the purpose of flight), to completion of the final checklist at the termination of the flight.

(b) [Reserved]

(c) The cockpit voice recorder required by paragraph (a) of this section must meet the following application standards:

(1) The requirements of part 25 of this chapter in affect on August 31, 1977.

(2) After September 1, 1980, each recorder container must—

(i) Be either bright orange or bright yellow;

(ii) Have reflective tape affixed to the external surface to facilitate its location under water; and

(iii) Have an approved underwater locating device on or adjacent to the container which is secured in such a manner that they are not likely to be separated during crash impact, unless the cockpit voice recorder, and the flight recorder required by §121.343, are installed adjacent to each other in such a manner that they are not likely to be separated during crash impact.

(d) No person may operate a multiengine, turbine-powered airplane having a passenger seat configuration of 10–19 seats unless it is equipped with an approved cockpit voice recorder that:

(1) Is installed in compliance with §23.1457(a) (1) and (2), (b), (c), (d), (e), (f), and (g); §25.1457(a) (1) and (2), (b), (c), (d), (e), (f), and (g) of this chapter, as applicable; and

(2) Is operated continuously from the use of the checklist before the flight to completion of the final checklist at the end of the flight.

(e) No person may operate a multiengine, turbine-powered airplane having a passenger seat configuration of 20 to 30 seats unless it is equipped with an approved cockpit voice recorder that—

(1) Is installed in compliance with §23.1457 or §25.1457 of this chapter, as applicable; and

(2) Is operated continuously from the use of the checklist before the flight to completion of the final checklist at the end of the flight.

(f) In complying with this section, an approved cockpit voice recorder having an erasure feature may be used, so that at any time during the operation of the recorder, information recorded more than 30 minutes earlier may be erased or otherwise obliterated.

(g) For those aircraft equipped to record the uninterrupted audio signals received by a boom or a mask microphone, the flight crewmembers are required to use the boom microphone below 18,000 feet mean sea level. No person may operate a large turbine engine powered airplane or a large pressurized airplane with four reciprocating engines manufactured after October 11, 1991, or on which a cockpit voice recorder has been installed after October 11, 1991, unless it is equipped to record the uninterrupted audio signal received by a boom or mask microphone in accordance with §25.1457(c)(5) of this chapter.

(h) In the event of an accident or occurrence requiring immediate notification of the National Transportation Safety Board under part 830 of its regulations, which results in the termination of the flight, the certificate holder shall keep the recorded information for at least 60 days or, if requested by the Administrator or the Board, for a longer period. Information obtained from the record is used to assist in determining the cause of accidents or occurrences in connection with investigations under part 830. The Administrator does not use the record in any civil penalty or certificate action.

[Doc. No. 6258, 29 FR 19205, Dec. 31, 1964, as amended by Amdt. 121–20, 31 FR 8912, June 28, 1966; Amdt. 121–23, 31 FR 15192, Dec. 3, 1966; Amdt. 121–32, 32 FR 13914, Oct. 6, 1967; Amdt. 121–130, 41 FR 47229, Oct. 28, 1976; Amdt. 121–135, 42 FR 36973, July 18, 1977; Amdt. 121–143, 43 FR 22642, May 25, 1978; Amdt. 121–197, 53 FR 26147, July 11, 1988; Amdt. 121–251, 60 FR 65933, Dec. 20, 1995]

§121.360 Ground proximity warning-glide slope deviation alerting system.

(a) No person may operate a turbine-powered airplane unless it is equipped with a ground proximity warning system that meets the performance and environmental standards of TSO-C92 (available from the FAA, 800 Independence Avenue SW., Washington, DC 20591) or incorporates TSO-approved ground proximity warning equipment.

(b) For the ground proximity warning system required by this section, the Airplane Flight Manual shall contain—

(1) Appropriate procedures for—

(i) The use of the equipment;

(ii) Proper flightcrew action with respect to the equipment;

(iii) Deactivation for planned abnormal and emergency conditions;

(iv) Inhibition of Mode 4 warnings based on flaps being in other than the landing configuration if the system incorporates a Mode 4 flap warning inhibition control; and

(2) An outline of all input sources that must be operating.

(c) No person may deactivate a ground proximity warning system required by this section except in accordance with the procedures contained in the Airplane Flight Manual.

(d) Whenever a ground proximity warning system required by this section is deactivated, an entry shall be made in the airplane maintenance record that includes the date and time of deactivation.

(e) No person may operate a turbine-powered airplane unless it is equipped with a ground proximity warning/glide slope deviation alerting system that

meets the performance and environmental standards contained in TSO-C92a or TSO-C92b or incorporates TSO-approved ground proximity warning-glide slope deviation alerting equipment.

(f) No person may operate a turbojet powered airplane equipped with a system required by paragraph (e) of this section, that incorporates equipment that meets the performance and environmental standards of TSO-C92b or is approved under that TSO, using other than Warning Envelopes 1 or 3 for Warning Modes 1 and 4.

(g) This section expires on March 29, 2005.

[Doc. No. 28154, 60 FR 65933, Dec. 20, 1995, as amended by Amdt. 121–273, 65 FR 16755, Mar. 29, 2000]

Subpart L—Maintenance, Preventive Maintenance, and Alterations

SOURCE: Docket No. 6258, 29 FR 19210, Dec. 31, 1964, unless otherwise noted.

§ 121.361 Applicability.

(a) Except as provided by paragraph (b) of this section, this subpart prescribes requirements for maintenance, preventive maintenance, and alterations for all certificate holders.

(b) The Administrator may amend a certificate holder's operations specifications to permit deviation from those provisions of this subpart that would prevent the return to service and use of airframe components, powerplants, appliances, and spare parts thereof because those items have been maintained, altered, or inspected by persons employed outside the United States who do not hold U.S. airman certificates. Each certificate holder who uses parts under this deviation must provide for surveillance of facilities and practices to assure that all work performed on these parts is accomplished in accordance with the certificate holder's manual.

[Doc. No. 8754, 33 FR 14406, Sept. 25, 1968]

§ 121.363 Responsibility for airworthiness.

(a) Each certificate holder is primarily responsible for—

(1) The airworthiness of its aircraft, including airframes, aircraft engines, propellers, appliances, and parts thereof; and

(2) The performance of the maintenance, preventive maintenance, and alteration of its aircraft, including airframes, aircraft engines, propellers, appliances, emergency equipment, and parts thereof, in accordance with its manual and the regulations of this chapter.

(b) A certificate holder may make arrangements with another person for the performance of any maintenance, preventive maintenance, or alterations. However, this does not relieve the certificate holder of the responsibility specified in paragraph (a) of this section.

[Doc. No. 6258, 29 FR 19210, Dec. 31, 1964, as amended by Amdt. 121–106, 38 FR 22378, Aug. 20, 1973]

§ 121.365 Maintenance, preventive maintenance, and alteration organization.

(a) Each certificate holder that performs any of its maintenance (other than required inspections), preventive maintenance, or alterations, and each person with whom it arranges for the performance of that work must have an organization adequate to perform the work.

(b) Each certificate holder that performs any inspections required by its manual in accordance with § 121.369(b)(2) or (3) (in this subpart referred to as *required inspections*) and each person with whom it arranges for the performance of that work must have an organization adequate to perform that work.

(c) Each person performing required inspections in addition to other maintenance, preventive maintenance, or alterations, shall organize the performance of those functions so as to separate the required inspection functions from the other maintenance, preventive maintenance, and alteration functions. The separation shall be below the level of administrative control at which overall responsibility for the required inspection functions and other

maintenance, preventive maintenance, and alteration functions are exercised.

[Doc. No. 6258, 29 FR 19210, Dec. 31, 1964, as amended by Amdt. 121–3, 30 FR 3639, Mar. 19, 1965]

§ 121.367 Maintenance, preventive maintenance, and alterations programs.

Each certificate holder shall have an inspection program and a program covering other maintenance, preventive maintenance, and alterations that ensures that—

(a) Maintenance, preventive maintenance, and alterations performed by it, or by other persons, are performed in accordance with the certificate holder's manual;

(b) Competent personnel and adequate facilities and equipment are provided for the proper performance of maintenance, preventive maintenance, and alterations; and

(c) Each aircraft released to service is airworthy and has been properly maintained for operation under this part.

[Doc. No. 6258, 29 FR 19210, Dec. 31, 1964, as amended by Amdt. 121–100, 37 FR 28053, Dec. 20, 1972]

§ 121.368 [Reserved]

§ 121.369 Manual requirements.

(a) The certificate holder shall put in its manual a chart or description of the certificate holder's organization required by §121.365 and a list of persons with whom it has arranged for the performance of any of its required inspections, other maintenance, preventive maintenance, or alterations, including a general description of that work.

(b) The certificate holder's manual must contain the programs required by §121.367 that must be followed in performing maintenance, preventive maintenance, and alterations of that certificate holder's airplanes, including airframes, aircraft engines, propellers, appliances, emergency equipment, and parts thereof, and must include at least the following:

(1) The method of performing routine and nonroutine maintenance (other than required inspections), preventive maintenance, and alterations.

(2) A designation of the items of maintenance and alteration that must be inspected (required inspections), including at least those that could result in a failure, malfunction, or defect endangering the safe operation of the aircraft, if not performed properly or if improper parts or materials are used.

(3) The method of performing required inspections and a designation by occupational title of personnel authorized to perform each required inspection.

(4) Procedures for the reinspection of work performed pursuant to previous required inspection findings (*buy-back procedures*).

(5) Procedures, standards, and limits necessary for required inspections and acceptance or rejection of the items required to be inspected and for periodic inspection and calibration of precision tools, measuring devices, and test equipment.

(6) Procedures to ensure that all required inspections are performed.

(7) Instructions to prevent any person who performs any item of work from performing any required inspection of that work.

(8) Instructions and procedures to prevent any decision of an inspector, regarding any required inspection from being countermanded by persons other than supervisory personnel of the inspection unit, or a person at that level of administrative control that has overall responsibility for the management of both the required inspection functions and the other maintenance, preventive maintenance, and alterations functions.

(9) Procedures to ensure that required inspections, other maintenance, preventive maintenance, and alterations that are not completed as a result of shift changes or similar work interruptions are properly completed before the aircraft is released to service.

(c) The certificate holder must set forth in its manual a suitable system (which may include a coded system) that provides for preservation and retrieval of information in a manner acceptable to the Administrator and that provides—

(1) A description (or reference to data acceptable to the Administrator) of the work performed;

(2) The name of the person performing the work if the work is performed by a person outside the organization of the certificate holder; and

(3) The name or other positive identification of the individual approving the work.

[Doc. No. 6258, 29 FR 19210, Dec. 31, 1964, as amended by Amdt. 121–94, 37 FR 15983, Aug. 9, 1972; Amdt. 121–106, 38 FR 22378, Aug. 20, 1973]

§ 121.370 [Reserved]

§ 121.370a [Reserved]

§ 121.371 Required inspection personnel.

(a) No person may use any person to perform required inspections unless the person performing the inspection is appropriately certificated, properly trained, qualified, and authorized to do so.

(b) No person may allow any person to perform a required inspection unless, at that time, the person performing that inspection is under the supervision and control of an inspection unit.

(c) No person may perform a required inspection if he performed the item of work required to be inspected.

(d) Each certificate holder shall maintain, or shall determine that each person with whom it arranges to perform its required inspections maintains, a current listing of persons who have been trained, qualified, and authorized to conduct required inspections. The persons must be identified by name, occupational title, and the inspections that they are authorized to perform. The certificate holder (or person with whom it arranges to perform its required inspections) shall give written information to each person so authorized describing the extent of his responsibilities, authorities, and inspectional limitations. The list shall be made available for inspection by the Administrator upon request.

§ 121.373 Continuing analysis and surveillance.

(a) Each certificate holder shall establish and maintain a system for the continuing analysis and surveillance of the performance and effectiveness of its inspection program and the program covering other maintenance, preventive maintenance, and alterations and for the correction of any deficiency in those programs, regardless of whether those programs are carried out by the certificate holder or by another person.

(b) Whenever the Administrator finds that either or both of the programs described in paragraph (a) of this section does not contain adequate procedures and standards to meet the requirements of this part, the certificate holder shall, after notification by the Administrator, make any changes in those programs that are necessary to meet those requirements.

(c) A certificate holder may petition the Administrator to reconsider the notice to make a change in a program. The petition must be filed with the FAA certificate-holding district office charged with the overall inspection of the certificate holder's operations within 30 days after the certificate holder receives the notice. Except in the case of an emergency requiring immediate action in the interest of safety, the filing of the petition stays the notice pending a decision by the Administrator.

[Doc. No. 6258, 29 FR 19210, Dec. 31, 1964, as amended by Amdt. 121–207, 54 FR 39293, Sept. 25, 1989; Amdt. 121–253, 61 FR 2611, Jan. 26, 1996]

§ 121.374 Continuous airworthiness maintenance program (CAMP) for two-engine ETOPS.

In order to conduct an ETOPS flight using a two-engine airplane, each certificate holder must develop and comply with the ETOPS continuous airworthiness maintenance program, as authorized in the certificate holder's operations specifications, for each airplane-engine combination used in ETOPS. The certificate holder must develop this ETOPS CAMP by supplementing the manufacturer's maintenance program or the CAMP currently approved for the certificate holder. This ETOPS CAMP must include the following elements:

(a) *ETOPS maintenance document.* The certificate holder must have an ETOPS

maintenance document for use by each person involved in ETOPS.

(1) The document must—

(i) List each ETOPS significant system,

(ii) Refer to or include all of the ETOPS maintenance elements in this section,

(iii) Refer to or include all supportive programs and procedures,

(iv) Refer to or include all duties and responsibilities, and

(v) Clearly state where referenced material is located in the certificate holder's document system.

(b) *ETOPS pre-departure service check.* Except as provided in Appendix P of this part, the certificate holder must develop a pre-departure check tailored to their specific operation.

(1) The certificate holder must complete a pre-departure service check immediately before each ETOPS flight.

(2) At a minimum, this check must—

(i) Verify the condition of all ETOPS Significant Systems;

(ii) Verify the overall status of the airplane by reviewing applicable maintenance records; and

(iii) Include an interior and exterior inspection to include a determination of engine and APU oil levels and consumption rates.

(3) An appropriately certificated mechanic that is ETOPS Qualified must accomplish and certify by signature, ETOPS specific tasks. A certificated mechanic, with an airframe and powerplant rating, who is ETOPS Qualified must certify by signature, that the ETOPS pre-departure service check has been completed.

(c) *Limitations on dual maintenance.*(1) Except as specified in paragraph (c)(2), the certificate holder may not perform scheduled or unscheduled dual maintenance during the same maintenance visit on the same or a substantially similar ETOPS Significant System listed in the ETOPS maintenance document, if the improper maintenance could result in the failure of an ETOPS Significant System.

(2) In the event dual maintenance as defined in paragraph (c)(1) of this section cannot be avoided, the certificate holder may perform maintenance provided:

(i) The maintenance action on each affected ETOPS Significant System is performed by a different technician, or

(ii) The maintenance action on each affected ETOPS Significant System is performed by the same technician under the direct supervision of a second qualified individual; and

(iii) For either paragraph (c)(2)(i) or (ii) of this section, a qualified individual conducts a ground verification test and any in-flight verification test required under the program developed pursuant to paragraph (d) of this section.

(d) *Verification program.* The certificate holder must develop and maintain a program for the resolution of discrepancies that will ensure the effectiveness of maintenance actions taken on ETOPS Significant Systems. The verification program must identify potential problems and verify satisfactory corrective action. The verification program must include ground verification and in-flight verification policy and procedures. The certificate holder must establish procedures to indicate clearly who is going to initiate the verification action and what action is necessary. The verification action may be performed on an ETOPS revenue flight provided the verification action is documented as satisfactorily completed upon reaching the ETOPS Entry Point.

(e) *Task identification.* The certificate holder must identify all ETOPS-specific tasks. An appropriately trained mechanic who is ETOPS qualified must accomplish and certify by signature that the ETOPS-specific task has been completed.

(f) *Centralized maintenance control procedures.* The certificate holder must develop and maintain procedures for centralized maintenance control for ETOPS.

(g) *Parts control program.* The certificate holder must develop an ETOPS parts control program to ensure the proper identification of parts used to maintain the configuration of airplanes used in ETOPS.

(h) *Reliability program.* The certificate holder must have an ETOPS reliability program. This program must be the certificate holder's existing reliability program or its Continuing Analysis

and Surveillance System (CASS) supplemented for ETOPS. This program must be event-oriented and include procedures to report the events listed below, as follows:

(1) The certificate holder must report the following events within 96 hours of the occurrence to its certificate holding district office (CHDO):

(i) IFSDs, except planned IFSDs performed for flight training.

(ii) Diversions and turnbacks for failures, malfunctions, or defects associated with any airplane or engine system.

(iii) Uncommanded power or thrust changes or surges.

(iv) Inability to control the engine or obtain desired power or thrust.

(v) Inadvertent fuel loss or unavailability, or uncorrectable fuel imbalance in flight.

(vi) Failures, malfunctions or defects associated with ETOPS Significant Systems.

(vii) Any event that would jeopardize the safe flight and landing of the airplane on an ETOPS flight.

(2) The certificate holder must investigate the cause of each event listed in paragraph (h)(1) of this section and submit findings and a description of corrective action to its CHDO. The report must include the information specified in §121.703(e). The corrective action must be acceptable to its CHDO.

(i) *Propulsion system monitoring.* (1) If the IFSD rate (computed on a 12-month rolling average) for an engine installed as part of an airplane-engine combination exceeds the following values, the certificate holder must do a comprehensive review of its operations to identify any common cause effects and systemic errors. The IFSD rate must be computed using all engines of that type in the certificate holder's entire fleet of airplanes approved for ETOPS.

(i) A rate of 0.05 per 1,000 engine hours for ETOPS up to and including 120 minutes.

(ii) A rate of 0.03 per 1,000 engine hours for ETOPS beyond 120-minutes up to and including 207 minutes in the North Pacific Area of Operation and up to and including 180 minutes elsewhere.

(iii) A rate of 0.02 per 1,000 engine hours for ETOPS beyond 207 minutes in the North Pacific Area of Operation and beyond 180 minutes elsewhere.

(2) Within 30 days of exceeding the rates above, the certificate holder must submit a report of investigation and any necessary corrective action taken to its CHDO.

(j) *Engine condition monitoring.* (1) The certificate holder must have an engine condition monitoring program to detect deterioration at an early stage and to allow for corrective action before safe operation is affected.

(2) This program must describe the parameters to be monitored, the method of data collection, the method of analyzing data, and the process for taking corrective action.

(3) The program must ensure that engine-limit margins are maintained so that a prolonged engine-inoperative diversion may be conducted at approved power levels and in all expected environmental conditions without exceeding approved engine limits. This includes approved limits for items such as rotor speeds and exhaust gas temperatures.

(k) *Oil-consumption monitoring.* The certificate holder must have an engine oil consumption monitoring program to ensure that there is enough oil to complete each ETOPS flight. APU oil consumption must be included if an APU is required for ETOPS. The operator's oil consumption limit may not exceed the manufacturer's recommendation. Monitoring must be continuous and include oil added at each ETOPS departure point. The program must compare the amount of oil added at each ETOPS departure point with the running average consumption to identify sudden increases.

(l) *APU in-flight start program.* If the airplane type certificate requires an APU but does not require the APU to run during the ETOPS portion of the flight, the certificate holder must develop and maintain a program acceptable to the FAA for cold soak in-flight start-and-run reliability.

(m) *Maintenance training.* For each airplane-engine combination, the certificate holder must develop a maintenance training program that provides training adequate to support ETOPS. It must include ETOPS specific training for all persons involved in ETOPS

maintenance that focuses on the special nature of ETOPS. This training must be in addition to the operator's maintenance training program used to qualify individuals to perform work on specific airplanes and engines.

(n) *Configuration, maintenance, and procedures (CMP) document.* If an airplane-engine combination has a CMP document, the certificate holder must use a system that ensures compliance with the applicable FAA-approved document.

(o) *Procedural changes.* Each substantial change to the maintenance or training procedures that were used to qualify the certificate holder for ETOPS, must be submitted to the CHDO for review. The certificate holder cannot implement a change until its CHDO notifies the certificate holder that the review is complete.

[Doc. No. FAA–2002–6717, 72 FR 1880, Jan. 16, 2007, as amended by Amdt. 121–329, 72 FR 7348, Feb. 15, 2007; Amdt. 121–329, 72 FR 26541, May 10, 2007]

§ 121.375 Maintenance and preventive maintenance training program.

Each certificate holder or person performing maintenance or preventive maintenance functions for it shall have a training program to ensure that each person (including inspection personnel) who determines the adequacy of work done is fully informed about procedures and techniques and new equipment in use and is competent to perform his duties.

§ 121.377 Maintenance and preventive maintenance personnel duty time limitations.

Within the United States, each certificate holder (or person performing maintenance or preventive maintenance functions for it) shall relieve each person performing maintenance or preventive maintenance from duty for a period of at least 24 consecutive hours during any seven consecutive days, or the equivalent thereof within any one calendar month.

§ 121.378 Certificate requirements.

(a) Except for maintenance, preventive maintenance, alterations, and required inspections performed by a certificated repair station that is located outside the United States, each person who is directly in charge of maintenance, preventive maintenance, or alterations, and each person performing required inspections must hold an appropriate airman certificate.

(b) For the purposes of this section, a person *directly in charge* is each person assigned to a position in which he is responsible for the work of a shop or station that performs maintenance, preventive maintenance, alterations, or other functions affecting aircraft airworthiness. A person who is *directly in charge* need not physically observe and direct each worker constantly but must be available for consultation and decision on matters requiring instruction or decision from higher authority than that of the persons performing the work.

[Doc. No. 6258, 29 FR 19210, Dec. 31, 1964, as amended by Amdt. 121–21, 31 FR 10618, Aug. 9, 1966; Amdt. 121–286, 66 FR 41116, Aug. 6, 2001]

§ 121.379 Authority to perform and approve maintenance, preventive maintenance, and alterations.

(a) A certificate holder may perform, or it may make arrangements with other persons to perform, maintenance, preventive maintenance, and alterations as provided in its continuous airworthiness maintenance program and its maintenance manual. In addition, a certificate holder may perform these functions for another certificate holder as provided in the continuous airworthiness maintenance program and maintenance manual of the other certificate holder.

(b) A certificate holder may approve any aircraft, airframe, aircraft engine, propeller, or appliance for return to service after maintenance, preventive maintenance, or alterations that are performed under paragraph (a) of this section. However, in the case of a major repair or major alteration, the work must have been done in accordance with technical data approved by the Administrator.

[Doc. No. 10289, 35 FR 16793, Oct. 30, 1970]

§ 121.380 Maintenance recording requirements.

(a) Each certificate holder shall keep (using the system specified in the manual required in § 121.369) the following

records for the periods specified in paragraph (c) of this section:

(1) All the records necessary to show that all requirements for the issuance of an airworthiness release under § 121.709 have been met.

(2) Records containing the following information:

(i) The total time in service of the airframe.

(ii) Except as provided in paragraph (b) of this section, the total time in service of each engine and propeller.

(iii) The current status of life-limited parts of each airframe, engine, propeller, and appliance.

(iv) The time since last overhaul of all items installed on the aircraft which are required to be overhauled on a specified time basis.

(v) The identification of the current inspection status of the aircraft, including the times since the last inspections required by the inspection program under which the aircraft and its appliances are maintained.

(vi) The current status of applicable airworthiness directives, including the date and methods of compliance, and, if the airworthiness directive involves recurring action, the time and date when the next action is required.

(vii) A list of current major alterations to each airframe, engine, propeller, and appliance.

(b) A certificate holder need not record the total time in service of an engine or propeller on a transport category cargo airplane, a transport category airplane that has a passenger seat configuration of more than 30 seats, or a nontransport category airplane type certificated before January 1, 1958, until the following, whichever occurs first:

(1) March 20, 1997; or

(2) The date of the first overhaul of the engine or propeller, as applicable, after January 19, 1996.

(c) Each certificate holder shall retain the records required to be kept by this section for the following periods:

(1) Except for the records of the last complete overhaul of each airframe, engine, propeller, and appliance, the records specified in paragraph (a)(1) of this section shall be retained until the work is repeated or superseded by other work or for one year after the work is performed.

(2) The records of the last complete overhaul of each airframe, engine, propeller, and appliance shall be retained until the work is superseded by work of equivalent scope and detail.

(3) The records specified in paragraph (a)(2) of this section shall be retained and transferred with the aircraft at the time the aircraft is sold.

(d) The certificate holder shall make all maintenance records required to be kept by this section available for inspection by the Administrator or any authorized representative of the National Transportation Safety Board (NTSB).

[Doc. No. 10658, 37 FR 15983, Aug. 9, 1972, as amended by Amdt. 121–251, 60 FR 65933, Dec. 20, 1995; Amdt. 121–321, 71 FR 536, Jan. 4, 2006]

§ 121.380a Transfer of maintenance records.

Each certificate holder who sells a U.S. registered aircraft shall transfer to the purchaser, at the time of sale, the following records of that aircraft, in plain language form or in coded form at the election of the purchaser, if the coded form provides for the preservation and retrieval of information in a manner acceptable to the Administrator:

(a) The record specified in § 121.380(a)(2).

(b) The records specified in § 121.380(a)(1) which are not included in the records covered by paragraph (a) of this section, except that the purchaser may permit the seller to keep physical custody of such records. However, custody of records in the seller does not relieve the purchaser of his responsibility under § 121.380(c) to make the records available for inspection by the Administrator or any authorized representative of the National Transportation Safety Board (NTSB).

[Doc. No. 10658, 37 FR 15984, Aug. 9, 1972]

Subpart M—Airman and Crewmember Requirements

SOURCE: Docket No. 6258, 29 FR 19212, Dec. 31, 1964, unless otherwise noted.

§ 121.381 Applicability.

This subpart prescribes airman and crewmember requirements for all certificate holders.

§ 121.383 Airman: Limitations on use of services.

(a) No certificate holder may use any person as an airman nor may any person serve as an airman unless that person—

(1) Holds an appropriate current airman certificate issued by the FAA;

(2) Has any required appropriate current airman and medical certificates in his possession while engaged in operations under this part; and

(3) Is otherwise qualified for the operation for which he is to be used.

(b) Each airman covered by paragraph (a)(2) of this section shall present either or both certificates for inspection upon the request of the Administrator.

(c) No certificate holder may use the services of any person as a pilot on an airplane engaged in operations under this part if that person has reached his 60th birthday. No person may serve as a pilot on an airplane engaged in operations under this part if that person has reached his 60th birthday.

[Doc. No. 6258, 29 FR 19212, Dec. 31, 1964, as amended by Amdt. 121–144, 43 FR 22646, May 25, 1978]

§ 121.385 Composition of flight crew.

(a) No certificate holder may operate an airplane with less than the minimum flight crew in the airworthiness certificate or the airplane Flight Manual approved for that type airplane and required by this part for the kind of operation being conducted.

(b) In any case in which this part requires the performance of two or more functions for which an airman certificate is necessary, that requirement is not satisfied by the performance of multiple functions at the same time by one airman.

(c) The minimum pilot crew is two pilots and the certificate holder shall designate one pilot as pilot in command and the other second in command.

(d) On each flight requiring a flight engineer at least one flight crewmember, other than the flight engineer, must be qualified to provide emergency performance of the flight engineer's functions for the safe completion of the flight if the flight engineer becomes ill or is otherwise incapacitated. A pilot need not hold a flight engineer's certificate to perform the flight engineer's functions in such a situation.

[Doc. No. 6258, 29 FR 19212, Dec. 31, 1964, as amended by Amdt. 121–178, 47 FR 13316, Mar. 29, 1982; Amdt. 121–256, 61 FR 30434, June 14, 1996]

§ 121.387 Flight engineer.

No certificate holder may operate an airplane for which a type certificate was issued before January 2, 1964, having a maximum certificated takeoff weight of more than 80,000 pounds without a flight crewmember holding a current flight engineer certificate. For each airplane type certificated after January 1, 1964, the requirement for a flight engineer is determined under the type certification requirements of § 25.1523.

[Doc. No. 5025, 30 FR 6067, Apr. 29, 1965]

§ 121.389 Flight navigator and specialized navigation equipment.

(a) No certificate holder may operate an airplane outside the 48 contiguous States and the District of Columbia, when its position cannot be reliably fixed for a period of more than 1 hour, without—

(1) A flight crewmember who holds a current flight navigator certificate; or

(2) Specialized means of navigation approved in accordance with § 121.355 which enables a reliable determination to be made of the position of the airplane by each pilot seated at his duty station.

(b) Notwithstanding paragraph (a) of this section, the Administrator may also require a flight navigator or special navigation equipment, or both, when specialized means of navigation are necessary for 1 hour or less. In making this determination, the Administrator considers—

(1) The speed of the airplane;

(2) Normal weather conditions en route;

(3) Extent of air traffic control;

(4) Traffic congestion;

(5) Area of navigational radio coverage at destination;

(6) Fuel requirements;

(7) Fuel available for return to point of departure or alternates;

(8) Predication of flight upon operation beyond the point of no return; and

(9) Any other factors he determines are relevant in the interest of safety.

(c) Operations where a flight navigator or special navigation equipment, or both, are required are specified in the operations specifications of the air carrier or commercial operator.

[Doc. No. 10204, 37 FR 6464, Mar. 30, 1972, as amended by Amdt. 121–178, 47 FR 13316, Mar. 29, 1982]

§ 121.391 Flight attendants.

(a) Each certificate holder shall provide at least the following flight attendants on each passenger-carrying airplane used:

(1) For airplanes having a maximum payload capacity of more than 7,500 pounds and having a seating capacity of more than 9 but less than 51 passengers—one flight attendant.

(2) For airplanes having a maximum payload capacity of 7,500 pounds or less and having a seating capacity of more than 19 but less than 51 passengers—one flight attendant.

(3) For airplanes having a seating capacity of more than 50 but less than 101 passengers—two flight attendants.

(4) For airplanes having a seating capacity of more than 100 passengers—two flight attendants plus one additional flight attendant for each unit (or part of a unit) of 50 passenger seats above a seating capacity of 100 passengers.

(b) If, in conducting the emergency evacuation demonstration required under § 121.291 (a) or (b), the certificate holder used more flight attendants than is required under paragraph (a) of this section for the maximum seating capacity of the airplane used in the demonstration, he may not, thereafter, take off that airplane—

(1) In its maximum seating capacity configuration with fewer flight attendants than the number used during the emergency evacuation demonstration; or

(2) In any reduced seating capacity configuration with fewer flight attendants than the number required by paragraph (a) of this section for that seating capacity plus the number of flight attendants used during the emergency evacuation demonstration that were in excess of those required under paragraph (a) of this section.

(c) The number of flight attendants approved under paragraphs (a) and (b) of this section are set forth in the certificate holder's operations specifications.

(d) During takeoff and landing, flight attendants required by this section shall be located as near as practicable to required floor level exists and shall be uniformly distributed throughout the airplane in order to provide the most effective egress of passengers in event of an emergency evacuation. During taxi, flight attendants required by this section must remain at their duty stations with safety belts and shoulder harnesses fastened except to perform duties related to the safety of the airplane and its occupants.

[Doc. No. 2033, 30 FR 3206, Mar. 9, 1965, as amended by Amdt. 121–30, 32 FR 13268, Sept. 20, 1967; Amdt. 121–46, 34 FR 5545, Mar. 22, 1969; Amdt. 121–84, 37 FR 3975, Feb. 24, 1972; Amdt. 121–88, 37 FR 5606, Mar. 17, 1972; Amdt. 121–159, 45 FR 41593, June 19, 1980; Amdt. 121–176, 46 FR 61454, Dec. 17, 1981; Amdt. 121–180, 47 FR 56463, Dec. 16, 1982; Amdt. 121–251, 60 FR 65933, Dec. 20, 1995]

§ 121.393 Crewmember requirements at stops where passengers remain on board.

At stops where passengers remain on board, the certificate holder must meet the following requirements:

(a) On each airplane for which a flight attendant is not required by § 121.391(a), the certificate holder must ensure that a person who is qualified in the emergency evacuation procedures for the airplane, as required in § 121.417, and who is identified to the passengers, remains:

(1) On board the airplane; or

(2) Nearby the airplane, in a position to adequately monitor passenger safety, and:

(i) The airplane engines are shut down; and

(ii) At least one floor level exit remains open to provide for the deplaning of passengers.

(b) On each airplane for which flight attendants are required by §121.391(a), but the number of flight attendants remaining on board is fewer than required by §121.391(a), the certificate holder must meet the following requirements:

(1) The certificate holder shall ensure that:

(i) The airplane engines are shut down;

(ii) At least one floor level exit remains open to provide for the deplaning of passengers; and

(iii) the number of flight attendants on board is at least half the number required by §121.391(a), rounded down to the next lower number in the case of fractions, but never fewer than one.

(2) The certificate holder may substitute for the required flight attendants other persons qualified in the emergency evacuation procedures for that aircraft as required in §121.417, if these persons are identified to the passengers.

(3) If only one flight attendant or other qualified person is on board during a stop, that flight attendant or other qualified person shall be located in accordance with the certificate holder's FAA-approved operating procedures. If more than one flight attendant or other qualified person is on board, the flight attendants or other qualified persons shall be spaced throughout the cabin to provide the most effective assistance for the evacuation in case of an emergency.

[Doc. No. 28154, 60 FR 65934, Dec. 20, 1995]

§121.395 Aircraft dispatcher: Domestic and flag operations.

Each certificate holder conducting domestic or flag operations shall provide enough qualified aircraft dispatchers at each dispatch center to ensure proper operational control of each flight.

[Doc. No. 28154, 61 FR 2611, Jan. 26, 1996]

§121.397 Emergency and emergency evacuation duties.

(a) Each certificate holder shall, for each type and model of airplane, assigned to each category of required crewmember, as appropriate, the necessary functions to be performed in an emergency or a situation requiring emergency evacuation. The certificate holder shall show those functions are realistic, can be practically accomplished, and will meet any reasonably anticipated emergency including the possible incapacitation of individual crewmembers or their inability to reach the passenger cabin because of shifting cargo in combination cargo-passenger airplanes.

(b) The certificate holder shall describe in its manual the functions of each category of required crewmembers under paragraph (a) of this section.

[Doc. No. 2033, 30 FR 3206, Mar. 9, 1965, as amended by Amdt. 121–7, 30 FR 6727, May 18, 1965]

Subpart N—Training Program

SOURCE: Doc. No. 9509, 35 FR 90, Jan. 3, 1970, unless otherwise noted.

§121.400 Applicability and terms used.

(a) This subpart prescribes the requirements applicable to each certificate holder for establishing and maintaining a training program for crewmembers, aircraft dispatchers, and other operations personnel, and for the approval and use of training devices in the conduct of the program.

(b) For the purpose of this subpart, airplane groups are as follows:

(1) *Group I.* Propeller driven, including—

(i) Reciprocating powered; and

(ii) Turbopropeller powered.

(2) *Group II.* Turbojet powered.

(c) For the purpose of this subpart, the following terms and definitions apply:

(1) *Initial training.* The training required for crewmembers and dispatchers who have not qualified and served in the same capacity on another airplane of the same group.

(2) *Transition training.* The training required for crewmembers and dispatchers who have qualified and served in the same capacity on another airplane of the same group.

(3) *Upgrade training.* The training required for crewmembers who have

qualified and served as second in command or flight engineer on a particular airplane type, before they serve as pilot in command or second in command, respectively, on that airplane.

(4) *Differences training.* The training required for crewmembers and dispatchers who have qualified and served on a particular type airplane, when the Administrator finds differences training is necessary before a crewmember serves in the same capacity on a particular variation of that airplane.

(5) *Programmed hours.* The hours of training prescribed in this subpart which may be reduced by the Administrator upon a showing by the certificate holder that circumstances justify a lesser amount.

(6) *Inflight.* Refers to maneuvers, procedures, or functions that must be conducted in the airplane.

(7) *Training center.* An organization governed by the applicable requirements of part 142 of this chapter that provides training, testing, and checking under contract or other arrangement to certificate holders subject to the requirements of this part.

(8) *Requalification training.* The training required for crewmembers previously trained and qualified, but who have become unqualified due to not having met within the required period the recurrent training requirements of § 121.427 or the proficiency check requirements of § 121.441.

[Doc. No. 9509, 35 FR 90, Jan. 3, 1970; 35 FR 2819, Feb. 11, 1970, as amended by Amdt. 121–104, 38 FR 14915, June 7, 1973; Amdt. 121–259, 61 FR 34560, July 2, 1996]

§ 121.401 Training program: General.

(a) Each certificate holder shall:

(1) Establish and implement a training program that satisfies the requirements of this subpart and appendices E and F of this part and that ensures that each crewmember, aircraft dispatcher, flight instructor and check airman is adequately trained to perform his or her assigned duties. Prior to implementation, the certificate holder must obtain initial and final FAA approval of the training program.

(2) Provide adequate ground and flight training facilities and properly qualified ground instructors for the training required by this subpart;

(3) Provide and keep current with respect to each airplane type and, if applicable, the particular variations within that airplane type, appropriate training material, examinations, forms, instructions, and procedures for use in conducting the training and checks required by this part; and

(4) Provide enough flight instructors, simulator instructors, and approved check airmen to conduct required flight training and flight checks, and simulator training courses permitted under this part.

(b) Whenever a crewmember or aircraft dispatcher who is required to take recurrent training, a flight check, or a competence check, takes the check or completes the training in the calendar month before or after the calendar month in which that training or check is required, he is considered to have taken or completed it in the calendar month in which it was required.

(c) Each instructor, supervisor, or check airman who is responsible for a particular ground training subject, segment of flight training, course of training, flight check, or competence check under this part shall certify as to the proficiency and knowledge of the crewmember, aircraft dispatcher, flight instructor, or check airman concerned upon completion of that training or check. That certification shall be made a part of the crewmember's or dispatcher's record. When the certification required by this paragraph is made by an entry in a computerized recordkeeping system, the certifying instructor, supervisor, or check airman must be identified with that entry. However, the signature of the certifying instructor, supervisor, or check airman is not required for computerized entries.

(d) Training subjects that are applicable to more than one airplane or crewmember position and that have been satisfactorily completed in connection with prior training for another airplane or another crewmember position, need not be repeated during subsequent training other than recurrent training.

(e) A person who progresses successfully through flight training, is recommended by his instructor or a check airman, and successfully completes the

appropriate flight check for a check airman or the Administrator, need not complete the programmed hours of flight training for the particular airplane. However, whenever the Administrator finds that 20 percent of the flight checks given at a particular training base during the previous 6 months under this paragraph are unsuccessful, this paragraph may not be used by the certificate holder at that base until the Administrator finds that the effectiveness of the flight training there has improved.

In the case of a certificate holder using a course of training permitted in §121.409(c), the Administrator may require the programmed hours of inflight training in whole or in part, until he finds the effectiveness of the flight training has improved as provided in paragraph (e) of this section.

[Doc. No. 9509, 35 FR 90, Jan. 3, 1970, as amended by Amdt. 121–104, 38 FR 14915, June 7, 1973; Amdt. 121–108, 38 FR 35446, Dec. 28, 1973; Amdt. 121–143, 43 FR 22642, May 25, 1978; Amdt. 121–316, 70 FR 58823, Oct. 7, 2005]

§121.402 Training program: Special rules.

(a) Other than the certificate holder, only another certificate holder certificated under this part or a flight training center certificated under part 142 of this chapter is eligible under this subpart to provide flight training, testing, and checking under contract or other arrangement to those persons subject to the requirements of this subpart.

(b) A certificate holder may contract with, or otherwise arrange to use the services of, a training center certificated under part 142 of this chapter to provide training, testing, and checking required by this part only if the training center—

(1) Holds applicable training specifications issued under part 142 of this chapter;

(2) Has facilities, training equipment, and courseware meeting the applicable requirements of part 142 of this chapter;

(3) Has approved curriculums, curriculum segments, and portions of curriculum segments applicable for use in training courses required by this subpart; and

(4) Has sufficient instructor and check airmen qualified under the applicable requirements of §§121.411 or 121.413 to provide training, testing, and checking to persons subject to the requirements of this subpart.

[Doc. No. 26933, 61 FR 34560, July 2, 1996, as amended by Amdt. 121–263, 62 FR 13791, Mar. 21, 1997]

§121.403 Training program: Curriculum.

(a) Each certificate holder must prepare and keep current a written training program curriculum for each type of airplane with respect to dispatchers and each crewmember required for that type airplane. The curriculum must include ground and flight training required by this subpart.

(b) Each training program curriculum must include:

(1) A list of principal ground training subjects, including emergency training subjects, that are provided.

(2) A list of all the training devices mockups, systems trainers, procedures trainers, or other training aids that the certificate holder will use.

(3) Detailed descriptions or pictorial displays of the approved normal, abnormal, and emergency maneuvers, procedures and functions that will be performed during each flight training phase or flight check, indicating those maneuvers, procedures and functions that are to be performed during the inflight portions of flight training and flight checks.

(4) A list of airplane simulators or other training devices approved under §121.407, including approvals for particular maneuvers, procedures, or functions.

(5) The programmed hours of training that will be applied to each phase of training.

(6) A copy of each statement issued by the Administrator under §121.405(d) for reduction of programmed hours of training.

§121.404 Compliance dates: Crew and dispatcher resource management training.

After March 19, 1998, no certificate holder may use a person as a flight crewmember, and after March 19, 1999, no certificate holder may use a person

as a flight attendant or aircraft dispatcher unless that person has completed approved crew resource management (CRM) or dispatcher resource management (DRM) initial training, as applicable, with that certificate holder or with another certificate holder.

[Doc. No. 28154, 61 FR 30435, June 14, 1996]

§ 121.405 Training program and revision: Initial and final approval.

(a) To obtain initial and final approval of a training program, or a revision to an approved training program, each certificate holder must submit to the Administrator—

(1) An outline of the proposed program or revision, including an outline of the proposed or revised curriculum, that provides enough information for a preliminary evaluation of the proposed training program or revised training program; and

(2) Additional relevant information as may be requested by the Administrator.

(b) If the proposed training program or revision complies with this subpart the Administrator grants initial approval in writing after which the certificate holder may conduct the training in accordance with that program. The Administrator then evaluates the effectiveness of the training program and advises the certificate holder of deficiencies, if any, that must be corrected.

(c) The Administrator grants final approval of the training program or revision if the certificate holder shows that the training conducted under the initial approval set forth in paragraph (b) of this section ensures that each person that successfully completes the training is adequately trained to perform his assigned duties.

(d) In granting initial and final approval of training programs or revisions, including reductions in programmed hours specified in this subpart, the Administrator considers the training aids, devices, methods, and procedures listed in the certificate holder's curriculum as set forth in § 121.403 that increase the quality and effectiveness of the teaching-learning process.

If approval of reduced programmed hours of training is granted, the Administrator provides the certificate holder with a statement of the basis for the approval.

(e) Whenever the Administrator finds that revisions are necessary for the continued adequacy of a training program that has been granted final approval, the certificate holder shall, after notification by the Administrator, make any changes in the program that are found necessary by the Administrator. Within 30 days after the certificate holder receives such notice, it may file a petition to reconsider the notice with the certificate-holding district office. The filing of a petition to reconsider stays the notice pending a decision by the Administrator. However, if the Administrator finds that there is an emergency that requires immediate action in the interest of safety in air transportation, he may, upon a statement of the reasons, require a change effective without stay.

(f) Each certificate holder described in § 135.3 (b) and (c) of this chapter must include the material required by § 121.403 in the manual required by § 135.21 of this chapter.

(g) The Administrator may grant a deviation to certificate holders described in § 135.3 (b) and (c) of this chapter to allow reduced programmed hours of ground training required by § 121.419 if it is found that a reduction is warranted based on the certificate holder's operations and the complexity of the make, model, and series of the aircraft used.

[Doc. No. 9509, 35 FR 90, Jan. 3, 1970, as amended by Amdt. 121–207, 54 FR 39293, Sept. 25, 1989; Amdt. 121–250, 60 FR 65948, Dec. 20, 1995; Amdt. 121–253, 61 FR 2612, Jan. 26, 1996]

§ 121.406 Credit for previous CRM/DRM training.

(a) For flightcrew members, the Administrator may credit CRM training received before March 19, 1998 toward all or part of the initial ground CRM training required by § 121.419.

(b) For flight attendants, the Administrator may credit CRM training received before March 19, 1999 toward all or part of the initial ground CRM training required by § 121.421.

(c) For aircraft dispatchers, the Administrator may credit CRM training received before March 19, 1999 toward

all or part of the initial ground CRM training required by §121.422.

(d) In granting credit for initial ground CRM or DRM training, the Administrator considers training aids, devices, methods, and procedures used by the certificate holder in a voluntary CRM or DRM program or in an AQP program that effectively meets the quality of an approved CRM or DRM initial ground training program under section 121.419, 121.421, or 121.422 as appropriate.

[Doc. No. 27993, 60 FR 65949, Dec. 20, 1995]

§121.407 Training program: Approval of airplane simulators and other training devices.

(a) Each airplane simulator and other training device that is used in a training course permitted under §121.409, in checks required under subpart O of this part or as permitted in appendices E and F to this part must:

(1) Be specifically approved for—

(i) The certificate holder;

(ii) The type airplane and, if applicable, the particular variation within type, for which the training or check is being conducted; and

(iii) The particular maneuver, procedure, or crewmember function involved.

(2) Maintain the performance, functional, and other characteristics that are required for approval.

(3) Be modified to conform with any modification to the airplane being simulated that results in changes to performance, functional, or other characteristics required for approval.

(4) Be given a daily functional preflight check before being used.

(5) Have a daily discrepancy log kept with each discrepancy entered in that log by the appropriate instructor or check airman at the end of each training or check flight.

(b) A particular airplane simulator or other training device may be approved for use by more than one certificate holder.

(c) An airplane simulator may be used instead of the airplane to satisfy the in-flight requirements of §§121.439 and 121.441 and appendices E and F of this part, if the simulator—

(1) Is approved under this section and meets the appropriate simulator requirements of appendix H of this part; and

(2) Is used as part of an approved program that meets the training requirements of §121.424 (a) and (c) and appendix H of this part.

(d) An airplane simulator approved under this section must be used instead of the airplane to satisfy the pilot flight training requirements prescribed in the certificate holder's approved low-altitude windshear flight training program set forth in §121.409(d) of this part.

[Doc. No. 9509, 35 FR 90, Jan. 3, 1970, as amended by Amdt. 121–161, 45 FR 44183, June 30, 1980; Amdt. 121–199, 53 FR 37696, Sept. 27, 1988]

§121.409 Training courses using airplane simulators and other training devices.

(a) Training courses utilizing airplane simulators and other training devices may be included in the certificate holder's approved training program for use as provided in this section.

(b) A course of training in an airplane simulator may be included for use as provided in §121.441 if that course—

(1) Provides at least 4 hours of training at the pilot controls of an airplane simulator as well as a proper briefing before and after the training;

(2) Provides training in at least the procedures and maneuvers set forth in appendix F to this part; or

(3) Provides line-oriented training that—

(i) Utilizes a complete flight crew;

(ii) Includes at least the maneuvers and procedures (abnormal and emergency) that may be expected in line operations;

(iii) Is representative of the flight segment appropriate to the operations being conducted by the certificate holder; and

(4) Is given by an instructor who meets the applicable requirements of §121.412.

The satisfactory completion of the course of training must be certified by either the Administrator or a qualified check airman.

(c) The programmed hours of flight training set forth in this subpart do

not apply if the training program for the airplane type includes—

(1) A course of pilot training in an airplane simulator as provided in § 121.424(d); or

(2) A course of flight engineer training in an airplane simulator or other training device as provided in § 121.425(c).

(d) Each certificate holder required to comply with § 121.358 of this part must use an approved simulator for each airplane type in each of its pilot training courses that provides training in at least the procedures and maneuvers set forth in the certificate holder's approved low-altitude windshear flight training program. The approved low-altitude windshear flight training, if applicable, must be included in each of the pilot flight training courses prescribed in §§ 121.409(b), 121.418, 121.424, and 121.427 of this part.

[Doc. No. 9509, 35 FR 90, Jan. 3, 1970, as amended by Amdt. 121–130, 41 FR 47229, Oct. 28, 1976; Amdt. 121–144, 43 FR 22646, May 25, 1978; Amdt. 121–199, 53 FR 37696, Sept. 27, 1988; Amdt. 121–264, 62 FR 23120, Apr. 28, 1997]

§ 121.411 Qualifications: Check airmen (airplane) and check airmen (simulator).

(a) For the purposes of this section and § 121.413:

(1) A check airman (airplane) is a person who is qualified, and permitted, to conduct flight checks or instruction in an airplane, in a flight simulator, or in a flight training device for a particular type airplane.

(2) A check airman (simulator) is a person who is qualified to conduct flight checks or instruction, but only in a flight simulator or in a flight training device for a particular type airplane.

(3) Check airmen (airplane) and check airmen (simulator) are those check airmen who perform the functions described in § 121.401(a)(4).

(b) No certificate holder may use a person, nor may any person serve as a check airman (airplane) in a training program established under this subpart unless, with respect to the airplane type involved, that person—

(1) Holds the airman certificates and ratings required to serve as a pilot in command, a flight engineer, or a flight navigator, as applicable, in operations under this part;

(2) Has satisfactorily completed the appropriate training phases for the airplane, including recurrent training, that are required to serve as a pilot in command, flight engineer, or flight navigator, as applicable, in operations under this part;

(3) Has satisfactorily completed the appropriate proficiency or competency checks that are required to serve as a pilot in command, flight engineer, or flight navigator, as applicable, in operations under this part;

(4) Has satisfactorily completed the applicable training requirements of § 121.413 including in-flight training and practice for initial and transition training;

(5) Holds at least a Class III medical certificate unless serving as a required crewmember, in which case holds a Class I or Class II medical certificate as appropriate;

(6) Has satisfied the recency of experience requirements of § 121.439; and

(7) Has been approved by the Administrator for the check airman duties involved.

(c) No certificate holder may use a person nor may any person serve as a check airman (simulator) in a training program established under this subpart unless, with respect to the airplane type involved, that person meets the provisions of paragraph (b) of this section, or—

(1) Holds the airman certificates and ratings, except medical certificate, required to serve as a pilot in command, a flight engineer, or a flight navigator, as applicable, in operations under this part;

(2) Has satisfactorily completed the appropriate training phases for the airplane, including recurrent training, that are required to serve as a pilot in command, flight engineer, or flight navigator in operations under this part;

(3) Has satisfactorily completed the appropriate proficiency or competency checks that are required to serve as a pilot in command, flight engineer, or flight navigator in operations under this part;

(4) Has satisfactorily completed the applicable training requirements of §121.413; and

(5) Has been approved by the Administrator for the check airman (simulator) duties involved.

(d) Completion of the requirements in paragraphs (b) (2), (3), and (4) or (c) (2), (3), and (4) of this section, as applicable, shall be entered in the individual's training record maintained by the certificate holder.

(e) Check airmen who have reached their 60th birthday or who do not hold an appropriate medical certificate may function as check airmen, but may not serve as pilot flightcrew members in operations under this part.

(f) A check airman (simulator) must accomplish the following—

(1) Fly at least two flight segments as a required crewmember for the type airplane involved within the 12-month period preceding the performance of any check airman duty in a flight simulator; or

(2) Satisfactorily complete an approved line-observation program within the period prescribed by that program and that must precede the performance of any check airman duty in a flight simulator.

(g) The flight segments or line-observation program required in paragraph (f) of this section are considered to be completed in the month required if completed in the calendar month before or in the calendar month after the month in which it is due.

[Doc. No. 28471, 61 FR 30741, June 17, 1996]

§121.412 Qualifications: Flight instructors (airplane) and flight instructors (simulator).

(a) For the purposes of this section and §121.414:

(1) A flight instructor (airplane) is a person who is qualified to instruct in an airplane, in a flight simulator, or in a flight training device for a particular type airplane.

(2) A flight instructor (simulator) is a person who is qualified to instruct, but only in a flight simulator, in a flight training device, or both, for a particular type airplane.

(3) Flight instructors (airplane) and flight instructors (simulator) are those instructors who perform the functions described in §121.401(a)(4).

(b) No certificate holder may use a person nor may any person serve as a flight instructor (airplane) in a training program established under this subpart unless, with respect to the airplane type involved, that person—

(1) Holds the airman certificates and rating required to serve as a pilot in command, a flight engineer, or a flight navigator, as applicable, in operations under this part;

(2) Has satisfactorily completed the appropriate training phases for the airplane, including recurrent training, that are required to serve as a pilot in command, flight engineer, or flight navigator, as applicable, in operations under this part;

(3) Has satisfactorily completed the appropriate proficiency or competency checks that are required to serve as a pilot in command, flight engineer, or flight navigator, as applicable, in operations under this part;

(4) Has satisfactorily completed the applicable training requirements of §121.414, including in-flight training and practice for initial and transition training;

(5) Holds at least a Class III medical certificate unless serving as a required crewmember, in which case holds a Class I or a Class II medical certificate as appropriate.

(6) Has satisfied the recency of experience requirements of §121.439.

(c) No certificate holder may use a person, nor may any person serve as a flight instructor (simulator) in a training program established under this subpart, unless, with respect to the airplane type involved, that person meets the provisions of paragraph (b) of this section, or—

(1) Holds the airman certificates and ratings, except medical certificate, required to serve as a pilot in command, a flight engineer, or a flight navigator, as applicable, in operations under this part except before March 19, 1997 that person need not hold a type rating for the airplane type involved provided that he or she only provides the instruction described in §§121.409(b) and 121.441;

(2) Has satisfactorily completed the appropriate training phases for the airplane, including recurrent training, that are required to serve as a pilot in command, flight engineer, or flight navigator, as applicable, in operations under this part;

(3) Has satisfactorily completed the appropriate proficiency or competency checks that are required to serve as a pilot in command, flight engineer, or flight navigator, as applicable, in operations under this part; and

(4) Has satisfactorily completed the applicable training requirements of § 121.414.

(d) Completion of the requirements in paragraphs (b) (2), (3), and (4) or (c) (2), (3), and (4) of this section as applicable shall be entered in the individual's training record maintained by the certificate holder.

(e) Flight instructors who have reached their 60th birthday, or who do not hold an appropriate medical certificate, may function as flight instructors, but may not serve as pilot flight crewmembers in operations under this part.

(f) A flight instructor (simulator) must accomplish the following—

(1) Fly at least two flight segments as a required crewmember for the type of airplane within the 12-month period preceding the performance of any flight instructor duty in a flight simulator (and must hold a Class I or Class II medical certificate as appropriate); or

(2) Satisfactorily complete an approved line-observation program within the period prescribed by that program and that must precede the performance of any check airman duty in a flight simulator.

(g) The flight segments or line-observation program required in paragraph (f) of this section is considered completed in the month required if completed in the calendar month before, or the calendar month after the month in which it is due.

[Doc. No. 28471, 61 FR 30742, June 17, 1996; 61 FR 34927, July 3, 1996; 62 FR 3739, Jan. 24, 1997; Amdt. 121–264, 62 FR 23120, Apr. 28, 1997]

§ 121.413 Initial and transition training and checking requirements: Check airmen (airplane), check airmen (simulator).

(a) No certificate holder may use a person nor may any person serve as a check airman unless—

(1) That person has satisfactorily completed initial or transition check airman training; and

(2) Within the preceding 24 calendar months that person satisfactorily conducts a proficiency or competency check under the observation of an FAA inspector or an aircrew designated examiner employed by the operator. The observation check may be accomplished in part or in full in an airplane, in a flight simulator, or in a flight training device. This paragraph applies after March 19, 1997.

(b) The observation check required by paragraph (a)(2) of this section is considered to have been completed in the month required if completed in the calendar month before, or the calendar month after, the month in which it is due.

(c) The initial ground training for check airmen must include the following:

(1) Check airman duties, functions, and responsibilities.

(2) The applicable Code of Federal Regulations and the certificate holder's policies and procedures.

(3) The appropriate methods, procedures, and techniques for conducting the required checks.

(4) Proper evaluation of student performance including the detection of—

(i) Improper and insufficient training; and

(ii) Personal characteristics of an applicant that could adversely affect safety.

(5) The appropriate corrective action in the case of unsatisfactory checks.

(6) The approved methods, procedures, and limitations for performing the required normal, abnormal, and emergency procedures in the airplane.

(d) The transition ground training for check airmen must include approved methods, procedures, and limitations for performing the required normal, abnormal, and emergency procedures applicable to the airplane to which the check airman is in transaction.

(e) The initial and transition flight training for pilot check airmen (airplane), flight engineer check airmen (airplane), and flight navigator check airmen (airplane) must include the following:

(1) The safety measures for emergency situations that are likely to develop during a check.

(2) The potential results of improper, untimely, or non-execution of safety measures during a check.

(3) For pilot check airman (airplane)—

(i) Training and practice in conducting flight checks from the left and right pilot seats in the required normal, abnormal, and emergency procedures to ensure competence to conduct the pilot flight checks required by this part; and

(ii) The safety measures to be taken from either pilot seat for emergency situations that are likely to develop during a check.

(4) For flight engineer check airmen (airplane) and flight navigator check airmen (airplane), training to ensure competence to perform assigned duties.

(f) The requirements of paragraph (e) of this section may be accomplished in full or in part in flight, in a flight simulator, or in a flight training device, as appropriate.

(g) The initial and transition flight training for check airmen (simulator) must include the following:

(1) Training and practice in conducting flight checks in the required normal, abnormal, and emergency procedures to ensure competence to conduct the flight checks required by this part. This training and practice must be accomplished in a flight simulator or in a flight training device.

(2) Training in the operation of flight simulators or flight training devices, or both, to ensure competence to conduct the flight checks required by this part.

[Doc. No. 28471, 61 FR 30743, June 17, 1996; 62 FR 3739, Jan. 24, 1997; Amdt. 121–264, 62 FR 23120, Apr. 28, 1997]

§ 121.414 Initial and transition training and checking requirements: flight instructors (airplane), flight instructors (simulator).

(a) No certificate holder may use a person nor may any person serve as a flight instructor unless—

(1) That person has satisfactorily completed initial or transition flight instructor training; and

(2) Within the preceding 24 calendar months, that person satisfactorily conducts instruction under the observation of an FAA inspector, an operator check airman, or an aircrew designated examiner employed by the operator. The observation check may be accomplished in part or in full in an airplane, in a flight simulator, or in a flight training device. This paragraph applies after March 19, 1997.

(b) The observation check required by paragraph (a)(2) of this section is considered to have been completed in the month required if completed in the calendar month before, or the calendar month after, the month in which it is due.

(c) The initial ground training for flight instructors must include the following:

(1) Flight instructor duties, functions, and responsibilities.

(2) The applicable Code of Federal Regulations and the certificate holder's policies and procedures.

(3) The appropriate methods, procedures, and techniques for conducting flight instruction.

(4) Proper evaluation of student performance including the detection of—

(i) Improper and insufficient training; and

(ii) Personal characteristics of an applicant that could adversely affect safety.

(5) The corrective action in the case of unsatisfactory training progress.

(6) The approved methods, procedures, and limitations for performing the required normal, abnormal, and emergency procedures in the airplane.

(7) Except for holders of a flight instructor certificate—

(i) The fundamental principles of the teaching-learning process;

(ii) Teaching methods and procedures; and

(iii) The instructor-student relationship.

(d) The transition ground training for flight instructors must include the approved methods, procedures, and limitations for performing the required normal, abnormal, and emergency procedures applicable to the airplane to which the flight instructor is in transition.

(e) The initial and transition flight training for flight instructors (airplane), flight engineer instructors (airplane), and flight navigator instructors (airplane) must include the following:

(1) The safety measures for emergency situations that are likely to develop during instruction.

(2) The potential results of improper, untimely, or non-execution of safety measures during instruction.

(3) For pilot flight instructor (airplane)—

(i) In-flight training and practice in conducting flight instruction from the left and right pilot seats in the required normal, abnormal, and emergency procedures to ensure competence as an instructor; and

(ii) The safety measures to be taken from either pilot seat for emergency situations that are likely to develop during instruction.

(4) For flight engineer instructors (airplane) and flight navigator instructors (airplane), in-flight training to ensure competence to perform assigned duties.

(f) The requirements of paragraph (e) of this section may be accomplished in full or in part in flight, in a flight simulator, or in a flight training device, as appropriate.

(g) The initial and transition flight training for flight instructors (simulator) must include the following:

(1) Training and practice in the required normal, abnormal, and emergency procedures to ensure competence to conduct the flight instruction required by this part. This training and practice must be accomplished in full or in part in a flight simulator or in a flight training device.

(2) Training in the operation of flight simulators or flight training devices, or both, to ensure competence to conduct the flight instruction required by this part.

[Doc. No. 28471, 61 FR 30743, June 17, 1996; 62 FR 3739, Jan. 24, 1997]

§ 121.415 Crewmember and dispatcher training requirements.

(a) Each training program must provide the following ground training as appropriate to the particular assignment of the crewmember or dispatcher:

(1) Basic indoctrination ground training for newly hired crewmembers or dispatchers including 40 programmed hours of instruction, unless reduced under § 121.405 or as specified in § 121.401(d), in at least the following—

(i) Duties and responsibilities of crewmembers or dispatchers, as applicable;

(ii) Appropriate provisions of the Federal Aviation Regulations;

(iii) Contents of the certificate holder's operating certificate and operations specifications (not required for flight attendants); and

(iv) Appropriate portions of the certificate holder's operating manual.

(2) The initial and transition ground training specified in §§ 121.419 through 121.422, as applicable.

(3) For crewmembers, emergency training as specified in §§ 121.417 and 121.805.

(4) After February 15, 2008, training for crewmembers and dispatchers in their roles and responsibilities in the certificate holder's passenger recovery plan, if applicable.

(b) Each training program must provide the flight training specified in §§ 121.424 through 121.426, as applicable.

(c) Each training program must provide recurrent ground and flight training as provided in § 121.427.

(d) Each training program must provide the differences training specified in § 121.418 if the Administrator finds that, due to differences between airplanes of the same type operated by the certificate holder, additional training is necessary to insure that each crewmember and dispatcher is adequately trained to perform his assigned duties.

(e) Upgrade training as specified in §§ 121.419 and 121.424 for a particular type airplane may be included in the training program for crewmembers who

have qualified and served as second in command pilot or flight engineer on that airplane.

(f) Particular subjects, maneuvers, procedures, or parts thereof specified in §§ 121.419 through 121.425 for transition or upgrade training, as applicable, may be omitted, or the programmed hours of ground instruction or inflight training may be reduced, as provided in § 121.405.

(g) In addition to initial, transition, upgrade, recurrent and differences training, each training program must also provide ground and flight training, instruction, and practice as necessary to insure that each crewmember and dispatcher—

(1) Remains adequately trained and currently proficient with respect to each airplane, crewmember position, and type of operation in which he serves; and

(2) Qualifies in new equipment, facilities, procedures, and techniques, including modifications to airplanes.

[Doc. No. 9509, 35 FR 90, Jan. 3, 1970, as amended by Amdt. 121–130, 41 FR 47229, Oct. 28, 1976; Amdt. 121–281, 66 FR 19043, Apr. 12, 2001; Amdt. 121–329, 72 FR 1881, Jan. 16, 2007]

§ 121.417 Crewmember emergency training.

(a) Each training program must provide the emergency training set forth in this section with respect to each airplane type, model, and configuration, each required crewmember, and each kind of operation conducted, insofar as appropriate for each crewmember and the certificate holder.

(b) Emergency training must provide the following:

(1) Instruction in emergency assignments and procedures, including coordination among crewmembers.

(2) Individual instruction in the location, function, and operation of emergency equipment including—

(i) Equipment used in ditching and evacuation;

(ii) [Reserved]

(iii) Portable fire extinguishers, with emphasis on type of extinguisher to be used on different classes of fires; and

(iv) Emergency exits in the emergency mode with the evacuation slide/raft pack attached (if applicable), with training emphasis on the operation of the exits under adverse conditions.

(3) Instruction in the handling of emergency situations including—

(i) Rapid decompression;

(ii) Fire in flight or on the surface, and smoke control procedures with emphasis on electrical equipment and related circuit breakers found in cabin areas including all galleys, service centers, lifts, lavatories and movie screens;

(iii) Ditching and other evacuation, including the evacuation of persons and their attendants, if any, who may need the assistance of another person to move expeditiously to an exit in the event of an emergency.

(iv) [Reserved]

(v) Hijacking and other unusual situations.

(4) Review and discussion of previous aircraft accidents and incidents pertaining to actual emergency situations.

(c) Each crewmember must accomplish the following emergency training during the specified training periods, using those items of installed emergency equipment for each type of airplane in which he or she is to serve (Alternate recurrent training required by § 121.433(c) of this part may be accomplished by approved pictorial presentation or demonstration):

(1) One-time emergency drill requirements to be accomplished during initial training. Each crewmember must perform—

(i) At least one approved protective breathing equipment (PBE) drill in which the crewmember combats an actual or simulated fire using at least one type of installed hand fire extinguisher or approved fire extinguisher that is appropriate for the type of actual fire or simulated fire to be fought while using the type of installed PBE required by § 121.337 or approved PBE simulation device as defined by paragraph (d) of this section for combatting fires aboard airplanes;

(ii) At least one approved firefighting drill in which the crewmember combats an actual fire using at least one type of installed hand fire extinguisher or approved fire extinguisher that is appropriate for the type of fire to be

fought. This firefighting drill is not required if the crewmember performs the PBE drill of paragraph (c)(1)(i) by combating an actual fire; and

(iii) An emergency evacuation drill with each person egressing the airplane or approved training device using at least one type of installed emergency evacuation slide. The crewmember may either observe the airplane exits being opened in the emergency mode and the associated exit slide/raft pack being deployed and inflated, or perform the tasks resulting in the accomplishment of these actions.

(2) Additional emergency drill requirements to be accomplished during initial training and once each 24 calendar months during recurrent training. Each crewmember must—

(i) Perform the following emergency drills and operate the following equipment:

(A) Each type of emergency exit in the normal and emergency modes, including the actions and forces required in the deployment of the emergency evacuation slides;

(B) Each type of installed hand fire extinguisher;

(C) Each type of emergency oxygen system to include protective breathing equipment;

(D) Donning, use, and inflation of individual flotation means, if applicable; and

(E) Ditching, if applicable, including but not limited to, as appropriate:

(*1*) Cockpit preparation and procedures;

(*2*) Crew coordination;

(*3*) Passenger briefing and cabin preparation;

(*4*) Donning and inflation of life preservers;

(*5*) Use of life-lines; and

(*6*) Boarding of passengers and crew into raft or a slide/raft pack.

(ii) Observe the following drills:

(A) Removal from the airplane (or training device) and inflation of each type of life raft, if applicable;

(B) Transfer of each type of slide/raft pack from one door to another;

(C) Deployment, inflation, and detachment from the airplane (or training device) of each type of slide/raft pack; and

(D) Emergency evacuation including the use of a slide.

(d) After September 1, 1993, no crewmember may serve in operations under this part unless that crewmember has performed the PBE drill and the firefighting drill described by paragraphs (c)(1)(i) and (c)(1)(ii) of this section, as part of a one-time training requirement of paragraphs (c)(1) or (c)(2) of this section as appropriate. Any crewmember who performs the PBE drill and the firefighting drill prescribed in paragraphs (c)(1)(i) and (c)(1)(ii) of this section after May 26, 1987, is deemed to be in compliance with this regulation upon presentation of information or documentation, in a form and manner acceptable to the Director, Flight Standards Service, showing that the appropriate drills have been accomplished.

(e) Crewmembers who serve in operations above 25,000 feet must receive instruction in the following:

(1) Respiration.

(2) Hypoxia.

(3) Duration of consciousness without supplemental oxygen at altitude.

(4) Gas expansion.

(5) Gas bubble formation.

(6) Physical phenomena and incidents of decompression.

(f) For the purposes of this section the following definitions apply:

(1) *Actual fire* means an ignited combustible material, in controlled conditions, of sufficient magnitude and duration to accomplish the training objectives outlined in paragraphs (c)(1)(i) and (c)(1)(ii) of this section.

(2) *Approved fire extinguisher* means a training device that has been approved by the Administrator for use in meeting the training requirements of § 121.417(c).

(3) *Approved PBE simulation device* means a training device that has been approved by the Administrator for use in meeting the training requirements of § 121.417(c).

(4) *Combats*, in this context, means to properly fight an actual or simulated fire using an appropriate type of fire extinguisher until that fire is extinguished.

(5) *Observe* means to watch without participating actively in the drill.

(6) *PBE drill* means an emergency drill in which a crewmember demonstrates the proper use of protective breathing equipment while fighting an actual or simulated fire.

(7) *Perform* means to satisfactorily accomplish a prescribed emergency drill using established procedures that stress the skill of the persons involved in the drill.

(8) *Simulated fire* means an artificial duplication of smoke or flame used to create various aircraft firefighting scenarios, such as lavatory, galley oven, and aircraft seat fires.

[Doc. No. 9509, 35 FR 90, Jan. 3, 1970]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting §121.417, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and on GPO Access.

§121.418 Differences training: Crewmembers and dispatchers.

(a) Differences training for crewmembers and dispatchers must consist of at least the following as applicable to their assigned duties and responsibilities:

(1) Instruction in each appropriate subject or part thereof required for initial ground training in the airplane unless the Administrator finds that particular subjects are not necessary.

(2) Flight training in each appropriate maneuver or procedure required for initial flight training in the airplane unless the Administrator finds that particular maneuvers or procedures are not necessary.

(3) The number of programmed hours of ground and flight training determined by the Administrator to be necessary for the airplane, the operation, and the crewmember or aircraft dispatcher involved.

Differences training for all variations of a particular type airplane may be included in initial, transition, upgrade, and recurrent training for the airplane.

§121.419 Pilots and flight engineers: Initial, transition, and upgrade ground training.

(a) Initial, transition, and upgrade ground training for pilots and flight engineers must include instruction in at least the following as applicable to their assigned duties:

(1) General subjects—

(i) The certificate holder's dispatch or flight release procedures;

(ii) Principles and methods for determining weight and balance, and runway limitations for takeoff and landing;

(iii) Enough meteorology to insure a practical knowledge of weather phenomena, including the principles of frontal systems, icing, fog, thunderstorms, and high altitude weather situations;

(iv) Air traffic control systems, procedures, and phraseology;

(v) Navigation and the use of navigation aids, including instrument approach procedures;

(vi) Normal and emergency communication procedures;

(vii) Visual cues prior to and during descent below DA/DH or MDA;

(viii) Approved crew resource management initial training; and

(ix) Other instructions as necessary to ensure his competence.

(2) For each airplane type—

(i) A general description;

(ii) Performance characteristics;

(iii) Engines and propellers;

(iv) Major components;

(v) Major airplane systems (i.e., flight controls, electrical, hydraulic); other systems as appropriate; principles of normal, abnormal, and emergency operations; appropriate procedures and limitations;

(vi) Procedures for—

(A) Recognizing and avoiding severe weather situations;

(B) Escaping from severe weather situations, in case of inadvertent encounters, including low-altitude windshear, and

(C) Operating in or near thunderstorms (including best penetrating altitudes), turbulent air (including clear air turbulence), icing, hail, and other potentially hazardous meteorological conditions;

(vii) Operating limitations;

(viii) Fuel consumption and cruise control;

(ix) Flight planning;

(x) Each normal and emergency procedure; and

(xi) The approved Airplane Flight Manual.

(b) Initial ground training for pilots and flight engineers must consist of at least the following programmed hours of instruction in the required subjects specified in paragraph (a) of this section and in §121.415(a) unless reduced under §121.405:

(1) Group I airplanes—

(i) Reciprocating powered, 64 hours; and

(ii) Turbopropeller powered, 80 hours.

(2) Group II airplanes, 120 hours.

[Doc. No. 9509, 35 FR 90, Jan. 3, 1970, as amended by Amdt. 121–199, 53 FR 37696, Sept. 27, 1988; Amdt. 121–250, 60 FR 65949, Dec. 20, 1995; Amdt. 121–333, 72 FR 31682, June 7, 2007]

§121.420 Flight navigators: Initial and transition ground training.

(a) Initial and transition ground training for flight navigators must include instruction in the subjects specified in §121.419(a) as appropriate to his assigned duties and responsibilities and in the following with respect to the particular type airplane:

(1) Limitations on climb, cruise, and descent speeds.

(2) Each item of navigational equipment installed including appropriate radio, radar, and other electronic equipment.

(3) Airplane performance.

(4) Airspeed, temperature, and pressure indicating instruments or systems.

(5) Compass limitations and methods of compensation.

(6) Cruise control charts and data, including fuel consumption rates.

(7) Any other instruction as necessary to ensure his competence.

(b) Initial ground training for flight navigators must consist of at least the following programmed hours of instruction in the subjects specified in paragraph (a) of this section and in §121.415(a) unless reduced under §121.405:

(1) Group I airplanes—

(i) Reciprocating powered, 16 hours; and

(ii) Turbopropeller powered; 32 hours.

(2) Group II airplanes, 32 hours.

§121.421 Flight attendants: Initial and transition ground training.

(a) Initial and transition ground training for flight attendants must include instruction in at least the following:

(1) General subjects—

(i) The authority of the pilot in command;

(ii) Passenger handling, including the procedures to be followed in the case of deranged persons or other persons whose conduct might jeopardize safety; and

(iii) Approved crew resource management initial training.

(2) For each airplane type—

(i) A general description of the airplane emphasizing physical characteristics that may have a bearing on ditching, evacuation, and inflight emergency procedures and on other related duties;

(ii) The use of both the public address system and the means of communicating with other flight crewmembers, including emergency means in the case of attempted hijacking or other unusual situations; and

(iii) Proper use of electrical galley equipment and the controls for cabin heat and ventilation.

(b) Initial and transition ground training for flight attendants must include a competence check to determine ability to perform assigned duties and responsibilities.

(c) Initial ground training for flight attendants must consist of at least the following programmed hours of instruction in the subjects specified in paragraph (a) of this section and in §121.415(a) unless reduced under §121.405.

(1) Group I airplanes—

(i) Reciprocating powered, 8 hours; and

(ii) Turbopropeller powered, 8 hours.

(2) Group II airplanes, 16 hours.

[Doc No. 9509, 35 FR 90, Jan. 3, 1970, as amended by Amdt. 121–250, 60 FR 65949, Dec. 20, 1995]

§121.422 Aircraft dispatchers: Initial and transition ground training.

(a) Initial and transition ground training for aircraft dispatchers must include instruction in at least the following:

(1) General subjects—

(i) Use of communications systems including the characteristics of those

systems and the appropriate normal and emergency procedures;

(ii) Meteorology, including various types of meteorological information and forecasts, interpretation of weather data (including forecasting of en route and terminal temperatures and other weather conditions), frontal systems, wind conditions, and use of actual and prognostic weather charts for various altitudes;

(iii) The NOTAM system;

(iv) Navigational aids and publications;

(v) Joint dispatcher-pilot responsibilities;

(vi) Characteristics of appropriate airports;

(vii) Prevailing weather phenomena and the available sources of weather information;

(viii) Air traffic control and instrument approach procedures; and

(ix) Approved dispatcher resource management (DRM) initial training.

(2) For each airplane—

(i) A general description of the airplane emphasizing operating and performance characteristics, navigation equipment, instrument approach and communication equipment, emergency equipment and procedures, and other subjects having a bearing on dispatcher duties and responsibilities;

(ii) Flight operation procedures including procedures specified in §121.419(a)(2)(vi);

(iii) Weight and balance computations;

(iv) Basic airplane performance dispatch requirements and procedures;

(v) Flight planning including track selection, flight time analysis, and fuel requirements; and

(vi) Emergency procedures.

(3) Emergency procedures must be emphasized, including the alerting of proper governmental, company, and private agencies during emergencies to give maximum help to an airplane in distress.

(b) Initial and transition ground training for aircraft dispatchers must include a competence check given by an appropriate supervisor or ground instructor that demonstrates knowledge and ability with the subjects set forth in paragraph (a) of this section.

(c) Initial ground training for aircraft dispatchers must consist of at least the following programmed hours of instruction in the subjects specified in paragraph (a) of this section and in §121.415(a) unless reduced under §121.405:

(1) Group I airplanes—

(i) Reciprocating powered, 30 hours; and

(ii) Turbopropeller powered, 40 hours.

(2) Group II airplanes, 40 hours.

[Doc. No. 9509, 35 FR 90, Jan. 3, 1970, as amended by Amdt. 121–250, 60 FR 65949, Dec. 20, 1995]

§121.424 Pilots: Initial, transition, and upgrade flight training.

(a) Initial, transition, and upgrade training for pilots must include flight training and practice in the maneuvers and procedures set forth in the certificate holder's approved low-altitude windshear flight training program and in appendix E to this part, as applicable.

(b) The maneuvers and procedures required by paragraph (a) of this section must be performed inflight except—

(1) That windshear maneuvers and procedures must be performed in a simulator in which the maneuvers and procedures are specifically authorized to be accomplished; and

(2) To the extent that certain other maneuvers and procedures may be performed in an airplane simulator, an appropriate training device, or a static airplane as permitted in appendix E to this part.

(c) Except as permitted in paragraph (d) of this section, the initial flight training required by paragraph (a) of this section must include at least the following programmed hours of inflight training and practice unless reduced under §121.405;

(1) Group I airplanes—

(i) *Reciprocating powered.* Pilot in command, 10 hours; second in command, 6 hours; and

(ii) *Turbopropeller powered.* Pilot in command, 15 hours; second in command, 7 hours.

(2) *Group II airplanes.* Pilot in command, 20 hours; second in command, 10 hours.

(d) If the certificate holder's approved training program includes a

course of training utilizing an airplane simulator under §121.409 (c) and (d) of this part, each pilot must successfully complete—

(1) With respect to §121.409(c) of this part—

(i) Training and practice in the simulator in at least all of the maneuvers and procedures set forth in appendix E to this part for initial flight training that are capable of being performed in an airplane simulator without a visual system; and

(ii) A flight check in the simulator or the airplane to the level of proficiency of a pilot in command or second in command, as applicable, in at least the maneuvers and procedures set forth in appendix F to this part that are capable of being performed in an airplane simulator without a visual system.

(2) With respect to §121.409(d) of this part, training and practice in at least the maneuvers and procedures set forth in the certificate holder's approved low-altitude windshear flight training program that are capable of being performed in an airplane simulator in which the maneuvers and procedures are specifically authorized.

[Doc. No. 9509, 35 FR 90, Jan. 3, 1970, as amended by Amdt. 121–199, 53 FR 37697, Sept. 27, 1988]

§121.425 Flight engineers: Initial and transition flight training.

(a) Initial and transition flight training for flight engineers must include at least the following:

(1) Training and practice in procedures related to the carrying out of flight engineer duties and functions. This training and practice may be accomplished either inflight, in an airplane simulator, or in a training device.

(2) A flight check that includes—

(i) Preflight inspection;

(ii) Inflight performance of assigned duties accomplished from the flight engineer station during taxi, runup, takeoff, climb, cruise, descent, approach, and landing;

(iii) Accomplishment of other functions, such as fuel management and preparation of fuel consumption records, and normal and emergency or alternate operation of all airplane flight systems, performed either inflight, in an airplane simulator, or in a training device.

Flight engineers possessing a commercial pilot certificate with an instrument, category and class rating, or pilots already qualified as second in command and reverting to flight engineer, may complete the entire flight check in an approved airplane simulator.

(b) Except as permitted in paragraph (c) of this section, the initial flight training required by paragraph (a) of this section must include at least the same number of programmed hours of flight training and practice that are specified for a second in command pilot under §121.424(c) unless reduced under §121.405.

(c) If the certificate holder's approved training program includes a course of training utilizing an airplane simulator or other training device under §121.409(c), each flight engineer must successfully complete in the simulator or other training device—

(1) Training and practice in at least all of the assigned duties, procedures, and functions required by paragraph (a) of this section; and

(2) A flight check to a flight engineer level of proficiency in the assigned duties, procedures, and functions.

[Doc. No. 9509, 35 FR 90, Jan. 3, 1970, as amended by Amdt. 121–144, 43 FR 22647, May 25, 1978]

§121.426 Flight navigators: Initial and transition flight training.

(a) Initial and transition flight training for flight navigators must include flight training and a flight check that are adequate to insure his proficiency in the performance of his assigned duties.

(b) The flight training and checks specified in paragraph (a) of this section must be performed—

(1) Inflight or in an appropriate training device; or

(2) In operations under this part if performed under supervision of a qualified flight navigator.

§121.427 Recurrent training.

(a) Recurrent training must ensure that each crew member or dispatcher is adequately trained and currently proficient with respect to the type airplane (including differences training, if

applicable) and crewmember position involved.

(b) Recurrent ground training for crewmembers and dispatchers must include at least the following:

(1) A quiz or other review to determine the state of the crewmember's or dispatcher's knowledge with respect to the airplane and position involved.

(2) Instruction as necessary in the subjects required for initial ground training by §§121.415(a) and 121.805, as appropriate, including emergency training (not required for aircraft dispatchers).

(3) For flight attendants and dispatchers, a competence check as required by §§121.421(b) and 121.422(b), respectively.

(4) Approved recurrent CRM training. For flight crewmembers, this training or portions thereof may be accomplished during an approved simulator line operational flight training (LOFT) session. The recurrent CRM training requirement does not apply until a person has completed the applicable initial CRM training required by §§121.419, 121.421, or 121.422.

(c) Recurrent ground training for crewmembers and dispatchers must consist of at least the following programmed hours unless reduced under §121.405:

(1) For pilots and flight engineers—

(i) Group I, reciprocating powered airplanes, 16 hours;

(ii) Group I turbopropeller powered airplanes, 20 hours; and

(iii) Group II airplanes, 25 hours.

(2) For flight navigators—

(i) Group I reciprocating powered airplanes, 12 hours;

(ii) Group I turbopropeller powered airplanes, 16 hours; and

(iii) Group II airplanes, 16 hours.

(3) For flight attendants—

(i) Group I reciprocating powered airplanes, 4 hours;

(ii) Group I turbopropeller powered airplanes, 5 hours; and

(iii) Group II airplanes, 12 hours.

(4) For aircraft dispatchers—

(i) Group I reciprocating powered airplanes, 8 hours;

(ii) Group I turbopropeller powered airplanes, 10 hours; and

(iii) Group II airplanes, 20 hours.

(d) Recurrent flight training for flight crewmembers must include at least the following:

(1) For pilots, flight training in an approved simulator in maneuvers and procedures set forth in the certificate holder's approved low-altitude windshear flight training program and flight training in maneuvers and procedures set forth in appendix F to this part, or in a flight training program approved by the Administrator, except as follows—

(i) The number of programmed inflight hours is not specified; and

(ii) Satisfactory completion of a proficiency check may be substituted for recurrent flight training as permitted in §121.433(c).

(2) For flight engineers, flight training as provided by §121.425(a) except as follows—

(i) The specified number of inflight hours is not required; and

(ii) The flight check, other than the preflight inspection, may be conducted in an airplane simulator or other training device. The preflight inspection may be conducted in an airplane, or by using an approved pictorial means that realistically portrays the location and detail or preflight inspection items and provides for the portrayal of abnormal conditions. Satisfactory completion of an approved line-oriented simulator training program may be substituted for the flight check.

(3) For flight navigators, enough inflight training and an inflight check to insure competency with respect to operating procedures and navigation equipment to be used and familiarity with essential navigation information pertaining to the certificate holder's routes that require a flight navigator.

[Doc. No. 9509, 35 FR 90, Jan. 30, 1970, as amended by Amdt. 121–80, 36 FR 19362, Oct. 5, 1971; Amdt. 121–144, 43 FR 22647, May 25, 1978; Amdt.121–199, 53 FR 37697, Sept. 27, 1988; Amdt. 121–250, 60 FR 65949, Dec. 20, 1995; Amdt. 121–281, 66 FR 19043, Apr. 12, 2001]

§121.429 Prohibited drugs.

(a) Each certificate holder shall provide each employee performing a function listed in appendix I to this part and his or her supervisor with the training specified in that appendix.

(b) No certificate holder may use any contractor to perform a function listed in appendix I to this part unless that contractor provides each of its employees performing that function for the certificate holder and his or her supervisor with the training specified in that appendix.

[Doc. No. 25148, 53 FR 47057, Nov. 21, 1988]

Subpart O—Crewmember Qualifications

§ 121.431 Applicability.

(a) This subpart:

(1) Prescribes crewmember qualifications for all certificate holders except where otherwise specified. The qualification requirements of this subpart also apply to each certificate holder that conducts commuter operations under part 135 of this chapter with airplanes for which two pilots are required by the aircraft type certification rules of this chapter. The Administrator may authorize any other certificate holder that conducts operations under part 135 of this chapter to comply with the training and qualification requirements of this subpart instead of subparts E, G, and H of part 135 of this chapter, except that these certificate holders may choose to comply with the operating experience requirements of § 135.344 of this chapter, instead of the requirements of § 121.434; and

(2) Permits training center personnel authorized under part 142 of this chapter who meet the requirements of §§ 121.411 through 121.414 to provide training, testing, and checking under contract or other arrangement to those persons subject to the requirements of this subpart.

(b) For the purpose of this subpart, the airplane groups and terms and definitions prescribed in § 121.400 and the following definitions apply:

Consolidation is the process by which a person through practice and practical experience increases proficiency in newly acquired knowledge and skills.

Line operating flight time is flight time performed in operations under this part.

Operating cycle is a complete flight segment consisting of a takeoff, climb, enroute portion, descent, and a landing.

[Doc. No. 10171, 36 FR 12284, June 30, 1971; as amended by Amdt. 121–250, 60 FR 65949, Dec. 20, 1995; Amdt. 121–248, 60 FR 20869, Apr. 27, 1995; Amdt. 121–250, 60 FR 65949, Dec. 20, 1995; Amdt. 121–259, 61 FR 34561, July 2, 1996; Amdt. 121–263, 62 FR 13791, Mar. 21, 1997]

§ 121.432 General.

(a) Except in the case of operating experience under § 121.434, a pilot who serves as second in command of an operation that requires three or more pilots must be fully qualified to act as pilot in command of that operation.

(b) No certificate holder may conduct a check or any training in operations under this part, except for the following checks and training required by this part or the certificate holder:

(1) Line checks for pilots.

(2) Flight navigator training conducted under the supervision of a flight navigator flight instructor.

(3) Flight navigator flight checks.

(4) Flight engineer checks (except for emergency procedures), if the person being checked is qualified and current in accordance with § 121.453(a).

(5) Flight attendant training and competence checks.

Except for pilot line checks and flight engineer flight checks, the person being trained or checked may not be used as a required crewmember.

(c) For the purposes of this subpart the airplane groups prescribed in § 121.400 apply.

(d) For the purposes of this subpart the terms and definitions in § 121.400 apply.

[Doc. No. 9509, 35 FR 95, Jan. 3, 1970, as amended by Amdt. 121–130, 41 FR 47229, Oct. 28, 1976]

§ 121.433 Training required.

(a) *Initial training.* No certificate holder may use any person nor may any person serve as a required crewmember on an airplane unless that person has satisfactorily completed, in a training program approved under subpart N of this part, initial ground and flight training for that type airplane and for the particular crewmember position, except as follows:

(1) Crewmembers who have qualified and served as a crewmember on another type airplane of the same group may serve in the same crewmember capacity upon completion of transition training as provided in §121.415.

(2) Crewmembers who have qualified and served as second in command or flight engineer on a particular type airplane may serve as pilot in command or second in command, respectively, upon completion of upgrade training for that airplane as provided in §121.415.

(b) *Differences training.* No certificate holder may use any person nor may any person serve as a required crewmember on an airplane of a type for which differences training is included in the certificate holder's approved training program unless that person has satisfactorily completed, with respect to both the crewmember position and the particular variation of the airplane in which he serves, either initial or transition ground and flight training, or differences training, as provided in §121.415.

(c) *Recurrent training.* (1) No certificate holder may use any person nor may any person serve as a required crewmember on an airplane unless, within the preceding 12 calendar months—

(i) For flight crewmembers, he has satisfactorily completed recurrent ground and flight training for that airplane and crewmember position and a flight check as applicable;

(ii) For flight attendants and dispatchers, he has satisfactorily completed recurrent ground training and a competence check; and

(iii) In addition, for pilots in command he has satisfactorily completed, within the preceding 6 calendar months, recurrent flight training in addition to the recurrent flight training required in paragraph (c)(1)(i) of this section, in an airplane in which he serves as pilot in command in operations under this part.

(2) For pilots, a proficiency check as provided in §121.441 of this part may be substituted for the recurrent flight training required by this paragraph and the approved simulator course of training under §121.409(b) of this part may be substituted for alternate periods of recurrent flight training required in that airplane, except as provided in paragraphs (d) and (e) of this section.

(d) For each airplane in which a pilot serves as pilot in command, he must satisfactorily complete either recurrent flight training or a proficiency check within the preceding 12 calendar months.

(e) Notwithstanding paragraphs (c)(2) and (d) of this section, a proficiency check as provided in §121.441 of this part may not be substituted for training in those maneuvers and procedures set forth in a certificate holder's approved low-altitude windshear flight training program when that program is included in a recurrent flight training course as required by §121.409(d) of this part.

[Doc. No. 9509, 35 FR 95, Jan. 3, 1970, as amended by Amdt. 121–91, 37 FR 10729, May 27, 1972; Amdt. 121–199, 53 FR 37697, Sept. 27, 1988]

§121.434 Operating experience, operating cycles, and consolidation of knowledge and skills.

(a) No certificate holder may use a person nor may any person serve as a required crewmember of an airplane unless the person has satisfactorily completed, on that type airplane and in that crewmember position, the operating experience, operating cycles, and the line operating flight time for consolidation of knowledge and skills, required by this section, except as follows:

(1) Crewmembers other than pilots in command may serve as provided herein for the purpose of meeting the requirements of this section.

(2) Pilots who are meeting the pilot in command requirements may serve as second in command.

(3) Separate operating experience, operating cycles, and line operating flight time for consolidation of knowledge and skills are not required for variations within the same type airplane.

(b) In acquiring the operating experience, operating cycles, and line operating flight time for consolidation of knowledge and skills, crewmembers must comply with the following:

(1) In the case of a flight crewmember, he must hold the appropriate certificates and ratings for the crewmember position and the airplane, except that a pilot who is meeting the pilot in command requirements must hold the appropriate certificates and ratings for a pilot in command in the airplane.

(2) The operating experience, operating cycles, and line operating flight time for consolidation of knowledge and skills must be acquired after satisfactory completion of the appropriate ground and flight training for the particular airplane type and crewmember position.

(3) The experience must be acquired in flight during operations under this part. However, in the case of an aircraft not previously used by the certificate holder in operations under this part, operating experience acquired in the aircraft during proving flights or ferry flights may be used to meet this requirement.

(c) Pilot crewmembers must acquire operating experience and operating cycles as follows:

(1) A pilot in command must—

(i) Perform the duties of a pilot in command under the supervision of a check pilot; and

(ii) In addition, if a qualifying pilot in command is completing initial or upgrade training specified in §121.424, be observed in the performance of prescribed duties by an FAA inspector during at least one flight leg which includes a takeoff and landing. During the time that a qualifying pilot in command is acquiring the operating experience in paragraphs (c)(l) (i) and (ii) of this section, a check pilot who is also serving as the pilot in command must occupy a pilot station. However, in the case of a transitioning pilot in command the check pilot serving as pilot in command may occupy the observer's seat, if the transitioning pilot has made at least two takeoffs and landings in the type airplane used, and has satisfactorily demonstrated to the check pilot that he is qualified to perform the duties of a pilot in command of that type of airplane.

(2) A second in command pilot must perform the duties of a second in command under the supervision of an appropriately qualified check pilot.

(3) The hours of operating experience and operating cycles for all pilots are as follows:

(i) For initial training, 15 hours in Group I reciprocating powered airplanes, 20 hours in Group I turbopropeller powered airplanes, and 25 hours in Group II airplanes. Operating experience in both airplane groups must include at least 4 operating cycles (at least 2 as the pilot flying the airplane).

(ii) For transition training, except as provided in paragraph (c)(3)(iii) of this section, 10 hours in Group I reciprocating powered airplanes, 12 hours in Group I turbopropeller powered airplanes, 25 hours for pilots in command in Group II airplanes, and 15 hours for second in command pilots in Group II airplanes. Operating experience in both airplane groups must include at least 4 operating cycles (at least 2 as the pilot flying the airplane).

(iii) In the case of transition training where the certificate holder's approved training program includes a course of training in an airplane simulator under §121.409(c), each pilot in command must comply with the requirements prescribed in paragraph (c)(3)(i) of this section for initial training.

(d) A flight engineer must perform the duties of a flight engineer under the supervision of a check airman or a qualified flight engineer for at least the following number of hours:

(1) Group I reciprocating powered airplanes, 8 hours.

(2) Group I turbopropeller powered airplanes, 10 hours.

(3) Group II airplanes, 12 hours.

(e) A flight attendant must, for at least 5 hours, perform the assigned duties of a flight attendant under the supervision of a flight attendant supervisor qualified under this part who personally observes the performance of these duties. However, operating experience is not required for a flight attendant who has previously acquired such experience on any large passenger carrying airplane of the same group, if the certificate holder shows that the flight attendant has received sufficient ground training for the airplane in which the flight attendant is to serve.

Flight attendants receiving operating experience may not be assigned as a required crewmember. Flight attendants who have satisfactorily completed training time acquired in an approved training program conducted in a full-scale (except for length) cabin training device of the type airplane in which they are to serve may substitute this time for 50 percent of the hours required by this paragraph.

(f) Flight crewmembers may substitute one additional takeoff and landing for each hour of flight to meet the operating experience requirements of this section, up to a maximum reduction of 50% of flight hours, except those in Group II initial training, and second in command pilots in Group II transition training. Notwithstanding the reductions in programmed hours permitted under §§ 121.405 and 121.409, the hours of operating experience for flight crewmembers are not subject to reduction other than as provided in this paragraph and paragraph (e) of this section.

(g) Except as provided in paragraph (h) of this section, pilot in command and second in command crewmembers must each acquire at least 100 hours of line operating flight time for consolidation of knowledge and skills (including operating experience required under paragraph (c) of this section) within 120 days after the satisfactory completion of:

(1) Any part of the flight maneuvers and procedures portion of either an airline transport pilot certificate with type rating practical test or an additional type rating practical test, or

(2) A § 121.441 proficiency check.

(h) The following exceptions apply to the consolidation requirement of paragraph (g) of this section:

(1) Pilots who have qualified and served as pilot in command or second in command on a particular type airplane in operations under this part before August 25, 1995 are not required to complete line operating flight time for consolidation of knowledge and skills.

(2) Pilots who have completed the line operating flight time requirement for consolidation of knowledge and skills while serving as second in command on a particular type airplane in operations under this part after August 25, 1995 are not required to repeat the line operating flight time before serving as pilot in command on the same type airplane.

(3) If, before completing the required 100 hours of line operating flight time, a pilot serves as a pilot in another airplane type operated by the certificate holder, the pilot may not serve as a pilot in the airplane for which the pilot has newly qualified unless the pilot satifactorily completes refresher training as provided in the certificate holder's approved training program and that training is conducted by an appropriately qualified instructor or check pilot.

(4) If the required 100 hours of line operating flight time are not completed within 120 days, the certificate holder may extend the 120-day period to no more than 150 days if—

(i) The pilot continues to meet all other applicable requirements of subpart O of this part; and

(ii) On or before the 120th day the pilot satisfactorily completes refresher training conducted by an appropriately qualified instructor or check pilot as provided in the certificate holder's approved training program, or a check pilot determines that the pilot has retained an adequate level of proficiency after observing that pilot in a supervised line operating flight.

(5) The Administrator, upon application by the certificate holder, may authorize deviations from the requirements of paragraph (g) of this section, by an appropriate amendment to the operations specifications, to the extent warranted by any of the following circumstances:

(i) A newly certificated certificate holder does not employ any pilots who meet the minimum requirements of paragraph (g) of this section.

(ii) An existing certificate holder adds to its fleet an airplane type not before proven for use in its operations.

(iii) A certificate holder establishes a new domicile to which it assigns pilots who will be required to become qualified on the airplanes operated from that domicile.

(i) Notwithstanding the reductions in programmed hours permitted under §§ 121.405 and 121.409 of subpart N of this part, the hours of operating experience

for flight crewmembers are not subject to reduction other than as provided in paragraphs (e) and (f) of this section.

[Doc. No. 9509, 35 FR 95, Jan. 3, 1970, as amended by Amdt. 121–74, 36 FR 12284, June 30, 1971; Amdt. 121–91, 37 FR 10729, May 27, 1972; Amdt. 121–140, 43 FR 9599, Mar. 9, 1978; Amdt. 121–144, 43 FR 22647, May 25, 1978; Amdt. 121–159, 45 FR 41593, June 19, 1980; Amdt. 121–248, 60 FR 20870, Apr. 27, 1995]

§ 121.437 Pilot qualification: Certificates required.

(a) No pilot may act as pilot in command of an aircraft (or as second in command of an aircraft in a flag or supplemental operation that requires three or more pilots) unless he holds an airline transport pilot certificate and an appropriate type rating for that aircraft.

(b) No certificate holder may use nor may any pilot act as a pilot in a capacity other than those specified in paragraph (a) of this section unless the pilot holds at least a commercial pilot certificate with appropriate category and class ratings for the aircraft concerned, and an instrument rating. Notwithstanding the requirements of §61.63 (b) and (c) of this chapter, a pilot who is currently employed by a certificate holder and meets applicable training requirements of subpart N of this part, and the proficiency check requirements of §121.441, may be issued the appropriate category and class ratings by presenting proof of compliance with those requirements to a Flight Standards District Office.

[Doc. No. 6258, 29 FR 19215, Dec. 31, 1964, as amended by Amdt. 121–148, 43 FR 46235, Oct. 5, 1978; 44 FR 25202, Apr. 30, 1979; Amdt. 121–207, 54 FR 39293, Sept. 25, 1989; Amdt. 121–253, 61 FR 2612, Jan. 26, 1996; Amdt. 121–262, 62 FR 13257, Mar. 19, 1997]

§ 121.438 Pilot operating limitations and pairing requirements.

(a) If the second in command has fewer than 100 hours of flight time as second in command in operations under this part in the type airplane being flown, and the pilot in command is not an appropriately qualified check pilot, the pilot in command must make all takeoffs and landings in the following situations:

(1) At special airports designated by the Administrator or at special airports designated by the certificate holder; and

(2) In any of the following conditions:

(i) The prevailing visibility value in the latest weather report for the airport is at or below ¾ mile.

(ii) The runway visual range for the runway to be used is at or below 4,000 feet.

(iii) The runway to be used has water, snow, slush or similar conditions that may adversely affect airplane performance.

(iv) The braking action on the runway to be used is reported to be less than ''good''.

(v) The crosswind component for the runway to be used is in excess of 15 knots.

(vi) Windshear is reported in the vicinity of the airport.

(vii) Any other condition in which the PIC determines it to be prudent to exercise the PIC's prerogative.

(b) No person may conduct operations under this part unless, for that type airplane, either the pilot in command or the second in command has at least 75 hours of line operating flight time, either as pilot in command or second in command. The Administrator may, upon application by the certificate holder, authorize deviations from the requirements of this paragraph (b) by an appropriate amendment to the operations specifications in any of the following circumstances:

(1) A newly certificated certificate holder does not employ any pilots who meet the minimum requirements of this paragraph.

(2) An existing certificate holder adds to its fleet a type airplane not before proven for use in its operations.

(3) An existing certificate holder establishes a new domicile to which it assigns pilots who will be required to become qualified on the airplanes operated from that domicile.

[Doc. No. 27210, 60 FR 20870, Apr. 27, 1995]

§ 121.439 Pilot qualification: Recent experience.

(a) No certificate holder may use any person nor may any person serve as a required pilot flight crewmember, unless within the preceding 90 days, that person has made at least three takeoffs and landings in the type airplane in

which that person is to serve. The takeoffs and landings required by this paragraph may be performed in a visual simulator approved under §121.407 to include takeoff and landing maneuvers. In addition, any person who fails to make the three required takeoffs and landings within any consecutive 90-day period must reestablish recency of experience as provided in paragraph (b) of this section.

(b) In addition to meeting all applicable training and checking requirements of this part, a required pilot flight crewmember who has not met the requirements of paragraph (a) of this section must reestablish recency of experience as follows:

(1) Under the supervision of a check airman, make at least three takeoffs and landings in the type airplane in which that person is to serve or in an advanced simulator or visual simulator. When a visual simulator is used, the requirements of paragraph (c) of this section must be met.

(2) The takeoffs and landings required in paragraph (b)(1) of this section must include—

(i) At least one takeoff with a simulated failure of the most critical powerplant;

(ii) At least one landing from an ILS approach to the lowest ILS minimum authorized for the certificate holder; and

(iii) At least one landing to a full stop.

(c) A required pilot flight crewmember who performs the manuvers prescribed in paragraph (b) of this section in a visual simulator must—

(1) Have previously logged 100 hours of flight time in the same type airplane in which he is to serve;

(2) Be observed on the first two landings made in operations under this part by an approved check airman who acts as pilot in command and occupies a pilot seat. The landings must be made in weather minimums that are not less than those contained in the certificate holder's operations specifications for Category I Operations, and must be made within 45 days following completion of simulator training.

(d) When using a simulator to accomplish any of the requirements of paragraph (a) or (b) of this section, each required flight crewmember position must be occupied by an appropriately qualified person and the simulator must be operated as if in a normal in-flight environment without use of the repositioning features of the simulator.

(e) A check airman who observes the takeoffs and landings prescribed in paragraphs (b)(1) and (c) of this section shall certify that the person being observed is proficient and qualified to perform flight duty in operations under this part and may require any additional maneuvers that are determined necessary to make this certifying statement.

[Doc. No. 16383, 43 FR 22648, May 25, 1978, as amended by Amdt. 121–148, 43 FR 46235, Oct. 5, 1978; Amdt. 121–179, 47 FR 33390, Aug. 2, 1982]

§121.440 Line checks.

(a) No certificate holder may use any person nor may any person serve as pilot in command of an airplane unless, within the preceding 12 calendar months, that person has passed a line check in which he satisfactorily performs the duties and responsibilities of a pilot in command in one of the types of airplanes he is to fly.

(b) A pilot in command line check for domestic and flag operations must—

(1) Be given by a pilot check airman who is currently qualified on both the route and the airplane; and

(2) Consist of at least one flight over a typical part of the certificate holder's route, or over a foreign or Federal airway, or over a direct route.

(c) A pilot in command line check for supplemental operations must—

(1) Be given by a pilot check airman who is currently qualified on the airplane; and

(2) Consist of at least one flight over a part of a Federal airway, foreign airway, or advisory route over which the pilot may be assigned.

[Doc. No. 9509, 35 FR 96, Jan. 3, 1970, as amended by Amdt. 121–143, 43 FR 22642, May 25, 1978; Amdt. 121–253, 61 FR 2612, Jan. 26, 1996]

§121.441 Proficiency checks.

(a) No certificate holder may use any person nor may any person serve as a

required pilot flight crewmember unless that person has satisfactorily completed either a proficiency check, or an approved simulator course of training under § 121.409, as follows:

(1) For a pilot in command, a proficiency check within the preceding 12 calendar months and, in addition, within the preceding 6 calendar months, either a proficiency check or the simulator training.

(2) For all other pilots—

(i) Within the preceding 24 calendar months either a proficiency check or the line-oriented simulator training course under § 121.409; and

(ii) Within the preceding 12 calendar months, either a proficiency check or any simulator training course under § 121.409.

(b) Except as provided in paragraphs (c) and (d) of this section, a proficiency check must meet the following requirements:

(1) It must include at least the procedures and maneuvers set forth in appendix F to this part unless otherwise specifically provided in that appendix.

(2) It must be given by the Administrator or a pilot check airman.

(c) An approved airplane simulator or other appropriate training device may be used in the conduct of a proficiency check as provided in appendix F to this part.

(d) A person giving a proficiency check may, in his discretion, waive any of the maneuvers or procedures for which a specific waiver authority is set forth in appendix F to this part if—

(1) The Administrator has not specifically required the particular maneuver or procedure to be performed;

(2) The pilot being checked is, at the time of the check, employed by a certificate holder as a pilot; and

(3) The pilot being checked is currently qualified for operations under this part in the particular type airplane and flight crewmember position or has, within the preceding six calendar months, satisfactorily completed an approved training program for the particular type airplane.

(e) If the pilot being checked fails any of the required maneuvers, the person giving the proficiency check may give additional training to the pilot during the course of the proficiency check. In addition to repeating the maneuvers failed, the person giving the proficiency check may require the pilot being checked to repeat any other maneuvers he finds are necessary to determine the pilot's proficiency. If the pilot being checked is unable to demonstrate satisfactory performance to the person conducting the check, the certificate holder may not use him nor may he serve in operations under this part until he has satisfactorily completed a proficiency check.

However, the entire proficiency check (other than the initial second-in-command proficiency check) required by this section may be conducted in an approved visual simulator if the pilot being checked accomplishes at least two landings in the appropriate airplane during a line check or other check conducted by a pilot check airman (a pilot-in-command may observe and certify the satisfactory accomplishment of these landings by a second-in-command). If a pilot proficiency check is conducted in accordance with this paragraph, the next required proficiency check for that pilot must be conducted in the same manner, or in accordance with appendix F of this part, or a course of training in an airplane visual simulator under § 121.409 may be substituted therefor.

[Doc. No. 9509, 35 FR 96, Jan. 3, 1970, as amended by Amdt. 121–103, 38 FR 12203, May 10, 1973, Amdt. 121–108, 38 FR 35446, Dec. 28, 1973; Amdt. 121–144, 43 FR 22648, May 25, 1978; Amdt. 121–263, 62 FR 13791, Mar. 21, 1997]

§ 121.443 Pilot in command qualification: Route and airports.

(a) Each certificate holder shall provide a system acceptable to the Administrator for disseminating the information required by paragraph (b) of this section to the pilot in command and appropriate flight operation personnel. The system must also provide an acceptable means for showing compliance with § 121.445.

(b) No certificate holder may use any person, nor may any person serve, as pilot in command unless the certificate holder has provided that person current information concerning the following subjects pertinent to the areas over which that person is to serve, and to each airport and terminal area into

which that person is to operate, and ensures that that person has adequate knowledge of, and the ability to use, the information:

(1) Weather characteristics appropriate to the season.

(2) Navigation facilities.

(3) Communication procedures, including airport visual aids.

(4) Kinds of terrain and obstructions.

(5) Minimum safe flight levels.

(6) En route and terminal area arrival and departure procedures, holding procedures and authorized instrument approach procedures for the airports involved.

(7) Congested areas and physical layout of each airport in the terminal area in which the pilot will operate.

(8) Notices to Airmen.

[Doc. No. 17897, 45 FR 41594, June 19, 1980; Amdt. 121–159, 45 FR 43154, June 26, 1980]

§ 121.445 Pilot in command airport qualification: Special areas and airports.

(a) The Administrator may determine that certain airports (due to items such as surrounding terrain, obstructions, or complex approach or departure procedures) are special airports requiring special airport qualifications and that certain areas or routes, or both, require a special type of navigation qualification.

(b) Except as provided in paragraph (c) of this section, no certificate holder may use any person, nor may any person serve, as pilot in command to or from an airport determined to require special airport qualifications unless, within the preceding 12 calendar months:

(1) The pilot in command or second in command has made an entry to that airport (including a takeoff and landing) while serving as a pilot flight crewmember; or

(2) The pilot in command has qualified by using pictorial means acceptable to the Administrator for that airport.

(c) Paragraph (b) of this section does not apply when an entry to that airport (including a takeoff or a landing) is being made if the ceiling at that airport is at least 1,000 feet above the lowest MEA or MOCA, or initial approach altitude prescribed for the instrument approach procedure for that airport, and the visibility at that airport is at least 3 miles.

(d) No certificate holder may use any person, nor may any person serve, as pilot in command between terminals over a route or area that requires a special type of navigation qualification unless, within the preceding 12 calendar months, that person has demonstrated qualification on the applicable navigation system in a manner acceptable to the Administrator, by one of the following methods:

(1) By flying over a route or area as pilot in command using the applicable special type of navigation system.

(2) By flying over a route or area as pilot in command under the supervision of a check airman using the special type of navigation system.

(3) By completing the training program requirements of appendix G of this part.

[Doc. No. 17897, 45 FR 41594, June 19, 1980]

§ 121.447 [Reserved]

§ 121.453 Flight engineer qualifications.

(a) No certificate holder may use any person nor may any person serve as a flight engineer on an airplane unless, within the preceding 6 calendar months, he has had at least 50 hours of flight time as a flight engineer on that type airplane or the certificate holder or the Administrator has checked him on that type airplane and determined that he is familiar and competent with all essential current information and operating procedures.

(b) A flight check given in accordance with § 121.425(a)(2) satisfies the requirements of paragraph (a) of this section.

[Doc. No. 9509, 35 FR 96, Jan. 3, 1970]

§ 121.455 Use of prohibited drugs.

(a) This section applies to persons who perform a function listed in appendix I to this part for the certificate holder or operator. For the purpose of this section, a person who performs such a function pursuant to a contract with the certificate holder or operator is considered to be performing that

function for the certificate holder or operator.

(b) No certificate holder or operator may knowingly use any person to perform, nor may any person perform for a certificate holder or operator, either directly or by contract, any function listed in appendix I to this part while that person has a prohibited drug, as defined in that appendix, in his or her system.

(c) No certificate holder or operator shall knowingly use any person to perform, nor shall any person perform for a certificate holder or operator, either directly or by contract, any safety-sensitive function if the person has a verified positive drug test result on or has refused to submit to a drug test required by appendix I to part 121 of this chapter and the person has not met the requirements of appendix I for returning to the performance of safety-sensitive duties.

[Doc. No. 25148, 53 FR 47057, Nov. 21, 1988, as amended by Amdt. 121–240, 59 FR 42928, Aug. 19, 1994; Amdt. 121–251, 60 FR 65934, Dec. 20, 1995]

§ 121.457 Testing for prohibited drugs.

(a) Each certificate holder or operator shall test each of its employees who performs a function listed in appendix I to this part in accordance with that appendix.

(b) No certificate holder or operator may use any contractor to perform a function listed in appendix I to this part unless that contractor tests each employee performing such a function for the certificate holder or operator in accordance with that appendix.

[Doc. No. 25148, 53 FR 47057, Nov. 21, 1988, as amended by Amdt. 121–251, 60 FR 65934, Dec. 20, 1995]

§ 121.458 Misuse of alcohol.

(a) *General.* This section applies to employees who perform a function listed in appendix J to this part for a certificate holder (*covered employees*). For the purpose of this section, a person who meets the definition of covered employee in appendix J is considered to be performing the function for the certificate holder.

(b) *Alcohol concentration.* No covered employee shall report for duty or remain on duty requiring the performance of safety-sensitive functions while having an alcohol concentration of 0.04 or greater. No certificate holder having actual knowledge that an employee has an alcohol concentration of 0.04 or greater shall permit the employee to perform or continue to perform safety-sensitive functions.

(c) *On-duty use.* No covered employee shall use alcohol while performing safety-sensitive functions. No certificate holder having actual knowledge that a covered employee is using alcohol while performing safety-sensitive functions shall permit the employee to perform or continue to perform safety-sensitive functions.

(d) *Pre-duty use.* (1) No covered employee shall perform flight crewmember or flight attendant duties within 8 hours after using alcohol. No certificate holder having actual knowledge that such an employee has used alcohol within 8 hours shall permit the employee to perform or continue to perform the specified duties.

(2) No covered employee shall perform safety-sensitive duties other than those specified in paragraph (d)(1) of this section within 4 hours after using alcohol. No certificate holder having actual knowledge that such an employee has used alcohol within 4 hours shall permit the employee to perform or continue to perform safety-sensitive functions.

(e) *Use following an accident.* No covered employee who has actual knowledge of an accident involving an aircraft for which he or she performed a safety-sensitive function at or near the time of the accident shall use alcohol for 8 hours following the accident, unless he or she has been given a post-accident test under appendix J of this part, or the employer has determined that the employee's performance could not have contributed to the accident.

(f) *Refusal to submit to a required alcohol test.* A covered employee must not refuse to submit to any alcohol test required under appendix J to this part. A certificate holder must not permit an employee who refuses to submit to such a test to perform or continue to perform safety-sensitive functions.

[Amdt. 121–237, 59 FR 7389, Feb. 15, 1994, as amended by Amdt. 121–325, 71 FR 35764, June 21, 2006]

§ 121.459 Testing for alcohol.

(a) Each certificate holder must establish an alcohol misuse prevention program in accordance with the provisions of appendix J to this part.

(b) No certificate holder shall use any person who meets the definition of *covered employee* in appendix J to this part to perform a safety-sensitive function listed in that appendix unless such person is subject to testing for alcohol misuse in accordance with the provisions of appendix J.

[Amdt. 121–237, 59 FR 7390, Feb. 15, 1994]

Subpart P—Aircraft Dispatcher Qualifications and Duty Time

Limitations: DOMESTIC AND FLAG OPERATIONS; FLIGHT ATTENDANT DUTY PERIOD LIMITATIONS AND REST REQUIREMENTS: DOMESTIC, FLAG, AND SUPPLEMENTAL OPERATIONS

§ 121.461 Applicability.

This subpart prescribes—

(a) Qualifications and duty time limitations for aircraft dispatchers for certificate holders conducting domestic flag operations; and

(b) Duty period limitations and rest requirements for flight attendants used by certificate holders conducting domestic, flag, or supplemental operations.

[Doc. No. 28154, 61 FR 2612, Jan. 26, 1996]

§ 121.463 Aircraft dispatcher qualifications.

(a) No certificate holder conducting domestic or flag operations may use any person, nor may any person serve, as an aircraft dispatcher for a particular airplane group unless that person has, with respect to an airplane of that group, satisfactorily completed the following:

(1) Initial dispatcher training, except that a person who has satisfactorily completed such training for another type airplane of the same group need only complete the appropriate transition training.

(2) Operating familiarization consisting of at least 5 hours observing operations under this part from the flight deck or, for airplanes without an observer seat on the flight deck, from a forward passenger seat with headset or speaker. This requirement may be reduced to a minimum of 2½ hours by the substitution of one additional takeoff and landing for an hour of flight. A person may serve as an aircraft dispatcher without meeting the requirement of this paragraph (a) for 90 days after initial introduction of the airplane into operations under this part.

(b) No certificate holder conducting domestic or flag operations may use any person, nor may any person serve, as an aircraft dispatcher for a particular type airplane unless that person has, with respect to that airplane, satisfactorily completed differences training, if applicable.

(c) No certificate holder conducting domestic or flag operations may use any person, nor may any person serve, as an aircraft dispatcher unless within the preceding 12 calendar months the aircraft dispatcher has satisfactorily completed operating familiarization consisting of at least 5 hours observing operations under this part, in one of the types of airplanes in each group to be dispatched. This observation shall be made from the flight deck or, for airplanes without an observer seat on the flight deck, from a forward passenger seat with headset or speaker. The requirement of paragraph (a) of this section may be reduced to a minimum of 2½ hours by the substitution of one additional takeoff and landing for an hour of flight. The requirement of this paragraph may be satisfied by observation of 5 hours of simulator training for each airplane group in one of the simulators approved under § 121.407 for the group. However, if the requirement of paragraph (a) is met by the use of a simulator, no reduction in hours is permitted.

(d) No certificate holder conducting domestic or flag operations may use any person, nor may any person serve as an aircraft dispatcher to dispatch airplanes in operations under this part unless the certificate holder has determined that he is familiar with all essential operating procedures for that segment of the operation over which he exercises dispatch jurisdiction. However, a dispatcher who is qualified to

dispatch airplanes through one segment of an operation may dispatch airplanes through other segments of the operation after coordinating with dispatchers who are qualified to dispach airplanes through those other segments.

(e) For the purposes of this section, the airplane groups, terms, and definitions in § 121.400 apply.

[Doc. No. 7325, 37 FR 5607, Mar. 17, 1972, as amended by Amdt. 121–251, 60 FR 65934, Dec. 20, 1995]

§ 121.465 Aircraft dispatcher duty time limitations: Domestic and flag operations.

(a) Each certificate holder conducting domestic or flag operations shall establish the daily duty period for a dispatcher so that it begins at a time that allows him or her to become thoroughly familiar with existing and anticipated weather conditions along the route before he or she dispatches any airplane. He or she shall remain on duty until each airplane dispatched by him or her has completed its flight, or has gone beyond his or her jurisdiction, or until he or she is relieved by another qualified dispatcher.

(b) Except in cases where circumstances or emergency conditions beyond the control of the certificate holder require otherwise—

(1) No certificate holder conducting domestic or flag operations may schedule a dispatcher for more than 10 consecutive hours of duty;

(2) If a dispatcher is scheduled for more than 10 hours of duty in 24 consecutive hours, the certificate holder shall provide him or her a rest period of at least eight hours at or before the end of 10 hours of duty.

(3) Each dispatcher must be relieved of all duty with the certificate holder for at least 24 consecutive hours during any seven consecutive days or the equivalent thereof within any calendar month.

(c) Notwithstanding paragraphs (a) and (b) of this section, a certificate holder conducting flag operations may, if authorized by the Administrator, schedule an aircraft dispatcher at a duty station outside of the 48 contiguous States and the District of Columbia, for more than 10 consecutive hours of duty in a 24-hour period if that aircraft dispatcher is relieved of all duty with the certificate holder for at least eight hours during each 24-hour period.

[Doc. No. 28154, 61 FR 2612, Jan. 26, 1996]

§ 121.467 Flight attendant duty period limitations and rest requirements: Domestic, flag, and supplemental operations.

(a) For purposes of this section—

Calendar day means the period of elapsed time, using Coordinated Universal Time or local time, that begins at midnight and ends 24 hours later at the next midnight.

Duty period means the period of elapsed time between reporting for an assignment involving flight time and release from that assignment by the certificate holder conducting domestic, flag, or supplemental operations. The time is calculated using either Coordinated Universal Time or local time to reflect the total elapsed time.

Flight attendant means an individual, other than a flight crewmember, who is assigned by a certificate holder conducting domestic, flag, or supplemental operations, in accordance with the required minimum crew complement under the certificate holder's operations specifications or in addition to that minimum complement, to duty in an aircraft during flight time and whose duties include but are not necessarily limited to cabin-safety-related responsibilities.

Rest period means the period free of all restraint or duty for a certificate holder conducting domestic, flag, or supplemental operations and free of all responsibility for work or duty should the occasion arise.

(b) Except as provided in paragraph (c) of this section, a certificate holder conducting domestic, flag, or supplemental operations may assign a duty period to a flight attendant only when the applicable duty period limitations and rest requirements of this paragraph are met.

(1) Except as provided in paragraphs (b)(4), (b)(5), and (b)(6) of this section, no certificate holder conducting domestic, flag, or supplemental operations may assign a flight attendant to a scheduled duty period of more than 14 hours.

(2) Except as provided in paragraph (b)(3) of this section, a flight attendant scheduled to a duty period of 14 hours or less as provided under paragraph (b)(1) of this section must be given a scheduled rest period of at least 9 consecutive hours. This rest period must occur between the completion of the scheduled duty period and the commencement of the subsequent duty period.

(3) The rest period required under paragraph (b)(2) of this section may be scheduled or reduced to 8 consecutive hours if the flight attendant is provided a subsequent rest period of at least 10 consecutive hours; this subsequent rest period must be scheduled to begin no later than 24 hours after the beginning of the reduced rest period and must occur between the completion of the scheduled duty period and the commencement of the subsequent duty period.

(4) A certificate holder conducting domestic, flag, or supplemental operations may assign a flight attendant to a scheduled duty period of more than 14 hours, but no more than 16 hours, if the certificate holder has assigned to the flight or flights in that duty period at least one flight attendant in addition to the minimum flight attendant complement required for the flight or flights in that duty period under the certificate holder's operations specifications.

(5) A certificate holder conducting domestic, flag, or supplemental operations may assign a flight attendant to a scheduled duty period of more than 16 hours, but no more than 18 hours, if the certificate holder has assigned to the flight or flights in that duty period at least two flight attendants in addition to the minimum flight attendant complement required for the flight or flights in that duty period under the certificate holder's operations specifications.

(6) A certificate holder conducting domestic, flag, or supplemental operations may assign a flight attendant to a scheduled duty period of more than 18 hours, but no more than 20 hours, if the scheduled duty period includes one or more flights that land or take off outside the 48 contiguous states and the District of Columbia, and if the certificate holder has assigned to the flight or flights in that duty period at least three flight attendants in addition to the minimum flight attendant complement required for the flight or flights in that duty period under the domestic certificate holder's operations specifications.

(7) Except as provided in paragraph (b)(8) of this section, a flight attendant scheduled to a duty period of more than 14 hours but no more than 20 hours, as provided in paragraphs (b)(4), (b)(5), and (b)(6) of this section, must be given a scheduled rest period of at least 12 consecutive hours. This rest period must occur between the completion of the scheduled duty period and the commencement of the subsequent duty period.

(8) The rest period required under paragraph (b)(7) of this section may be scheduled or reduced to 10 consecutive hours if the flight attendant is provided a subsequent rest period of at least 14 consecutive hours; this subsequent rest period must be scheduled to begin no later than 24 hours after the beginning of the reduced rest period and must occur between the completion of the scheduled duty period and the commencement of the subsequent duty period.

(9) Notwithstanding paragraphs (b)(4), (b)(5), and (b)(6) of this section, if a certificate holder conducting domestic, flag, or supplemental operations elects to reduce the rest period to 10 hours as authorized by paragraph (b)(8) of this section, the certificate holder may not schedule a flight attendant for a duty period of more than 14 hours during the 24-hour period commencing after the beginning of the reduced rest period.

(10) No certificate holder conducting domestic, flag, or supplemental operations may assign a flight attendant any duty period with the certificate holder unless the flight attendant has had at least the minimum rest required under this section.

(11) No certificate holder conducting domestic, flag, or supplemental operations may assign a flight attendant to perform any duty with the certificate holder during any required rest period.

(12) Time spent in transportation, not local in character, that a certificate holder conducting domestic, flag, or supplemental operations requires of a flight attendant and provides to transport the flight attendant to an airport at which that flight attendant is to serve on a flight as a crewmember, or from an airport at which the flight attendant was relieved from duty to return to the flight attendant's home station, is not considered part of a rest period.

(13) Each certificate holder conducting domestic, flag, or supplemental operations must relieve each flight attendant engaged in air transportation and each commercial operator must relieve each flight attendant engaged in air commerce from all further duty for at least 24 consecutive hours during any 7 consecutive calendar days.

(14) A flight attendant is not considered to be scheduled for duty in excess of duty period limitations if the flights to which the flight attendant is assigned are scheduled and normally terminate within the limitations but due to circumstances beyond the control of the certificate holder conducting domestic, flag, or supplemental operations (such as adverse weather conditions) are not at the time of departure expected to reach their destination within the scheduled time.

(c) Notwithstanding paragraph (b) of this section, a certificate holder conducting domestic, flag, or supplemental operations may apply the flight crewmember flight time and duty limitations and rest requirements of this part to flight attendants for all operations conducted under this part provided that—

(1) The certificate holder establishes written procedures that—

(i) Apply to all flight attendants used in the certificate holder's operation;

(ii) Include the flight crewmember requirements contained in subparts Q, R, or S of this part, as appropriate to the operation being conducted, except that rest facilities on board the aircraft are not required;

(iii) Include provisions to add one flight attendant to the minimum flight attendant complement for each flight crewmember who is in excess of the minimum number required in the aircraft type certificate data sheet and who is assigned to the aircraft under the provisions of subparts Q, R, and S, as applicable, of this part;

(iv) Are approved by the Administrator and are described or referenced in the certificate holder's operations specifications; and

(2) Whenever the Administrator finds that revisions are necessary for the continued adequacy of the written procedures that are required by paragraph (c)(1) of this section and that had been granted final approval, the certificate holder must, after notification by the Administrator, make any changes in the procedures that are found necessary by the Administrator. Within 30 days after the certificate holder receives such notice, it may file a petition to reconsider the notice with the certificate-holding district office. The filing of a petition to reconsider stays the notice, pending decision by the Administrator. However, if the Administrator finds that an emergency requires immediate action in the interest of safety, the Administrator may, upon a statement of the reasons, require a change effective without stay.

[Amdt. 121–241, 59 FR 42991, Aug. 19, 1994, as amended by Amdt. 121–253, 61 FR 2612, Jan. 26, 1996]

Subpart Q—Flight Time Limitations and Rest Requirements: Domestic Operations

SOURCE: Docket No. 23634, 50 FR 29319, July 18, 1985, unless otherwise noted.

§ 121.470 Applicability.

This subpart prescribes flight time limitations and rest requirements for domestic operations, except that:

(a) Certificate holders conducting operations with airplanes having a passenger seat configuration of 30 seats or fewer, excluding each crewmember seat, and a payload capacity of 7,500 pounds or less, may comply with the applicable requirements of §§135.261 through 135.273 of this chapter.

(b) Certificate holders conducting scheduled operations entirely within the States of Alaska or Hawaii with

airplanes having a passenger seat configuration of more than 30 seats, excluding each crewmember seat, or a payload capacity of more than 7,500 pounds, may comply with the requirements of subpart R of this part for those operations.

[Doc. No. 28154, 60 FR 65934, Dec. 20, 1995]

§ 121.471 Flight time limitations and rest requirements: All flight crewmembers.

(a) No certificate holder conducting domestic operations may schedule any flight crewmember and no flight crewmember may accept an assignment for flight time in scheduled air transportation or in other commercial flying if that crewmember's total flight time in all commercial flying will exceed—

(1) 1,000 hours in any calendar year;

(2) 100 hours in any calendar month;

(3) 30 hours in any 7 consecutive days;

(4) 8 hours between required rest periods.

(b) Except as provided in paragraph (c) of this section, no certificate holder conducting domestic operations may schedule a flight crewmember and no flight crewmember may accept an assignment for flight time during the 24 consecutive hours preceding the scheduled completion of any flight segment without a scheduled rest period during that 24 hours of at least the following:

(1) 9 consecutive hours of rest for less than 8 hours of scheduled flight time.

(2) 10 consecutive hours of rest for 8 or more but less than 9 hours of scheduled flight time.

(3) 11 consecutive hours of rest for 9 or more hours of scheduled flight time.

(c) A certificate holder may schedule a flight crewmember for less than the rest required in paragraph (b) of this section or may reduce a scheduled rest under the following conditions:

(1) A rest required under paragraph (b)(1) of this section may be scheduled for or reduced to a minimum of 8 hours if the flight crewmember is given a rest period of at least 10 hours that must begin no later than 24 hours after the commencement of the reduced rest period.

(2) A rest required under paragraph (b)(2) of this section may be scheduled for or reduced to a minimum of 8 hours if the flight crewmember is given a rest period of at least 11 hours that must begin no later than 24 hours after the commencement of the reduced rest period.

(3) A rest required under paragraph (b)(3) of this section may be scheduled for or reduced to a minimum of 9 hours if the flight crewmember is given a rest period of at least 12 hours that must begin no later than 24 hours after the commencement of the reduced rest period.

(4) No certificate holder may assign, nor may any flight crewmember perform any flight time with the certificate holder unless the flight crewmember has had at least the minimum rest required under this paragraph.

(d) Each certificate holder conducting domestic operations shall relieve each flight crewmember engaged in scheduled air transportation from all further duty for at least 24 consecutive hours during any 7 consecutive days.

(e) No certificate holder conducting domestic operations may assign any flight crewmember and no flight crewmember may accept assignment to any duty with the air carrier during any required rest period.

(f) Time spent in transportation, not local in character, that a certificate holder requires of a flight crewmember and provides to transport the crewmember to an airport at which he is to serve on a flight as a crewmember, or from an airport at which he was relieved from duty to return to his home station, is not considered part of a rest period.

(g) A flight crewmember is not considered to be scheduled for flight time in excess of flight time limitations if the flights to which he is assigned are scheduled and normally terminate within the limitations, but due to circumstances beyond the control of the certificate holder (such as adverse weather conditions), are not at the time of departure expected to reach their destination within the scheduled time.

[Doc. No. 23634, 50 FR 29319, July 18, 1985, as amended by Amdt. 121–253, 61 FR 2612, Jan. 26, 1996]

Subpart R—Flight Time Limitations: Flag Operations

SOURCE: Docket No. 6258, 29 FR 19217, Dec. 31, 1964; 30 FR 3639, Mar. 19, 1965, unless otherwise noted.

§ 121.480 Applicability.

This subpart prescribes flight time limitations and rest requirements for flag operations, except that certificate holders conducting operations with airplanes having a passenger seat configuration of 30 seats or fewer, excluding each crewmember seat, and a payload capacity of 7,500 pounds or less, may comply with the applicable requirements of §§135.261 through 135.273 of this chapter.

[Doc. No. 28154, 60 FR 65934, Dec. 20, 1995]

§ 121.481 Flight time limitations: One or two pilot crews.

(a) A certificate holder conducting flag operations may schedule a pilot to fly in an airplane that has a crew of one or two pilots for eight hours or less during any 24 consecutive hours without a rest period during these eight hours.

(b) If a certificate holder conducting flag operations schedules a pilot to fly more than eight hours during any 24 consecutive hours, it shall give him an intervening rest period, at or before the end of eight scheduled hours of flight duty. This rest period must be at least twice the number of hours flown since the preceding rest period, but not less than eight hours. The certificate holder shall relieve that pilot of all duty with it during that rest period.

(c) Each pilot who has flown more than eight hours during 24 consecutive hours must be given at least 18 hours of rest before being assigned to any duty with the certificate holder.

(d) No pilot may fly more than 32 hours during any seven consecutive days, and each pilot must be relieved from all duty for at least 24 consecutive hours at least once during any seven consecutive days.

(e) No pilot may fly as a member of a crew more than 100 hours during any one calendar month.

(f) No pilot may fly as a member of a crew more than 1,000 hours during any 12-calendar-month period.

[Doc. No. 6258, 29 FR 19217, Dec. 31, 1964; 30 FR 3639, Mar. 19, 1965, as amended by Amdt. 121–253, 61 FR 2612, Jan. 26, 1996]

§ 121.483 Flight time limitations: Two pilots and one additional flight crewmember.

(a) No certificate holder conducting flag operations may schedule a pilot to fly, in an airplane that has a crew of two pilots and at least one additional flight crewmember, for a total of more than 12 hours during any 24 consecutive hours.

(b) If a pilot has flown 20 or more hours during any 48 consecutive hours or 24 or more hours during any 72 consecutive hours, he must be given at least 18 hours of rest before being assigned to any duty with the air carrier. In any case, he must be given at least 24 consecutive hours of rest during any seven consecutive days.

(c) No pilot may fly as a flight crewmember more than—

(1) 120 hours during any 30 consecutive days;

(2) 300 hours during any 90 consecutive days; or

(3) 1,000 hours during any 12-calendar-month period.

[Doc. No. 6258, 29 FR 19217, Dec. 31, 1964; 30 FR 3639, Mar. 19, 1965, as amended by Amdt. 121–253, 61 FR 2612, Jan. 26, 1996]

§ 121.485 Flight time limitations: Three or more pilots and an additional flight crewmember.

(a) Each certificate holder conducting flag operations shall schedule its flight hours to provide adequate rest periods on the ground for each pilot who is away from his base and who is a pilot on an airplane that has a crew of three or more pilots and an additional flight crewmember. It shall also provide adequate sleeping quarters on the airplane whenever a pilot is scheduled to fly more than 12 hours during any 24 consecutive hours.

(b) The certificate holder conducting flag operations shall give each pilot, upon return to his base from any flight or series of flights, a rest period that is at least twice the total number of hours he flew since the last rest period

at his base. During the rest period required by this paragraph, the air carrier may not require him to perform any duty for it. If the required rest period is more than seven days, that part of the rest period in excess of seven days may be given at any time before the pilot is again scheduled for flight duty on any route.

(c) No pilot may fly as a flight crewmember more than—

(1) 350 hours during any 90 consecutive days; or

(2) 1,000 hours during any 12-calendar-month period.

[Doc. No. 6258, 29 FR 19217, Dec. 31, 1964; 30 FR 3639, Mar. 19, 1965, as amended by Amdt. 121–253, 61 FR 2612, Jan. 26, 1996]

§ 121.487 Flight time limitations: Pilots not regularly assigned.

(a) Except as provided in paragraphs (b) through (e) of this section, a pilot who is not regularly assigned as a flight crewmember for an entire calendar month under §121.483 or 121.485 may not fly more than 100 hours in any 30 consecutive days.

(b) The monthly flight time limitations for a pilot who is scheduled for duty aloft for more than 20 hours in two-pilot crews in any calendar month, or whose assignment in such a crew is interrupted more than once in that calendar month by assignment to a crew consisting of two or more pilots and an additional flight crewmember, are those set forth in §121.481.

(c) Except for a pilot covered by paragraph (b) of this section, the monthly and quarterly flight time limitations for a pilot who is scheduled for duty aloft for more than 20 hours in two-pilot and additional flight crewmember crews in any calendar month, or whose assignment in such a crew is interrupted more than once in that calendar month by assignment to a crew consisting of three pilots and additional flight crewmember, are those set forth in §121.483.

(d) The quarterly flight time limitations for a pilot to whom paragraphs (b) and (c) of this section do not apply and who is scheduled for duty aloft for a total of not more than 20 hours within any calendar month in two-pilot crews (with or without additional flight crewmembers) are those set forth in §121.485.

(e) The monthly and quarterly flight time limitations for a pilot assigned to each of two-pilot, two-pilot and additional flight crewmember, and three-pilot and additional flight crewmember crews in a given calendar month, and who is not subject to paragraph (b), (c), or (d) of this section, are those set forth in §121.483.

[Doc. No. 6258, 29 FR 19217, Dec. 31, 1964; Amdt. 121–3, 30 FR 3639, Mar. 19, 1965, as amended by Amdt. 121–137, 42 FR 43973, Sept. 1, 1977]

§ 121.489 Flight time limitations: Other commercial flying.

No pilot that is employed as a pilot by a certificate holder conducting flag operations may do any other commercial flying if that commercial flying plus his flying in air transportation will exceed any flight time limitation in this part.

[Doc. No. 28154, 61 FR 2612, Jan. 26, 1996]

§ 121.491 Flight time limitations: Deadhead transportation.

Time spent in deadhead transportation to or from duty assignment is not considered to be a part of a rest period.

§ 121.493 Flight time limitations: Flight engineers and flight navigators.

(a) In any operation in which one flight engineer or flight navigator is required, the flight time limitations in §121.483 apply to that flight engineer or flight navigator.

(b) In any operation in which more than one flight engineer or flight navigator is required, the flight time limitations in §121.485 apply to those flight engineers or flight navigators.

Subpart S—Flight Time Limitations: Supplemental Operations

SOURCE: Docket No. 6258, 29 FR 19218, Dec. 31, 1964; 30 FR 3639, Mar. 19, 1965, unless otherwise noted.

§ 121.500 Applicability.

This subpart prescribes flight time limitations and rest requirements for

supplemental operations, except that certificate holders conducting operations with airplanes having a passenger seat configuration of 30 seats or fewer, excluding each crewmember seat, and a payload capacity of 7,500 pounds or less, may comply with the applicable requirements of §§ 135.261 through 135.273 of this chapter.

[Doc. No. 28154, 60 FR 65934, Dec. 20, 1995]

§ 121.503 Flight time limitations: Pilots: airplanes.

(a) A certificate holder conducting supplemental operations may schedule a pilot to fly in an airplane for eight hours or less during any 24 consecutive hours without a rest period during those eight hours.

(b) Each pilot who has flown more than eight hours during any 24 consecutive hours must be given at least 16 hours of rest before being assigned to any duty with the certificate holder.

(c) Each certificate holder conducting supplemental operations shall relieve each pilot from all duty for at least 24 consecutive hours at least once during any seven consecutive days.

(d) No pilot may fly as a crewmember in air transportation more than 100 hours during any 30 consecutive days.

(e) No pilot may fly as a crewmember in air transportation more than 1,000 hours during any calendar year.

(f) Notwithstanding paragraph (a) of this section, the certificate holder may, in conducting a transcontinental nonstop flight, schedule a flight crewmember for more than eight but not more than 10 hours of continuous duty aloft without an intervening rest period, if—

(1) The flight is in an airplane with a pressurization system that is operative at the beginning of the flight;

(2) The flight crew consists of at least two pilots and a flight engineer; and

(3) The certificate holder uses, in conducting the operation, an air/ground communication service that is independent of systems operated by the United States, and a dispatch organization, both of which are approved by the Administrator as adequate to serve the terminal points concerned.

[Doc. No. 6258, 29 FR 19218, Dec. 31, 1964; 30 FR 3639, Mar. 19, 1965, as amended by Amdt. 121–253, 61 FR 2613, Jan. 26, 1996]

§ 121.505 Flight time limitations: Two pilot crews: airplanes.

(a) If a certificate holder conducting supplemental operations schedules a pilot to fly more than eight hours during any 24 consecutive hours, it shall give him an intervening rest period at or before the end of eight scheduled hours of flight duty. This rest period must be at least twice the number of hours flown since the preceding rest period, but not less than eight hours. The certificate holder conducting supplemental operations shall relieve that pilot of all duty with it during that rest period.

(b) No pilot of an airplane that has a crew of two pilots may be on duty for more than 16 hours during any 24 consecutive hours.

[Doc. No. 6258, 29 FR 19218, Dec. 31, 1964; 30 FR 3639, Mar. 19, 1965, as amended by Amdt. 121–253, 61 FR 2613, Jan. 26, 1996]

§ 121.507 Flight time limitations: Three pilot crews: airplanes.

(a) No certificate holder conducting supplemental operations may schedule a pilot—

(1) For flight deck duty in an airplane that has a crew of three pilots for more than eight hours in any 24 consecutive hours; or

(2) To be aloft in an airplane that has a crew of three pilot for more than 12 hours in any 24 consecutive hours.

(b) No pilot of an airplane that has a crew of three pilots may be on duty for more than 18 hours in any 24 consecutive hours.

[Doc. No. 6258, 29 FR 19218, Dec. 31, 1964; 30 FR 3639, Mar. 19, 1965, as amended by Amdt. 121–253, 61 FR 2613, Jan. 26, 1996]

§ 121.509 Flight time limitations: Four pilot crews: airplanes.

(a) No certificate holder conducting supplemental operations may schedule a pilot—

(1) For flight deck duty in an airplane that has a crew of four pilots for more than eight hours in any 24 consecutive hours; or

(2) To be aloft in an airplane that has a crew of four pilots for more than 16 hours in any 24 consecutive hours.

(b) No pilot of an airplane that has a crew of four pilots may be on duty for

more than 20 hours in any 24 consecutive hours.

[Doc. No. 6258, 29 FR 19218, Dec. 31, 1964; 30 FR 3639, Mar. 19, 1965, as amended by Amdt. 121–253, 61 FR 2613, Jan. 26, 1996]

§ 121.511 Flight time limitations: Flight engineers: airplanes.

(a) In any operation in which one flight engineer is serving the flight time limitations in §§ 121.503 and 121.505 apply to that flight engineer.

(b) In any operation in which more than one flight engineer is serving and the flight crew contains more than two pilots the flight time limitations in § 121.509 apply in place of those in § 121.505.

§ 121.513 Flight time limitations: Overseas and international operations: airplanes.

In place of the flight time limitations in §§ 121.503 through 121.511, a certificate holder conducting supplemental operations may elect to comply with the flight time limitations of §§ 121.515 and 121.521 through 121.525 for operations conducted—

(a) Between a place in the 48 contiguous States and the District of Columbia, or Alaska, and any place outside thereof;

(b) Between any two places outside the 48 contiguous States, the District of Columbia, and Alaska; or

(c) Between two places within the State of Alaska or the State of Hawaii.

[Doc. No. 6258, 29 FR 19218, Dec. 31, 1964; 30 FR 3639, Mar. 19, 1965, as amended by Amdt. 121–253, 61 FR 2613, Jan. 26, 1996]

§ 121.515 Flight time limitations: All airmen: airplanes.

No airman may be aloft as a flight crewmember more than 1,000 hours in any 12-calendar-month period.

§ 121.517 Flight time limitations: Other commercial flying: airplanes.

No airman who is employed by a certificate holder conducting supplemental operations may do any other commercial flying, if that commercial flying plus his flying in operations under this part will exceed any flight time limitation in this part.

[Doc. No. 28154, 61 FR 2613, Jan. 26, 1996]

§ 121.519 Flight time limitations: Deadhead transportation: airplanes.

Time spent by an airman in deadhead transportation to or from a duty assignment is not considered to be part of any rest period.

§ 121.521 Flight time limitations: Crew of two pilots and one additional airman as required.

(a) No certificate holder conducting supplemental operations may schedule an airman to be aloft as a member of the flight crew in an airplane that has a crew of two pilots and at least one additional flight crewmember for more than 12 hours during any 24 consecutive hours.

(b) If an airman has been aloft as a member of a flight crew for 20 or more hours during any 48 consecutive hours or 24 or more hours during any 72 consecutive hours, he must be given at least 18 hours of rest before being assigned to any duty with the certificate holder. In any case, he must be relieved of all duty for at least 24 consecutive hours during any seven consecutive days.

(c) No airman may be aloft as a flight crewmember more than—

(1) 120 hours during any 30 consecutive days; or

(2) 300 hours during any 90 consecutive days.

[Doc. No. 6258, 29 FR 19218, Dec. 31, 1964, as amended by Amdt. 121–17, 31 FR 1147, Jan. 28, 1966; Amdt. 121–253, 61 FR 2613, Jan. 26, 1996]

§ 121.523 Flight time limitations: Crew of three or more pilots and additional airmen as required.

(a) No certificate holder conducting supplemental operations may schedule an airman for flight deck duty as a flight engineer, or navigator in a crew of three or more pilots and additional airmen for a total of more than 12 hours during any 24 consecutive hours.

(b) Each certificate holder conducting supplemental operations shall schedule its flight hours to provide adequate rest periods on the ground for each airman who is away from his principal operations base. It shall also provide adequate sleeping quarters on the airplane whenever an airman is scheduled to be aloft as a flight crewmember

for more than 12 hours during any 24 consecutive hours.

(c) No certificate holder conducting supplemental operations may schedule any flight crewmember to be on continuous duty for more than 30 hours. Such a crewmember is considered to be on continuous duty from the time he reports for duty until the time he is released from duty for a rest period of at least 10 hours on the ground. If a flight crewmember is on continuous duty for more than 24 hours (whether scheduled or not) duty any scheduled duty period, he must be given at least 16 hours for rest on the ground after completing the last flight scheduled for that scheduled duty period before being assigned any further flight duty.

(d) If a flight crewmember is required to engage in deadhead transportation for more than four hours before beginning flight duty, one half of the time spent in deadhead transportation must be treated as duty time for the purpose of complying with duty time limitations, unless he is given at least 10 hours of rest on the ground before being assigned to flight duty.

(e) Each certificate holder conducting supplemental operations shall give each airman, upon return to his operations base from any flight or series of flights, a rest period that is at least twice the total number of hours he was aloft as a flight crewmember since the last rest period at his base, before assigning him to any further duty. If the required rest period is more than seven days, that part of the rest period that is more than seven days may be given at any time before the pilot is again scheduled for flight duty.

(f) No airman may be aloft as a flight crewmember for more than 350 hours in any 90 consecutive days.

[Doc. No. 6258, 29 FR 19218, Dec. 31, 1964; 30 FR 3639, Mar. 19, 1965, as amended by Amdt. 121–253, 61 FR 2613, Jan. 26, 1996]

§ 121.525 Flight time limitations: Pilots serving in more than one kind of flight crew.

(a) This section applies to each pilot assigned during any 30 consecutive days to more than one type of flight crew.

(b) The flight time limitations for a pilot who is scheduled for duty aloft for more than 20 hours in two-pilot crews in 30 consecutive days, or whose assignment in such a crew is interrupted more than once in any 30 consecutive days by assignment to a crew of two or more pilots and an additional flight crewmember, are those listed in §§ 121.503 through 121.509, as appropriate.

(c) Except for a pilot covered by paragraph (b) of this section, the flight time limitations for a pilot scheduled for duty aloft for more than 20 hours in two-pilot and additional flight crewmember crews in 30 consecutive days or whose assignment in such a crew is interrupted more than once in any 30 consecutive days by assignment to a crew consisting of three pilots and an additional flight crewmember, are those set forth in § 121.521.

(d) The flight time limitations for a pilot to whom paragraphs (b) and (c) of this section do not apply, and who is scheduled for duty aloft for a total of not more than 20 hours within 30 consecutive days in two-pilot crews (with or without additional flight crewmembers) are those set forth in § 121.523.

(e) The flight time limitations for a pilot assigned to each of two-pilot, two-pilot and additional flight crewmember, and three-pilot and additional flight crewmember crews in 30 consecutive days, and who is not subject to paragraph (b), (c), or (d) of this section, are those listed in § 121.523.

Subpart T—Flight Operations

SOURCE: Docket No. 6258, 29 FR 19219, Dec. 31, 1964, unless otherwise noted.

§ 121.531 Applicability.

This subpart prescribes requirements for flight operations applicable to all certificate holders, except where otherwise specified.

§ 121.533 Responsibility for operational control: Domestic operations.

(a) Each certificate holder conducting domestic operations is responsible for operational control.

(b) The pilot in command and the aircraft dispatcher are jointly responsible for the preflight planning, delay, and dispatch release of a flight in compliance with this chapter and operations specifications.

(c) The aircraft dispatcher is responsible for—

(1) Monitoring the progress of each flight;

(2) Issuing necessary information for the safety of the flight; and

(3) Cancelling or redispatching a flight if, in his opinion or the opinion of the pilot in command, the flight cannot operate or continue to operate safely as planned or released.

(d) Each pilot in command of an aircraft is, during flight time, in command of the aircraft and crew and is responsible for the safety of the passengers, crewmembers, cargo, and airplane.

(e) Each pilot in command has full control and authority in the operation of the aircraft, without limitation, over other crewmembers and their duties during flight time, whether or not he holds valid certificates authorizing him to perform the duties of those crewmembers.

[Doc. No. 6258, 29 FR 19219, Dec. 31, 1964, as amended by Amdt. 121–253, 61 FR 2613, Jan. 26, 1996]

§ 121.535 Responsibility for operational control: Flag operations.

(a) Each certificate holder conducting flag operations is responsible for operational control.

(b) The pilot in command and the aircraft dispatcher are jointly responsible for the preflight planning, delay, and dispatch release of a flight in compliance with this chapter and operations specifications.

(c) The aircraft dispatcher is responsible for—

(1) Monitoring the progress of each flight;

(2) Issuing necessary instructions and information for the safety of the flight; and

(3) Cancelling or redispatching a flight if, in his opinion or the opinion of the pilot in command, the flight cannot operate or continue to operate safely as planned or released.

(d) Each pilot in command of an aircraft is, during flight time, in command of the aircraft and crew and is responsible for the safety of the passengers, crewmembers, cargo, and airplane.

(e) Each pilot in command has full control and authority in the operation of the aircraft, without limitation, over other crewmembers and their duties during flight time, whether or not he holds valid certificates authorizing him to perform the duties of those crewmembers.

(f) No pilot may operate an aircraft in a careless or reckless manner so as to endanger life or property.

[Doc. No. 6258, 29 FR 19219, Dec. 31, 1964, as amended by Amdt. 121–253, 61 FR 2613, Jan. 26, 1996]

§ 121.537 Responsibility for operational control: Supplemental operations.

(a) Each certificate holder conducting supplemental operations—

(1) Is responsible for operational control; and

(2) Shall list each person authorized by it to exercise operational control in its operator's manual.

(b) The pilot in command and the director of operations are jointly responsible for the initiation, continuation, diversion, and termination of a flight in compliance with this chapter and the operations specifications. The director of operations may delegate the functions for the initiation, continuation, diversion, and termination of a flight but he may not delegate the responsibility for those functions.

(c) The director of operations is responsible for cancelling, diverting, or delaying a flight if in his opinion or the opinion of the pilot in command the flight cannot operate or continue to operate safely as planned or released. The director of operations is responsible for assuring that each flight is monitored with respect to at least the following:

(1) Departure of the flight from the place of origin and arrival at the place of destination, including intermediate stops and any diversions therefrom.

(2) Maintenance and mechanical delays encountered at places of origin

and destination and intermediate stops.

(3) Any known conditions that may adversely affect the safety of flight.

(d) Each pilot in command of an aircraft is, during flight time, in command of the aircraft and crew and is responsible for the safety of the passengers, crewmembers, cargo, and aircraft. The pilot in command has full control and authority in the operation of the aircraft, without limitation, over other crewmembers and their duties during flight time, whether or not he holds valid certificates authorizing him to perform the duties of those crewmembers.

(e) Each pilot in command of an aircraft is responsible for the preflight planning and the operation of the flight in compliance with this chapter and the operations specifications.

(f) No pilot may operate an aircraft, in a careless or reckless manner, so as to endanger life or property.

[Doc. No. 6258, 29 FR 19219, Dec. 31, 1964, as amended by Amdt. 121–253, 61 FR 2613, Jan. 26, 1996]

§ 121.538 Aircraft security.

Certificate holders conducting operations under this part must comply with the applicable security requirements in 49 CFR chapter XII.

[67 FR 8350, Feb. 22, 2002]

§ 121.539 Operations notices.

Each certificate holder shall notify its appropriate operations personnel of each change in equipment and operating procedures, including each known change in the use of navigation aids, airports, air traffic control procedures and regulations, local airport traffic control rules, and known hazards to flight, including icing and other potentially hazardous meteorological conditions and irregularities in ground and navigation facilities.

§ 121.541 Operations schedules: Domestic and flag operations.

In establishing flight operations schedules, each certificate holder conducting domestic or flag operations shall allow enough time for the proper servicing of aircraft at intermediate stops, and shall consider the prevailing winds en route and the cruising speed of the type of aircraft used. This cruising speed may not be more than that resulting from the specified cruising output of the engines.

[Doc. No. 28154, 61 FR 2613, Jan. 26, 1996]

§ 121.542 Flight crewmember duties.

(a) No certificate holder shall require, nor may any flight crewmember perform, any duties during a critical phase of flight except those duties required for the safe operation of the aircraft. Duties such as company required calls made for such nonsafety related purposes as ordering galley supplies and confirming passenger connections, announcements made to passengers promoting the air carrier or pointing out sights of interest, and filling out company payroll and related records are not required for the safe operation of the aircraft.

(b) No flight crewmember may engage in, nor may any pilot in command permit, any activity during a critical phase of flight which could distract any flight crewmember from the performance of his or her duties or which could interfere in any way with the proper conduct of those duties. Activities such as eating meals, engaging in nonessential conversations within the cockpit and nonessential communications between the cabin and cockpit crews, and reading publications not related to the proper conduct of the flight are not required for the safe operation of the aircraft.

(c) For the purposes of this section, critical phases of flight includes all ground operations involving taxi, takeoff and landing, and all other flight operations conducted below 10,000 feet, except cruise flight.

NOTE: Taxi is defined as ''movement of an airplane under its own power on the surface of an airport.''

[Doc. No. 20661, 46 FR 5502, Jan. 19, 1981]

§ 121.543 Flight crewmembers at controls.

(a) Except as provided in paragraph (b) of this section, each required flight crewmember on flight deck duty must remain at the assigned duty station with seat belt fastened while the aircraft is taking off or landing, and while it is en route.

(b) A required flight crewmember may leave the assigned duty station—

(1) If the crewmember's absence is necessary for the performance of duties in connection with the operation of the aircraft;

(2) If the crewmember's absence is in connection with physiological needs; or

(3) If the crewmember is taking a rest period, and relief is provided—

(i) In the case of the assigned pilot in command during the en route cruise portion of the flight, by a pilot who holds an airline transport pilot certificate and an appropriate type rating, is currently qualified as pilot in command or second in command, and is qualified as pilot in command of that aircraft during the en route cruise portion of the flight. A second in command qualified to act as a pilot in command en route need not have completed the following pilot in command requirements: The 6-month recurrent flight training required by §121.433(c)(1)(iii); the operating experience required by §121.434; the takeoffs and landings required by §121.439; the line check required by §121.440; and the 6-month proficiency check or simulator training required by §121.441(a)(1); and

(ii) In the case of the assigned second in command, by a pilot qualified to act as second in command of that aircraft during en route operations. However, the relief pilot need not meet the recent experience requirements of §121.439(b).

[Doc. No. 16383, 43 FR 22648, May 25, 1978, as amended by Amdt. 121–179, 47 FR 33390, Aug. 2, 1982]

§121.545 Manipulation of controls.

No pilot in command may allow any person to manipulate the controls of an aircraft during flight nor may any person manipulate the controls during flight unless that person is—

(a) A qualified pilot of the certificate holder operating that aircraft.

(b) An authorized pilot safety representative of the Administrator or of the National Transportation Safety Board who has the permission of the pilot in command, is qualified in the aircraft, and is checking flight operations; or

(c) A pilot of another certificate holder who has the permission of the pilot in command, is qualified in the aircraft, and is authorized by the certificate holder operating the aircraft.

[Doc. No. 6258, 29 FR 19220, Dec. 31, 1964, as amended by Doc. No. 8084, 32 FR 5769, Apr. 11, 1967; Amdt. 121–144, 43 FR 22648, May 25, 1978]

§121.547 Admission to flight deck.

(a) No person may admit any person to the flight deck of an aircraft unless the person being admitted is—

(1) A crewmember;

(2) An FAA air carrier inspector, a DOD commercial air carrier evaluator, or an authorized representative of the National Transportation Safety Board, who is performing official duties;

(3) Any person who—

(i) Has permission of the pilot in command, an appropriate management official of the part 119 certificate holder, and the Administrator; and

(ii) Is an employee of—

(A) The United States, or

(B) A part 119 certificate holder and whose duties are such that admission to the flightdeck is necessary or advantageous for safe operation; or

(C) An aeronautical enterprise certificated by the Administrator and whose duties are such that admission to the flightdeck is necessary or advantageous for safe operation.

(4) Any person who has the permission of the pilot in command, an appropriate management official of the part 119 certificate holder and the Administrator. Paragraph (a)(2) of this section does not limit the emergency authority of the pilot in command to exclude any person from the flightdeck in the interests of safety.

(b) For the purposes of paragraph (a)(3) of this section, employees of the United States who deal responsibly with matters relating to safety and employees of the certificate holder whose efficiency would be increased by familiarity with flight conditions, may be admitted by the certificate holder. However, the certificate holder may not admit employees of traffic, sales, or other departments that are not directly related to flight operations, unless they are eligible under paragraph (a)(4) of this section.

(c) No person may admit any person to the flight deck unless there is a seat available for his use in the passenger compartment, except—

(1) An FAA air carrier inspector, a DOD commercial air carrier evaluator, or authorized representative of the Administrator or National Transportation Safety Board who is checking or observing flight operations;

(2) An air traffic controller who is authorized by the Administrator to observe ATC procedures;

(3) A certificated airman employed by the certificate holder whose duties require an airman certificate;

(4) A certificated airman employed by another part 119 certificate holder whose duties with that part 119 certificate holder require an airman certificate and who is authorized by the part 119 certificate holder operating the aircraft to make specific trips over a route;

(5) An employee of the part 119 certificate holder operating the aircraft whose duty is directly related to the conduct or planning of flight operations or the in-flight monitoring of aircraft equipment or operating procedures, if his presence on the flightdeck is necessary to perform his duties and he has been authorized in writing by a responsible supervisor, listed in the Operations Manual as having that authority; and

(6) A technical representative of the manufacturer of the aircraft or its components whose duties are directly related to the in-flight monitoring of aircraft equipment or operating procedures, if his presence on the flightdeck is necessary to perform his duties and he has been authorized in writing by the Administrator and by a responsible supervisor of the operations department of the part 119 certificate holder, listed in the Operations Manual as having that authority.

[Doc. No. 6258, 29 FR 19220, Dec. 31, 1964, as amended by Doc. No. 8084, 32 FR 5769, Apr. 11, 1967; Amdt. 121–253, 61 FR 2613, Jan. 26, 1996; Amdt. 121–288, 67 FR 2127, Jan. 15, 2002; Amdt. 121–298, 68 FR 41217, July 10, 2003]

§ 121.548 Aviation safety inspector's credentials: Admission to pilot's compartment.

Whenever, in performing the duties of conducting an inspection, an inspector of the Federal Aviation Administration presents form FAA 110A, ''Aviation Safety Inspector's Credential,'' to the pilot in command of an aircraft operated by a certificate holder, the inspector must be given free and uninterrupted access to the pilot's compartment of that aircraft.

[Doc. No. 28154, 61 FR 2613, Jan. 26, 1996]

§ 121.548a DOD Commercial Air Carrier Evaluator's Credential.

Whenever, in performing the duties of conducting an evaluation, a DOD commercial air carrier evaluator presents S&A Form 110B, ''DOD Commercial Air Carrier Evaluator's Credential,'' to the pilot in command of an airplane operated by the certificate holder, the evaluator must be given free and uninterrupted access to the pilot's compartment of that airplane.

[Doc. No. FAA–2003–15571, 68 FR 41217, July 10, 2003]

§ 121.549 Flying equipment.

(a) The pilot in command shall ensure that appropriate aeronautical charts containing adequate information concerning navigation aids and instrument approach procedures are aboard the aircraft for each flight.

(b) Each crewmember shall, on each flight, have readily available for his use a flashlight that is in good working order.

§ 121.550 Secret Service Agents: Admission to flight deck.

Whenever an Agent of the Secret Service who is assigned the duty of protecting a person aboard an aircraft operated by a certificate holder considers it necessary in the performance of his duty to ride on the flight deck of the aircraft, he must, upon request and presentation of his Secret Service credentials to the pilot in command of the aircraft, be admitted to the flight deck

and permitted to occupy an observer seat thereon.

[Doc. No. 9031, 35 FR 12061, July 28, 1970, as amended by Amdt. 121–253, 61 FR 2613, Jan. 26, 1996]

§ 121.551 Restriction or suspension of operation: Domestic and flag operations.

When a certificate holder conducting domestic or flag operations knows of conditions, including airport and runway conditions, that are a hazard to safe operations, it shall restrict or suspend operations until those conditions are corrected.

[Doc. No. 28154, 61 FR 2613, Jan. 26, 1996]

§ 121.553 Restriction or suspension of operation: Supplemental operations.

When a certificate holder conducting supplemental operations or pilot in command knows of conditions, including airport and runway conditions, that are a hazard to safe operations, the certificate holder or pilot in command, as the case may be, shall restrict or suspend operations until those conditions are corrected.

[Doc. No. 28154, 61 FR 2613, Jan. 26, 1996]

§ 121.555 Compliance with approved routes and limitations: Domestic and flag operations.

No pilot may operate an airplane in scheduled air transportation—

(a) Over any route or route segment unless it is specified in the certificate holder's operations specifications; or

(b) Other than in accordance with the limitations in the operations specifications.

[Doc. No. 6258, 29 FR 19219, Dec. 31, 1964, as amended by Amdt. 121–253, 61 FR 2614, Jan. 26, 1996]

§ 121.557 Emergencies: Domestic and flag operations.

(a) In an emergency situation that requires immediate decision and action the pilot in command may take any action that he considers necessary under the circumstances. In such a case he may deviate from prescribed operations procedures and methods, weather minimums, and this chapter, to the extent required in the interests of safety.

(b) In an emergency situation arising during flight that requires immediate decision and action by an aircraft dispatcher, and that is known to him, the aircraft dispatcher shall advise the pilot in command of the emergency, shall ascertain the decision of the pilot in command, and shall have the decision recorded. If the aircraft dispatcher cannot communicate with the pilot, he shall declare an emergency and take any action that he considers necessary under the circumstances.

(c) Whenever a pilot in command or dispatcher exercises emergency authority, he shall keep the appropriate ATC facility and dispatch centers fully informed of the progress of the flight. The person declaring the emergency shall send a written report of any deviation through the certificate holder's operations manager, to the Administrator. A dispatcher shall send his report within 10 days after the date of the emergency, and a pilot in command shall send his report within 10 days after returning to his home base.

[Doc. No. 6258, 29 FR 19219, Dec. 31, 1964, as amended by Amdt. 121–253, 61 FR 2614, Jan. 26, 1996]

§ 121.559 Emergencies: Supplemental operations.

(a) In an emergency situation that requires immediate decision and action, the pilot in command may take any action that he considers necessary under the circumstances. In such a case, he may deviate from prescribed operations, procedures and methods, weather minimums, and this chapter, to the extent required in the interests of safety.

(b) In an emergency situation arising during flight that requires immediate decision and action by appropriate management personnel in the case of operations conducted with a flight following service and which is known to them, those personnel shall advise the pilot in command of the emergency, shall ascertain the decision of the pilot

in command, and shall have the decision recorded. If they cannot communicate with the pilot, they shall declare an emergency and take any action that they consider necessary under the circumstances.

(c) Whenever emergency authority is exercised, the pilot in command or the appropriate management personnel shall keep the appropriate communication facility fully informed of the progress of the flight. The person declaring the emergency shall send a written report of any deviation, through the certificate holder's director of operations, to the Administrator within 10 days after the flight is completed or, in the case of operations outside the United States, upon return to the home base.

[Doc. No. 6258, 29 FR 19219, Dec. 31, 1964, as amended by Amdt. 121–253, 61 FR 2614, Jan. 26, 1996; Amdt. 121–333, 72 FR 31682, June 7, 2007]

§ 121.561 Reporting potentially hazardous meteorological conditions and irregularities of ground facilities or navigation aids.

(a) Whenever he encounters a meteorological condition or an irregularity in aground facility or navigation aid, in flight, the knowledge of which he considers essential to the safety of other flights, the pilot in command shall notify an appropriate ground station as soon as practicable.

(b) The ground radio station that is notified under paragraph (a) of this section shall report the information to the agency directly responsible for operating the facility.

[Docket No. 6258, 29 FR 19219, Dec. 31, 1964, as amended by Amdt. 121–333, 72 FR 31682, June 7, 2007]

§ 121.563 Reporting mechanical irregularities.

The pilot in command shall ensure that all mechanical irregularities occurring during flight time are entered in the maintenance log of the airplane at the end of that flight time. Before each flight the pilot in command shall ascertain the status of each irregularity entered in the log at the end of the preceding flight.

[Doc. No. 17897, 45 FR 41594, June 19, 1980, as amended by Amdt. 121–179, 47 FR 33390, Aug. 2, 1982]

§ 121.565 Engine inoperative: Landing; reporting.

(a) Except as provided in paragraph (b) of this section, whenever an airplane engine fails or whenever an engine is shutdown to prevent possible damage, the pilot in command must land the airplane at the nearest suitable airport, in point of time, at which a safe landing can be made.

(b) If not more than one engine of an airplane that has three or more engines fails or is shut down to prevent possible damage, the pilot-in-command may proceed to an airport that the pilot selects if, after considering the following, the pilot makes a reasonable decision that proceeding to that airport is as safe as landing at the nearest suitable airport:

(1) The nature of the malfunction and the possible mechanical difficulties that may occur if flight is continued.

(2) The altitude, weight, and useable fuel at the time that the engine is shutdown.

(3) The weather conditions en route and at possible landing points.

(4) The air traffic congestion.

(5) The kind of terrain.

(6) His familiarity with the airport to be used.

(c) The pilot-in-command must report each engine shutdown in flight to the appropriate communication facility as soon as practicable and must keep that facility fully informed of the progress of the flight.

(d) If the pilot in command lands at an airport other than the nearest suitable airport, in point of time, he or she shall (upon completing the trip) send a written report, in duplicate, to his or her director of operations stating the reasons for determining that the selection of an airport, other than the nearest airport, was as safe a course of action as landing at the nearest suitable airport. The director of operations shall, within 10 days after the pilot returns to his or her home base, send a copy of this report with the director of

operation's comments to the certificate-holding district office.

[Doc. No. 6258, 29 FR 19219, Dec. 31, 1964, as amended by Amdt. 121–207, 54 FR 39293, Sept. 25, 1989; Amdt. 121–253, 61 FR 2614, Jan. 26, 1996; Amdt. 121–329, 72 FR 1881, Jan. 16, 2007; Amdt. 121–333, 72 FR 31682, June 7, 2007]

§ 121.567 Instrument approach procedures and IFR landing minimums.

No person may make an instrument approach at an airport except in accordance with IFR weather minimums and instrument approach procedures set forth in the certificate holder's operations specifications.

§ 121.569 Equipment interchange: Domestic and flag operations.

(a) Before operating under an interchange agreement, each certificate holder conducting domestic or flag operations shall show that—

(1) The procedures for the interchange operation conform with this chapter and with safe operating practices;

(2) Required crewmembers and dispatchers meet approved training requirements for the airplanes and equipment to be used and are familiar with the communications and dispatch procedures to be used;

(3) Maintenance personnel meet training requirements for the airplanes and equipment, and are familiar with the maintenance procedures to be used;

(4) Flight crewmembers and dispatchers meet appropriate route and airport qualifications; and

(5) The airplanes to be operated are essentially similar to the airplanes of the certificate holder with whom the interchange is effected with respect to the arrangement of flight instruments and the arrangement and motion of controls that are critical to safety unless the Administrator determines that the certificate holder has adequate training programs to insure that any potentially hazardous dissimilarities are safely overcome by flight crew familiarization.

(b) Each certificate holder conducting domestic or flag operations shall include the pertinent provisions and procedures involved in the equipment interchange agreement in its manuals.

[Doc. No. 6258, 29 FR 19219, Dec. 31, 1964, as amended by Amdt. 121–253, 61 FR 2614, Jan. 26, 1996]

§ 121.570 Airplane evacuation capability.

(a) No person may cause an airplane carrying passengers to be moved on the surface, take off, or land unless each automatically deployable emergency evacuation assisting means, installed pursuant to §121.310(a), is ready for evacuation.

(b) Each certificate holder shall ensure that, at all times passengers are on board prior to airplane movement on the surface, at least one floor-level exit provides for the egress of passengers through normal or emergency means.

[Doc No. 26142, 57 FR 42674, Sept. 15, 1992]

§ 121.571 Briefing passengers before takeoff.

(a) Each certificate holder operating a passenger-carrying airplane shall insure that all passengers are orally briefed by the appropriate crewmember as follows:

(1) Before each takeoff, on each of the following:

(i) *Smoking.* Each passenger shall be briefed on when, where, and under what conditions smoking is prohibited including, but not limited to, any applicable requirements of part 252 of this title). This briefing shall include a statement that the Federal Aviation Regulations require passenger compliance with the lighted passenger information signs, posted placards, areas designated for safety purposes as no smoking areas, and crewmember instructions with regard to these items. The briefing shall also include a statement that Federal law prohibits tampering with, disabling, or destroying any smoke detector in an airplane lavatory; smoking in lavatories; and, when applicable, smoking in passenger compartments.

(ii) The location of emergency exits.

(iii) The use of safety belts, including instructions on how to fasten and unfasten the safety belts. Each passenger shall be briefed on when, where, and under what conditions the safety belt

must be fastened about that passenger. This briefing shall include a statement that the Federal Aviation Regulations require passenger compliance with lighted passenger information signs and crewmember instructions concerning the use of safety belts.

(iv) The location and use of any required emergency flotation means.

(v) On operations that do not use a flight attendant, the following additional information:

(A) The placement of seat backs in an upright position before takeoff and landing.

(B) Location of survival equipment.

(C) If the flight involves operations above 12,000 MSL, the normal and emergency use of oxygen.

(D) Location and operation of fire extinguisher.

(2) After each takeoff, immediately before or immediately after turning the seat belt sign off, an announcement shall be made that passengers should keep their seat belts fastened, while seated, even when the seat belt sign is off.

(3) Except as provided in paragraph (a)(4) of this section, before each takeoff a required crewmember assigned to the flight shall conduct an individual briefing of each person who may need the assistance of another person to move expeditiously to an exit in the event of an emergency. In the briefing the required crewmember shall—

(i) Brief the person and his attendant, if any, on the routes to each appropriate exit and on the most appropriate time to begin moving to an exit in the event of an emergency; and

(ii) Inquire of the person and his attendant, if any, as to the most appropriate manner of assisting the person so as to prevent pain and further injury.

(4) The requirements of paragraph (a)(3) of this section do not apply to a person who has been given a briefing before a previous leg of a flight in the same aircraft when the crewmembers on duty have been advised as to the most appropriate manner of assisting the person so as to prevent pain and further injury.

(b) Each certificate holder must carry on each passenger-carrying airplane, in convenient locations for use of each passenger, printed cards supplementing the oral briefing. Each card must contain information pertinent only to the type and model of airplane used for that flight, including—

(1) Diagrams of, and methods of operating, the emergency exits;

(2) Other instructions necessary for use of emergency equipment; and

(3) No later than June 12, 2005, for Domestic and Flag scheduled passenger-carrying flights, the sentence, ''Final assembly of this airplane was completed in [INSERT NAME OF COUNTRY].''

(c) The certificate holder shall describe in its manual the procedure to be followed in the briefing required by paragraph (a) of this section.

[Doc. No. 2033, 30 FR 3206, Mar. 9, 1965, as amended by Amdt. 121–30, 32 FR 13268, Sept. 20, 1967; Amdt. 121–84, 37 FR 3975, Feb. 24, 1972; Amdt. 121–133, 42 FR 18394, Apr. 7, 1977; Amdt. 121–144, 43 FR 22648, May 25, 1978; Amdt. 121–146, 43 FR 28403, June 29, 1978; Amdt. 121–196, 53 FR 12362, Apr. 13, 1988; Amdt. 121–230, 57 FR 42674, Sept. 15, 1992; Amdt. 121–251, 60 FR 65935, Dec. 20, 1995; 69 FR 39294, June 29, 2004]

§ 121.573 Briefing passengers: Extended overwater operations.

(a) In addition to the oral briefing required by §121.571(a), each certificate holder operating an airplane in extended overwater operations shall ensure that all passengers are orally briefed by the appropriate crewmember on the location and operation of life preservers, liferafts, and other flotation means, including a demonstration of the method of donning and inflating a life preserver.

(b) The certificate holder shall describe in its manual the procedure to be followed in the briefing required by paragraph (a) of this section.

(c) If the airplane proceeds directly over water after takeoff, the briefing required by paragraph (a) of this section must be done before takeoff.

(d) If the airplane does not proceed directly over water after takeoff, no part of the briefing required by paragraph (a) of this section has to be given before takeoff, but the entire briefing

must be given before reaching the overwater part of the flight.

[Doc. No. 2033, 30 FR 3206, Mar. 9, 1965, as amended by Amdt. 121–144, 43 FR 22648, May 25, 1978; Amdt. 121–146, 43 FR 28403, June 29, 1978]

§ 121.574 Oxygen for medical use by passengers.

(a) A certificate holder may allow a passenger to carry and operate equipment for the storage, generation, or dispensing of oxygen when the following conditions are met:

(1) The equipment is—

(i) Furnished by the certificate holder;

(ii) Of an approved type or is in conformity with the manufacturing, packaging, marking, labeling, and maintenance requirements of 49 CFR parts 171, 172, and 173, except § 173.24(a)(1);

(iii) Maintained by the certificate holder in accordance with an approved maintenance program;

(iv) Free of flammable contaminants on all exterior surfaces;

(v) Capable of providing a minimum mass flow of oxygen to the user of four liters per minute;

(vi) Constructed so that all valves, fittings, and gauges are protected from damage; and

(vii) Appropriately secured.

(2) When the oxygen is stored in the form of a liquid, the equipment has been under the certificate holder's approved maintenance program since its purchase new or since the storage container was last purged.

(3) When the oxygen is stored in the form of a compressed gas as defined in 49 CFR 173.300(a)—

(i) The equipment has been under the certificate holder's approved maintenance program since its purchase new or since the last hydrostatic test of the storage cylinder; and

(ii) The pressure in any oxygen cylinder does not exceed the rated cylinder pressure.

(4) Each person using the equipment has a medical need to use it evidenced by a written statement to be kept in that person's possession, signed by a licensed physician which specifies the maximum quantity of oxygen needed each hour and the maximum flow rate needed for the pressure altitude corresponding to the pressure in the cabin of the airplane under normal operating conditions. This paragraph does not apply to the carriage of oxygen in an airplane in which the only passengers carried are persons who may have a medical need for oxygen during flight, no more than one relative or other interested person for each of those persons, and medical attendants.

(5) When a physician's statement is required by paragraph (a)(4) of this section, the total quantity of oxygen carried is equal to the maximum quantity of oxygen needed each hour, as specified in the physician's statement, multiplied by the number of hours used to compute the amount of airplane fuel required by this part.

(6) The pilot in command is advised when the equipment is on board, and when it is intended to be used.

(7) The equipment is stowed, and each person using the equipment is seated, so as not to restrict access to or use of any required emergency, or regular exit or of the aisle in the passenger compartment.

(b) No person may, and no certificate holder may allow any person to, smoke within 10 feet of oxygen storage and dispensing equipment carried in accordance with paragraph (a) of this section.

(c) No certificate holder may allow any person to connect or disconnect oxygen dispensing equipment, to or from a gaseous oxygen cylinder while any passenger is aboard the airplane.

(d) The requirements of this section do not apply to the carriage of supplemental or first-aid oxygen and related equipment required by this chapter.

[Doc. No. 12169, 39 FR 42677, Dec. 6, 1974, as amended by Amdt. 121–159, 45 FR 41594, June 19, 1980]

§ 121.575 Alcoholic beverages.

(a) No person may drink any alcoholic beverage aboard an aircraft unless the certificate holder operating the aircraft has served that beverage to him.

(b) No certificate holder may serve any alcoholic beverage to any person aboard any of its aircraft who—

(1) Appears to be intoxicated;

(2) Is escorting a person or being escorted in accordance with 49 CFR 1544.221; or

(3) Has a deadly or dangerous weapon accessible to him while aboard the aircraft in accordance with 49 CFR 1544.219, 1544.221, or 1544.223.

(c) No certificate holder may allow any person to board any of its aircraft if that person appears to be intoxicated.

(d) Each certificate holder shall, within five days after the incident, report to the Administrator the refusal of any person to comply with paragraph (a) of this section, or of any disturbance caused by a person who appears to be intoxicated aboard any of its aircraft.

[Doc. No. 6258, 29 FR 19219, Dec. 31, 1964, as amended by Amdt. 121–118, 40 FR 17552, Apr. 21, 1975; Amdt. 121–178, 47 FR 13316, Mar. 29, 1982; Amdt. 121–275, 67 FR 31932, May 10, 2002]

§ 121.576 Retention of items of mass in passenger and crew compartments.

The certificate holder must provide and use means to prevent each item of galley equipment and each serving cart, when not in use, and each item of crew baggage, which is carried in a passenger or crew compartment from becoming a hazard by shifting under the appropriate load factors corresponding to the emergency landing conditions under which the airplane was type certificated.

[Doc. No. 16383, 43 FR 22648, May 25, 1978]

§ 121.577 Stowage of food, beverage, and passenger service equipment during airplane movement on the surface, takeoff, and landing.

(a) No certificate holder may move an airplane on the surface, take off, or land when any food, beverage, or tableware furnished by the certificate holder is located at any passenger seat.

(b) No certificate holder may move an airplane on the surface, take off, or land unless each food and beverage tray and seat back tray table is secured in its stowed position.

(c) No certificate holder may permit an airplane to move on the surface, take off, or land unless each passenger serving cart is secured in its stowed position.

(d) No certificate holder may permit an airplane to move on the surface, take off, or land unless each movie screen that extends into an aisle is stowed.

(e) Each passenger shall comply with instructions given by a crewmember with regard to compliance with this section.

[Doc. No. 26142, 57 FR 42674, Sept. 15, 1992]

§ 121.578 Cabin ozone concentration.

(a) For the purpose of this section, the following definitions apply:

(1) *Flight segment* means scheduled nonstop flight time between two airports.

(2) *Sea level equivalent* refers to conditions of 25° C and 760 millimeters of mercury pressure.

(b) Except as provided in paragraphs (d) and (e) of this section, no certificate holder may operate an airplane above the following flight levels unless it is successfully demonstrated to the Administrator that the concentration of ozone inside the cabin will not exceed—

(1) For flight above flight level 320, 0.25 parts per million by volume, sea level equivalent, at any time above that flight level; and

(2) For flight above flight level 270, 0.1 parts per million by volume, sea level equivalent, time-weighted average for each flight segment that exceeds 4 hours and includes flight above that flight level. (For this purpose, the amount of ozone below flight level 180 is considered to be zero.)

(c) Compliance with this section must be shown by analysis or tests, based on either airplane operational procedures and performance limitations or the certificate holder's operations. The analysis or tests must show either of the following:

(1) Atmospheric ozone statistics indicate, with a statistical confidence of at least 84%, that at the altitudes and locations at which the airplane will be operated cabin ozone concentrations will not exceed the limits prescribed by paragraph (b) of this section.

(2) The airplane ventilation system including any ozone control equipment, will maintain cabin ozone concentrations at or below the limits prescribed by paragraph (b) of this section.

(d) A certificate holder may obtain an authorization to deviate from the requirements of paragraph (b) of this section, by an amendment to its operations specifications, if—

(1) It shows that due to circumstances beyond its control or to unreasonable economic burden it cannot comply for a specified period of time; and

(2) It has submitted a plan acceptable to the Administrator to effect compliance to the extent possible.

(e) A certificate holder need not comply with the requirements of paragraph (b) of this section for an aircraft—

(1) When the only persons carried are flight crewmembers and persons listed in §121.583;

(2) If the aircraft is scheduled for retirement before January 1, 1985; or

(3) If the aircraft is scheduled for reengining under the provisions of subpart E of part 91, until it is re-engined.

[Doc. No. 121–154, 45 FR 3883, Jan. 21, 1980. Redesignated by Amdt. 121–162, 45 FR 46739, July 10, 1980, and amended by Amdt. 121–181, 47 FR 58489, Dec. 30, 1982; Amdt. 121–251, 60 FR 65935, Dec. 20, 1995]

§121.579 Minimum altitudes for use of autopilot.

(a) *En route operations.* Except as provided in paragraphs (b), (c), and (d) of this section, no person may use an autopilot en route, including climb and descent, at an altitude above the terrain that is less than twice the maximum altitude loss specified in the Airplane Flight Manual for a malfunction of the autopilot under cruise conditions, or less than 500 feet, whichever is higher.

(b) *Approaches.* When using an instrument approach facility, no person may use an autopilot at an altitude above the terrain that is less than twice the maximum altitude loss specified in the Airplane Flight Manual for a malfunction of the autopilot under approach conditions, or less than 50 feet below the approved minimum descent altitude or DA/DH for the facility, whichever is higher, except—

(1) When reported weather conditions are less than the basic VFR weather conditions in §91.155 of this chapter, no person may use an autopilot with an approach coupler for ILS approaches at an altitude above the terrain that is less than 50 feet higher than the maximum altitude loss specified in the Airplane Flight Manual for the malfunction of the autopilot with approach coupler under approach conditions; and

(2) When reported weather conditions are equal to or better than the basic VFR minimums in §91.155 of this chapter, no person may use an autopilot with an approach coupler for ILS approaches at an altitude above the terrain that is less than the maximum altitude loss specified in the Airplane Flight Manual for the malfunction of the autopilot with approach coupler under approach conditions, or 50 feet, whichever is higher.

(c) Notwithstanding paragraph (a) or (b) of this section, the Administrator issues operations specifications to allow the use, to touchdown, of an approved flight control guidance system with automatic capability, in any case in which—

(1) The system does not contain any altitude loss (above zero) specified in the Airplane Flight Manual for malfunction of the autopilot with approach coupler; and

(2) He finds that the use of the system to touchdown will not otherwise affect the safety standards required by this section.

(d) *Takeoffs.* Notwithstanding paragraph (a) of this section, the Administrator issues operations specifications to allow the use of an approved autopilot system with automatic capability below the altitude specified in paragraph (a) of this section during the takeoff and initial climb phase of flight provided:

(1) The Airplane Flight Manual specifies a minimum altitude engagement certification restriction;

(2) The system is not engaged prior to the minimum engagement certification restriction specified in the Airplane Flight Manual or an altitude specified by the Administrator, whichever is higher; and

(3) The Administrator finds that the use of the system will not otherwise affect the safety standards required by this section.

[Doc. No. 6258, 29 FR 19219, Dec. 31, 1964, as amended by Amdt. 121–13, 30 FR 14781, Nov. 30, 1965; Amdt. 121–33, 32 FR 13912, Oct. 6, 1967; Amdt. 121–130, 41 FR 47229, Oct. 28, 1976; Amdt. 121–206, 54 FR 34331, Aug. 18, 1989; Amdt. 121–265, 62 FR 27922, May 21, 1997; Amdt. 121–333, 72 FR 31682, June 7, 2007]

§ 121.580 Prohibition on interference with crewmembers.

No person may assault, threaten, intimidate, or interfere with a crewmember in the performance of the crewmember's duties aboard an aircraft being operated under this part.

[Doc. No. FAA–1998–4954, 64 FR 1080, Jan. 7, 1999]

§ 121.581 Observer's seat: En route inspections.

(a) Except as provided in paragraph (c) of this section, each certificate holder shall make available a seat on the flight deck of each airplane, used by it in air commerce, for occupancy by the Administrator while conducting en route inspections. The location and equipment of the seat, with respect to its suitability for use in conducting en route inspections, is determined by the Administrator.

(b) In each airplane that has more than one observer's seat, in addition to the seats required for the crew complement for which the airplane was certificated, the forward observer's seat or the observer's seat selected by the Administrator must be made available when complying with paragraph (a) of this section.

(c) For any airplane type certificated before December 20, 1995, for not more than 30 passengers that does not have an observer seat on the flightdeck, the certificate holder must provide a forward passenger seat with headset or speaker for occupancy by the Administrator while conducting en route inspections.

[Doc. No. 6258, 29 FR 19219, Dec. 31, 1964, as amended by Amdt. 121–144, 43 FR 22648, May 25, 1978; Amdt. 121–251, 60 FR 65935, Dec. 20, 1995; Amdt. 121–288, 67 FR 2128, Jan. 15, 2002]

§ 121.582 Means to discreetly notify a flightcrew.

Except for all-cargo operations as defined in § 119.3 of this chapter, after October 15, 2007, for all passenger carrying airplanes that require a lockable flightdeck door in accordance with § 121.313(f), the certificate holder must have an approved means by which the cabin crew can discreetly notify the flightcrew in the event of suspicious activity or security breaches in the cabin.

[Amdt. 121–334, 72 FR 45635, Aug. 15, 2007]

§ 121.583 Carriage of persons without compliance with the passenger-carrying requirements of this part.

(a) When authorized by the certificate holder, the following persons, but no others, may be carried aboard an airplane without complying with the passenger-carrying airplane requirements in §§ 121.309(f), 121.310, 121.391, 121.571, and 121.587; the passenger-carrying operation requirements in §§ 121.157(c) and 121.291; and the requirements pertaining to passengers in §§ 121.285, 121.313(f), 121.317, 121.547, and 121.573:

(1) A crewmember.

(2) A company employee.

(3) An FAA air carrier inspector, a DOD commercial air carrier evaluator, or an authorized representative of the National Transportation Safety Board, who is performing official duties.

(4) A person necessary for—

(i) The safety of the flight;

(ii) The safe handling of animals;

(iii) The safe handling of hazardous materials whose carriage is governed by regulations in 49 CFR part 175;

(iv) The security of valuable or confidential cargo;

(v) The preservation of fragile or perishable cargo;

(vi) Experiments on, or testing of, cargo containers or cargo handling devices;

(vii) The operation of special equipment for loading or unloading cargo; and

(viii) The loading or unloading of outsize cargo.

(5) A person described in paragraph (a)(4) of this section, when traveling to or from his assignment.

(6) A person performing duty as an honor guard accompanying a shipment made by or under the authority of the United States.

(7) A military courier, military route supervisor, military cargo contract coordinator, or a flight crewmember of another military cargo contract air carrier or commercial operator, carried by a military cargo contract air carrier or commercial operator in operations under a military cargo contract, if that carriage is specifically authorized by the appropriate armed forces.

(8) A dependent of an employee of the certificate holder when traveling with the employee on company business to or from outlying stations not served by adequate regular passenger flights.

(b) No certificate holder may operate an airplane carrying a person covered by paragraph (a) of this section unless—

(1) Each person has unobstructed access from his seat to the pilot compartment or to a regular or emergency exit;

(2) The pilot in command has a means of notifying each person when smoking is prohibited and when safety belts must be fastened; and

(3) The airplane has an approved seat with an approved safety belt for each person. The seat must be located so that the occupant is not in any position to interfere with the flight crewmembers performing their duties.

(c) Before each takeoff, each certificate holder operating an airplane carrying persons covered by paragraph (a) of this section shall ensure that all such persons have been orally briefed by the appropriate crewmember on—

(1) Smoking;

(2) The use of seat belts;

(3) The location and operation of emergency exits;

(4) The use of oxygen and emergency oxygen equipment; and

(5) For extended overwater operations, the location of life rafts, and the location and operation of life preservers including a demonstration of the method of donning and inflating a life preserver.

(d) Each certificate holder operating an airplane carrying persons covered by paragraph (a) of this section shall incorporate procedures for the safe carriage of such persons into the certificate holder's operations manual.

(e) The pilot in command may authorize a person covered by paragraph (a) of this section to be admitted to the crew compartment of the airplane.

[Doc. No. 10580, 35 FR 14612, Sept. 18, 1970, as amended by Amdt. 121–96, 37 FR 19608, Sept. 21, 1972; Amdt. 121–159, 45 FR 41594, June 19, 1980; Amdt. 121–232, 57 FR 48663, Oct. 27, 1992; Amdt. 121–251, 60 FR 65935, Dec. 20, 1995; Amdt. 121–253, 61 FR 2614, Jan. 26, 1996; Amdt. 121–298, 68 FR 41217, July 10, 2003]

§ 121.584 Requirement to view the area outside the flightdeck door.

From the time the airplane moves in order to initiate a flight segment through the end of that flight segment, no person may unlock or open the flightdeck door unless:

(a) A person authorized to be on the flightdeck uses an approved audio procedure and an approved visual device to verify that:

(1) The area outside the flightdeck door is secure, and;

(2) If someone outside the flightdeck is seeking to have the flightdeck door opened, that person is not under duress, and;

(b) After the requirements of paragraph (a) of this section have been satisfactorily accomplished, the crewmember in charge on the flightdeck authorizes the door to be unlocked and open.

[Amdt. 121–334, 72 FR 45635, Aug. 15, 2007]

§ 121.585 Exit seating.

(a)(1) Each certificate holder shall determine, to the extent necessary to perform the applicable functions of paragraph (d) of this section, the suitability of each person it permits to occupy an exit seat, in accordance with this section. For the purpose of this section—

(i) *Exit seat* means—

(A) Each seat having direct access to an exit; and,

(B) Each seat in a row of seats through which passengers would have to pass to gain access to an exit, from the first seat inboard of the exit to the first aisle inboard of the exit.

(ii) A passenger seat having ''direct access'' means a seat from which a passenger can proceed directly to the exit

without entering an aisle or passing around an obstruction.

(2) Each certificate holder shall make the passenger exit seating determinations required by this paragraph in a non-discriminatory manner consistent with the requirements of this section, by persons designated in the certificate holder's required operations manual.

(3) Each certificate holder shall designate the exit seats for each passenger seating configuration in its fleet in accordance with the definitions in this paragraph and submit those designations for approval as part of the procedures required to be submitted for approval under paragraphs (n) and (p) of this section.

(b) No certificate holder may seat a person in a seat affected by this section if the certificate holder determines that it is likely that the person would be unable to perform one or more of the applicable functions listed in paragraph (d) of this section because—

(1) The person lacks sufficient mobility, strength, or dexterity in both arms and hands, and both legs:

(i) To reach upward, sideways, and downward to the location of emergency exit and exit-slide operating mechanisms;

(ii) To grasp and push, pull, turn, or otherwise manipulate those mechanisms;

(iii) To push, shove, pull, or otherwise open emergency exits;

(iv) To lift out, hold, deposit on nearby seats, or maneuver over the seatbacks to the next row objects the size and weight of over-wing window exit doors;

(v) To remove obstructions similar in size and weight to over-wing exit doors;

(vi) To reach the emergency exit expeditiously;

(vii) To maintain balance while removing obstructions;

(viii) To exit expeditiously;

(ix) To stabilize an escape slide after deployment; or

(x) To assist others in getting off an escape slide;

(2) The person is less than 15 years of age or lacks the capacity to perform one or more of the applicable functions listed in paragraph (d) of this section without the assistance of an adult companion, parent, or other relative;

(3) The person lacks the ability to read and understand instructions required by this section and related to emergency evacuation provided by the certificate holder in printed or graphic form or the ability to understand oral crew commands.

(4) The person lacks sufficient visual capacity to perform one or more of the applicable functions in paragraph (d) of this section without the assistance of visual aids beyond contact lenses or eyeglasses;

(5) The person lacks sufficient aural capacity to hear and understand instructions shouted by flight attendants, without assistance beyond a hearing aid;

(6) The person lacks the ability adequately to impart information orally to other passengers; or,

(7) The person has:

(i) A condition or responsibilities, such as caring for small children, that might prevent the person from performing one or more of the applicable functions listed in paragraph (d) of this section; or

(ii) A condition that might cause the person harm if he or she performs one or more of the applicable functions listed in paragraph (d) of this section.

(c) Each passenger shall comply with instructions given by a crewmember or other authorized employee of the certificate holder implementing exit seating restrictions established in accordance with this section.

(d) Each certificate holder shall include on passenger information cards, presented in the language in which briefings and oral commands are given by the crew, at each exit seat affected by this section, information that, in the event of an emergency in which a crewmember is not available to assist, a passenger occupying an exit seat may use if called upon to perform the following functions:

(1) Locate the emergency exit;

(2) Recognize the emergency exit opening mechanism;

(3) Comprehend the instructions for operating the emergency exit;

(4) Operate the emergency exit;

(5) Assess whether opening the emergency exit will increase the hazards to which passengers may be exposed;

(6) Follow oral directions and hand signals given by a crewmember;

(7) Stow or secure the emergency exit door so that it will not impede use of the exit;

(8) Assess the condition of an escape slide, activate the slide, and stabilize the slide after deployment to assist others in getting off the slide;

(9) Pass expeditiously through the emergency exit; and

(10) Assess, select, and follow a safe path away from the emergency exit.

(e) Each certificate holder shall include on passenger information cards, at each exit seat—

(1) In the primary language in which emergency commands are given by the crew, the selection criteria set forth in paragraph (b) of this section, and a request that a passenger identify himself or herself to allow reseating if he or she:

(i) Cannot meet the selection criteria set forth in paragraph (b) of this section;

(ii) Has a nondiscernible condition that will prevent him or her from performing the applicable functions listed in paragraph (d) of this section;

(iii) May suffer bodily harm as the result of performing one or more of those functions; or

(iv) Does not wish to perform those functions; and

(2) In each language used by the certificate holder for passenger information cards, a request that a passenger identify himself or herself to allow reseating if he or she lacks the ability to read, speak, or understand the language or the graphic form in which instructions required by this section and related to emergency evacuation are provided by the certificate holder, or the ability to understand the specified language in which crew commands will be given in an emergency.

(3) May suffer bodily harm as the result of performing one or more of those functions; or,

(4) Does not wish to perform those functions.

A certificate holder shall not require the passenger to disclose his or her reason for needing reseating.

(f) Each certificate holder shall make available for inspection by the public at all passenger loading gates and ticket counters at each airport where it conducts passenger operations, written procedures established for making determinations in regard to exit row seating.

(g) No certificate holder may allow taxi or pushback unless at least one required crewmember has verified that no exit seat is occupied by a person the crewmember determines is likely to be unable to perform the applicable functions listed in paragraph (d) of this section.

(h) Each certificate holder shall include in its passenger briefings a reference to the passenger information cards, required by paragraphs (d) and (e), the selection criteria set forth in paragraph (b), and the functions to be performed, set forth in paragraph (d) of this section.

(i) Each certificate holder shall include in its passenger briefings a request that a passenger identify himself or herself to allow reseating if he or she—

(1) Cannot meet the selection criteria set forth in paragraph (b) of this section;

(2) Has a nondiscernible condition that will prevent him or her from performing the applicable functions listed in paragraph (d) of this section;

(3) May suffer bodily harm as the result of performing one or more of those functions listed in paragraph (d) of this section; or,

(4) Does not wish to perform those functions listed in paragraph (d) of this section.

A certificate holder shall not require the passenger to disclose his or her reason for needing reseating.

(j) [Reserved]

(k) In the event a certificate holder determines in accordance with this section that it is likely that a passenger assigned to an exit seat would be unable to perform the functions listed in paragraph (d) of this section or a passenger requests a non-exit seat, the certificate holder shall expeditiously relocate the passenger to a non-exit seat.

(l) In the event of full booking in the non-exit seats and if necessary to accommodate a passenger being relocated

from an exit seat, the certificate holder shall move a passenger who is willing and able to assume the evacuation functions that may be required, to an exit seat.

(m) A certificate holder may deny transportation to any passenger under this section only because—

(1) The passenger refuses to comply with instructions given by a crewmember or other authorized employee of the certificate holder implementing exit seating restrictions established in accordance with this section, or

(2) The only seat that will physically accommodate the person's handicap is an exit seat.

(n) In order to comply with this section certificate holders shall—

(1) Establish procedures that address:

(i) The criteria listed in paragraph (b) of this section;

(ii) The functions listed in paragraph (d) of this section;

(iii) The requirements for airport information, passenger information cards, crewmember verification of appropriate seating in exit seats, passenger briefings, seat assignments, and denial of transportation as set forth in this section;

(iv) How to resolve disputes arising from implementation of this section, including identification of the certificate holder employee on the airport to whom complaints should be addressed for resolution; and,

(2) Submit their procedures for preliminary review and approval to the principal operations inspectors assigned to them at the certificate-holding district office.

(o) Certificate holders shall assign seats prior to boarding consistent with the criteria listed in paragraph (b) and the functions listed in paragraph (d) of this section, to the maximum extent feasible.

(p) The procedures required by paragraph (n) of this section will not become effective until final approval is granted by the Director, Flight Standards Service, Washington, DC. Approval will be based solely upon the safety aspects of the certificate holder's procedures.

[Doc. No. 25821, 55 FR 8072, Mar. 6, 1990, as amended by Amdt. 121–232, 57 FR 48663, Oct. 27, 1992; Amdt. 121–253, 61 FR 2614, Jan. 26, 1996]

§ 121.586 Authority to refuse transportation.

(a) No certificate holder may refuse transportation to a passenger on the basis that, because the passenger may need the assistance of another person to move expeditiously to an exit in the event of an emergency, his transportation would or might be inimical to safety of flight unless—

(1) The certificate holder has established procedures (including reasonable notice requirements) for the carriage of passengers who may need the assistance of another person to move expeditiously to an exit in the event of an emergency; and

(2) At least one of the following conditions exist:

(i) The passenger fails to comply with the notice requirements in the certificate holder's procedures.

(ii) The passenger cannot be carried in accordance with the certificate holder's procedures.

(b) Each certificate holder shall provide the certificate-holding district office with a copy of each procedure it establishes in accordance with paragraph (a)(2) of this section.

(c) Whenever the Administrator finds that revisions in the procedures described in paragraph (a)(2) of this section are necessary in the interest of safety or in the public interest, the certificate holder, after notification by the Administrator, shall make those revisions in its procedures. Within 30 days after the certificate holder receives such notice, it may file a petition to reconsider the notice with the certificate-holding district office. The filing of a petition to reconsider stays the notice pending a decision by the Administrator. However, if the Administrator finds that there is an emergency that requires immediate action in the interest of safety in air commerce, he may, upon a statement of the reasons, require a change effective without stay.

(d) Each certificate holder shall make available to the public at each airport it serves a copy of each procedure it establishes in accordance with paragraph (a)(1) of this section.

[Doc. No. 12881, 42 FR 18394, Apr. 7, 1977, as amended by Amdt. 121–174, 46 FR 38051, July 23, 1981; Amdt. 121–207, 54 FR 39293, Sept. 25, 1989; Amdt. 121–253, 61 FR 2614, Jan. 26, 1996]

§ 121.587 Closing and locking of flightcrew compartment door.

(a) Except as provided in paragraph (b) of this section, a pilot in command of an airplane that has a lockable flightcrew compartment door in accordance with § 121.313 and that is carrying passengers shall ensure that the door separating the flightcrew compartment from the passenger compartment is closed and locked at all times when the aircraft is being operated.

(b) The provisions of paragraph (a) of this section do not apply at any time when it is necessary to permit access and egress by persons authorized in accordance with § 121.547 and provided the part 119 operator complies with FAA approved procedures regarding the opening, closing and locking of the flightdeck doors.

[Doc. No. FAA–2001–11032, 67 FR 2128, Jan. 15, 2002]

§ 121.589 Carry-on baggage.

(a) No certificate holder may allow the boarding of carry-on baggage on an airplane unless each passenger's baggage has been scanned to control the size and amount carried on board in accordance with an approved carry-on baggage program in its operations specifications. In addition, no passenger may board an airplane if his/her carry-on baggage exceeds the baggage allowance prescribed in the carry-on baggage program in the certificate holder's operations specifications.

(b) No certificate holder may allow all passenger entry doors of an airplane to be closed in preparation for taxi or pushback unless at least one required crewmember has verified that each article of baggage is stowed in accordance with this section and § 121.285 (c) and (d).

(c) No certificate holder may allow an airplane to take off or land unless each article of baggage is stowed:

(1) In a suitable closet or baggage or cargo stowage compartment placarded for its maximum weight and providing proper restraint for all baggage or cargo stowed within, and in a manner that does not hinder the possible use of any emergency equipment; or

(2) As provided in § 121.285 (c) and (d); or

(3) Under a passenger seat.

(d) Baggage, other than articles of loose clothing, may not be placed in an overhead rack unless that rack is equipped with approved restraining devices or doors.

(e) Each passenger must comply with instructions given by crewmembers regarding compliance with paragraphs (a), (b), (c), (d), and (g) of this section.

(f) Each passenger seat under which baggage is allowed to be stowed shall be fitted with a means to prevent articles of baggage stowed under it from sliding forward. In addition, each aisle seat shall be fitted with a means to prevent articles of baggage stowed under it from sliding sideward into the aisle under crash impacts severe enough to induce the ultimate inertia forces specified in the emergency landing condition regulations under which the airplane was type certificated.

(g) In addition to the methods of stowage in paragraph (c) of this section, flexible travel canes carried by blind individuals may be stowed—

(1) Under any series of connected passenger seats in the same row, if the cane does not protrude into an aisle and if the cane is flat on the floor; or

(2) Between a nonemergency exit window seat and the fuselage, if the cane is flat on the floor; or

(3) Beneath any two nonemergency exit window seats, if the cane is flat on the floor; or

(4) In accordance with any other method approved by the Administrator.

[Doc. No. 24996, 52 FR 21476, June 5, 1987, as amended by Amdt. 121–251, 60 FR 65935, Dec. 20, 1995]

§ 121.590 Use of certificated land airports in the United States.

(a) Except as provided in paragraphs (b) or (c) of this section, or unless authorized by the Administrator under 49 U.S.C. 44706(c), no air carrier and no

pilot being used by an air carrier may operate, in the conduct of a domestic type operation, flag type operation, or supplemental type operation, an airplane at a land airport in any State of the United States, the District of Columbia, or any territory or possession of the United States unless that airport is certificated under part 139 of this chapter. Further, after June 9, 2005 for Class I airports and after December 9, 2005 for Class II, III, and IV airports, when an air carrier and a pilot being used by the air carrier are required to operate at an airport certificated under part 139 of this chapter, the air carrier and the pilot may only operate at that airport if the airport is classified under part 139 to serve the type airplane to be operated and the type of operation to be conducted.

(b)(1) An air carrier and a pilot being used by the air carrier in the conduct of a domestic type operation, flag type operation, or supplemental type operation may designate and use as a required alternate airport for departure or destination an airport that is not certificated under part 139 of this chapter.

(2) Until December 9, 2005, an air carrier and a pilot being used by the air carrier in the conduct of domestic type operations and flag type operations, may operate an airplane designed for more than 9 but less than 31 passenger seats, at a land airport, in any State of the United States, the District of Columbia, or any territory or possession of the United States, that does not hold an airport operating certificate issued under part 139 of this chapter, and that serves small air carrier aircraft (as defined under ''Air carrier aircraft'' and ''Class III airport'' in §139.5 of this Chapter).

(c) An air carrier and a pilot used by the air carrier in conducting a domestic type operation, flag type operation, or supplemental type operation may operate an airplane at an airport operated by the U.S. Government that is not certificated under part 139 of this chapter, only if that airport meets the equivalent—

(1) Safety standards for airports certificated under part 139 of this chapter; and

(2) Airport classification requirements under part 139 to serve the type airplane to be operated and the type of operation to be conducted.

(d) An air carrier, a commercial operator, and a pilot being used by the air carrier or the commercial operator—when conducting a passenger-carrying airplane operation under this part that is not a domestic type operation, a flag type operation, or a supplemental type operation—may operate at a land airport not certificated under part 139 of this chapter only when the following conditions are met:

(1) The airport is adequate for the proposed operation, considering such items as size, surface, obstructions, and lighting.

(2) For an airplane carrying passengers at night, the pilot may not take off from, or land at, an airport unless—

(i) The pilot has determined the wind direction from an illuminated wind direction indicator or local ground communications or, in the case of takeoff, that pilot's personal observations; and

(ii) The limits of the area to be used for landing or takeoff are clearly shown by boundary or runway marker lights. If the area to be used for takeoff or landing is marked by flare pots or lanterns, their use must be authorized by the Administrator.

(e) A commercial operator and a pilot used by the commercial operator in conducting a domestic type operation, flag type operation, or supplemental type operation may operate an airplane at an airport operated by the U.S. Government that is not certificated under part 139 of this chapter only if that airport meets the equivalent—

(1) Safety standards for airports certificated under part 139 of this chapter; and

(2) Airport classification requirements under part 139 of this chapter to serve the type airplane to be operated and the type of operation to be conducted.

(f) For the purpose of this section, the terms—

Domestic type operation means any domestic operation conducted with—

(1) An airplane designed for at least 31 passenger seats (as determined by the aircraft type certificate issued by a

competent civil aviation authority) at any land airport in any State of the United States, the District of Columbia, or any territory or possession of the United States; or

(2) An airplane designed for more than 9 passenger seats but less than 31 passenger seats (as determined by the aircraft type certificate issued by a competent civil aviation authority) at any land airport in any State of the United States (except Alaska), the District of Columbia, or any territory or possession of the United States.

Flag type operation means any flag operation conducted with—

(1) An airplane designed for at least 31 passenger seats (as determined by the aircraft type certificate issued by a competent civil aviation authority) at any land airport in any State of the United States, the District of Columbia, or any territory or possession of the United States; or

(2) An airplane designed for more than 9 passenger seats but less than 31 passenger seats (as determined by the aircraft type certificate issued by a competent civil aviation authority) at any land airport in any State of the United States (except Alaska), the District of Columbia, or any territory or possession of the United States.

Supplemental type operation means any supplemental operation (except an all-cargo operation) conducted with an airplane designed for at least 31 passenger seats (as determined by the aircraft type certificate issued by a competent civil aviation authority) at any land airport in any State of the United States, the District of Columbia, or any territory or possession of the United States.

United States means the States of the United States, the District of Columbia, and the territories and possessions of the United States.

NOTE: Special Statutory Requirement to Operate to or From a Part 139 Airport. Each air carrier that provides—in an aircraft (e.g., airplane, rotorcraft, etc.) designed for more than 9 passenger seats—regularly scheduled charter air transportation for which the public is provided in advance a schedule containing the departure location, departure time, and arrival location of the flight must operate to and from an airport certificated under part 139 of this chapter in accordance with 49 U.S.C. 41104(b). That statutory provision contains stand-alone requirements for such air carriers and special exceptions for operations in Alaska and outside the United States. Nothing in §121.590 exempts the air carriers described in this note from the requirements of 49 U.S.C. 41104(b). Certain operations by air carriers that conduct public charter operations under 14 CFR part 380 are covered by the statutory requirements to operate to and from part 139 airports. *See* 49 U.S.C. 41104(b).

[Doc. No. FAA–2000–7479, 69 FR 6424, Feb. 10, 2004; Amdt. 121–304, 69 FR 31522, June 4, 2004]

Subpart U—Dispatching and Flight Release Rules

SOURCE: Docket No. 6258, 29 FR 19222, Dec. 31, 1964, unless otherwise noted.

§ 121.591 Applicability.

This subpart prescribes dispatching rules for domestic and flag operations and flight release rules for supplemental operations.

[Doc. No. 28154, 61 FR 2614, Jan. 26, 1996]

§ 121.593 Dispatching authority: Domestic operations.

Except when an airplane lands at an intermediate airport specified in the original dispatch release and remains there for not more than one hour, no person may start a flight unless an aircraft dispatcher specifically authorizes that flight.

§ 121.595 Dispatching authority: Flag operations.

(a) No person may start a flight unless an aircraft dispatcher specifically authorizes that flight.

(b) No person may continue a flight from an intermediate airport without redispatch if the airplane has been on the ground more than six hours.

§ 121.597 Flight release authority: Supplemental operations.

(a) No person may start a flight under a flight following system without specific authority from the person authorized by the operator to exercise operational control over the flight.

(b) No person may start a flight unless the pilot in command or the person authorized by the operator to exercise operational control over the flight has executed a flight release setting forth the conditions under which the flights

will be conducted. The pilot in command may sign the flight release only when he and the person authorized by the operator to exercise operational control believe that the flight can be made with safety.

(c) No person may continue a flight from an intermediate airport without a new flight release if the aircraft has been on the ground more than six hours.

[Doc. No. 6258, 29 FR 19222, Dec. 31, 1964, as amended by Amdt. 121–3, 30 FR 3639, Mar. 19, 1965]

§ 121.599 Familiarity with weather conditions.

(a) *Domestic and flag operations.* No aircraft dispatcher may release a flight unless he is thoroughly familiar with reported and forecast weather conditions on the route to be flown.

(b) *Supplemental operations.* No pilot in command may begin a flight unless he is thoroughly familiar with reported and forecast weather conditions on the route to be flown.

[Doc. No. 6258, 29 FR 19222, Dec. 31, 1964, as amended by Amdt. 121–253, 61 FR 2614, Jan. 26, 1996]

§ 121.601 Aircraft dispatcher information to pilot in command: Domestic and flag operations.

(a) The aircraft dispatcher shall provide the pilot in command all available current reports or information on airport conditions and irregularities of navigation facilities that may affect the safety of the flight.

(b) Before beginning a flight, the aircraft dispatcher shall provide the pilot in command with all available weather reports and forecasts of weather phenomena that may affect the safety of flight, including adverse weather phenomena, such as clear air turbulence, thunderstorms, and low altitude wind shear, for each route to be flown and each airport to be used.

(c) During a flight, the aircraft dispatcher shall provide the pilot in command any additional available information of meteorological conditions (including adverse weather phenomena, such as clear air turbulence, thunderstorms, and low altitude wind shear), and irregularities of facilities and services that may affect the safety of the flight.

[Doc. No. 6258, 29 FR 19222, Dec. 31, 1964, as amended by Amdt. 121–134, 42 FR 27573, May 31, 1977; Amdt. 121–144, 43 FR 22649, May 25, 1978; Amdt. 121–253, 61 FR 2614, Jan. 26, 1996]

§ 121.603 Facilities and services: Supplemental operations.

(a) Before beginning a flight, each pilot in command shall obtain all available current reports or information on airport conditions and irregularities of navigation facilities that may affect the safety of the flight.

(b) During a flight, the pilot in command shall obtain any additional available information of meteorological conditions and irregularities of facilities and services that may affect the safety of the flight.

§ 121.605 Airplane equipment.

No person may dispatch or release an airplane unless it is airworthy and is equipped as prescribed in § 121.303.

§ 121.607 Communication and navigation facilities: Domestic and flag operations.

(a) Except as provided in paragraph (b) of this section for a certificate holder conducting flag operations, no person may dispatch an airplane over an approved route or route segment unless the communication and navigation facilities required by §§ 121.99 and 121.103 for the approval of that route or segment are in satisfactory operating condition.

(b) If, because of technical reasons or other reasons beyond the control of a certificate holder conducting flag operations, the facilities required by §§ 121.99 and 121.103 are not available over a route or route segment outside the United States, the certificate holder may dispatch an airplane over that route or route segment if the pilot in command and dispatcher find that communication and navigation facilities equal to those required are available and are in satisfactory operating condition.

[Doc. No. 6258, 29 FR 19222, Dec. 31, 1964, as amended by Amdt. 121–253, 61 FR 2614, Jan. 26, 1996]

§ 121.609 Communication and navigation facilities: Supplemental operations.

No person may release an aircraft over any route or route segment unless communication and navigation facilities equal to those required by § 121.121 are in satisfactory operating condition.

§ 121.611 Dispatch or flight release under VFR.

No person may dispatch or release an aircraft for VFR operation unless the ceiling and visibility en route, as indicated by available weather reports or forecasts, or any combination thereof, are and will remain at or above applicable VFR minimums until the aircraft arrives at the airport or airports specified in the dispatch or flight release.

§ 121.613 Dispatch or flight release under IFR or over the top.

Except as provided in § 121.615, no person may dispatch or release an aircraft for operations under IFR or over-the-top, unless appropriate weather reports or forecasts, or any combination thereof, indicate that the weather conditions will be at or above the authorized minimums at the estimated time of arrival at the airport or airports to which dispatched or released.

[Doc. No. 6258, 29 FR 19222, Dec. 31, 1964, as amended by Amdt. 121–33, 32 FR 13912, Oct. 6, 1967]

§ 121.615 Dispatch or flight release over water: Flag and supplemental operations.

(a) No person may dispatch or release an aircraft for a flight that involves extended overwater operation unless appropriate weather reports or forecasts or any combination thereof, indicate that the weather conditions will be at or above the authorized minimums at the estimated time of arrival at any airport to which dispatched or released or to any required alternate airport.

(b) Each certificate holder conducting a flag or supplemental operation or a domestic operation within the State of Alaska shall conduct extended overwater operations under IFR unless it shows that operating under IFR is not necessary for safety.

(c) Each certificate holder conducting a flag or supplemental operation or a domestic operation within the State of Alaska shall conduct other overwater operations under IFR if the Administrator determines that operation under IFR is necessary for safety.

(d) Each authorization to conduct extended overwater operations under VFR and each requirement to conduct other overwater operations under IFR will be specified in the certificate holder's operations specifications.

[Doc. No. 6258, 29 FR 19222, Dec. 31, 1964, as amended by Amdt. 121–33, 32 FR 13912, Oct. 6, 1967; Amdt. 121–253, 61 FR 2614, Jan. 26, 1996]

§ 121.617 Alternate airport for departure.

(a) If the weather conditions at the airport of takeoff are below the landing minimums in the certificate holder's operations specifications for that airport, no person may dispatch or release an aircraft from that airport unless the dispatch or flight release specifies an alternate airport located within the following distances from the airport of takeoff:

(1) *Aircraft having two engines.* Not more than one hour from the departure airport at normal cruising speed in still air with one engine inoperative.

(2) *Aircraft having three or more engines.* Not more than two hours from the departure airport at normal cruising speed in still air with one engine inoperative.

(b) For the purpose of paragraph (a) of this section, the alternate airport weather conditions must meet the requirements of the certificate holder's operations specifications.

(c) No person may dispatch or release an aircraft from an airport unless he lists each required alternate airport in the dispatch or flight release.

§ 121.619 Alternate airport for destination: IFR or over-the-top: Domestic operations.

(a) No person may dispatch an airplane under IFR or over-the-top unless he lists at least one alternate airport for each destination airport in the dispatch release. When the weather conditions forecast for the destination and first alternate airport are marginal at least one additional alternate must be designated. However, no alternate airport is required if for at least 1 hour

before and 1 hour after the estimated time of arrival at the destination airport the appropriate weather reports or forecasts, or any combination of them, indicate—

(1) The ceiling will be at least 2,000 feet above the airport elevation; and

(2) Visibility will be at least 3 miles.

(b) For the purposes of paragraph (a) of this section, the weather conditions at the alternate airport must meet the requirements of § 121.625.

(c) No person may dispatch a flight unless he lists each required alternate airport in the dispatch release.

[Doc. No. 6258, 29 FR 19222, Dec. 31, 1964, as amended by Amdt. 121–159, 45 FR 41594, June 19, 1980]

§ 121.621 Alternate airport for destination: Flag operations.

(a) No person may dispatch an airplane under IFR or over-the-top unless he lists at least one alternate airport for each destination airport in the dispatch release, unless—

(1) The flight is scheduled for not more than 6 hours and, for at least 1 hour before and 1 hour after the estimated time of arrival at the destination airport, the appropriate weather reports or forecasts, or any combination of them, indicate the ceiling will be:

(i) At least 1,500 feet above the lowest circling MDA, if a circling approach is required and authorized for that airport; or

(ii) At least 1,500 feet above the lowest published instrument approach minimum or 2,000 feet above the airport elevation, whichever is greater; and

(iii) The visibility at that airport will be at least 3 miles, or 2 miles more than the lowest applicable visibility minimums, whichever is greater, for the instrument approach procedures to be used at the destination airport; or

(2) The flight is over a route approved without an available alternate airport for a particular destination airport and the airplane has enough fuel to meet the requirements of § 121.641(b) or § 121.645(c).

(b) For the purposes of paragraph (a) of this section, the weather conditions at the alternate airport must meet the requirements of the certificate holder's operations specifications.

(c) No person may dispatch a flight unless he lists each required alternate airport in the dispatch release.

[Doc. No. 6258, 29 FR 19222, Dec. 31, 1964, as amended by Amdt. 121–159, 45 FR 41594, June 19, 1980; Amdt. 121–253, 61 FR 2614, Jan. 26, 1996]

§ 121.623 Alternate airport for destination: IFR or over-the-top: Supplemental operations.

(a) Except as provided in paragraph (b) of this section, each person releasing an aircraft for operation under IFR or over-the-top shall list at least one alternate airport for each destination airport in the flight release.

(b) An alternate airport need not be designated for IFR or over-the-top operations where the aircraft carries enough fuel to meet the requirements of §§ 121.643 and 121.645 for flights outside the 48 contiguous States and the District of Columbia over routes without an available alternate airport for a particular airport of destination.

(c) For the purposes of paragraph (a) of this section, the weather requirements at the alternate airport must meet the requirements of the certificate holder's operations specifications.

(d) No person may release a flight unless he lists each required alternate airport in the flight release.

[Doc. No. 6258, 29 FR 19222, Dec. 31, 1964, as amended by Amdt. 121–253, 61 FR 2614, Jan. 26, 1996]

§ 121.624 ETOPS Alternate Airports.

(a) No person may dispatch or release an airplane for an ETOPS flight unless enough ETOPS Alternate Airports are listed in the dispatch or flight release such that the airplane remains within the authorized ETOPS maximum diversion time. In selecting these ETOPS Alternate Airports, the certificate holder must consider all adequate airports within the authorized ETOPS diversion time for the flight that meet the standards of this part.

(b) No person may list an airport as an ETOPS Alternate Airport in a dispatch or flight release unless, when it might be used (from the earliest to the latest possible landing time)—

(1) The appropriate weather reports or forecasts, or any combination thereof, indicate that the weather conditions will be at or above the ETOPS Alternate Airport minima specified in the certificate holder's operations specifications; and

(2) The field condition reports indicate that a safe landing can be made.

(c) Once a flight is en route, the weather conditions at each ETOPS Alternate Airport must meet the requirements of §121.631 (c).

(d) No person may list an airport as an ETOPS Alternate Airport in the dispatch or flight release unless that airport meets the public protection requirements of §121.97(b)(1)(ii).

[Doc. No. FAA–2002–6717, 72 FR 1881, Jan. 16, 2007]

§121.625 Alternate Airport weather minima.

Except as provided in §121.624 for ETOPS Alternate Airports, no person may list an airport as an alternate in the dispatch or flight release unless the appropriate weather reports or forecasts, or any combination thereof, indicate that the weather conditions will be at or above the alternate weather minima specified in the certificate holder's operations specifications for that airport when the flight arrives.

[Doc. No. FAA–2002–6717, 72 FR 1881, Jan. 16, 2007]

§121.627 Continuing flight in unsafe conditions.

(a) No pilot in command may allow a flight to continue toward any airport to which it has been dispatched or released if, in the opinion of the pilot in command or dispatcher (domestic and flag operations only), the flight cannot be completed safely; unless, in the opinion of the pilot in command, there is no safer procedure. In that event, continuation toward that airport is an emergency situation as set forth in §121.557.

(b) If any instrument or item of equipment required under this chapter for the particular operation becomes inoperative en route, the pilot in command shall comply with the approved procedures for such an occurrence as specified in the certificate holder's manual.

[Doc. No. 6258, 29 FR 1922, Dec. 31, 1964, as amended by Amdt. 121–222, 56 FR 12310, Mar. 22, 1991; Amdt. 121–253, 61 FR 2615, Jan. 26, 1996]

§121.628 Inoperable instruments and equipment.

(a) No person may take off an airplane with inoperable instruments or equipment installed unless the following conditions are met:

(1) An approved Minimum Equipment List exists for that airplane.

(2) The certificate-holding district office has issued the certificate holder operations specifications authorizing operations in accordance with an approved Minimum Equipment List. The flight crew shall have direct access at all times prior to flight to all of the information contained in the approved Minimum Equipment List through printed or other means approved by the Administrator in the certificate holders operations specifications. An approved Minimum Equipment List, as authorized by the operations specifications, constitutes an approved change to the type design without requiring recertification.

(3) The approved Minimum Equipment List must:

(i) Be prepared in accordance with the limitations specified in paragraph (b) of this section.

(ii) Provide for the operation of the airplane with certain instruments and equipment in an inoperable condition.

(4) Records identifying the inoperable instruments and equipment and the information required by paragraph (a)(3)(ii) of this section must be available to the pilot.

(5) The airplane is operated under all applicable conditions and limitations contained in the Minimum Equipment List and the operations specifications authorizing use of the Minimum Equipment List.

(b) The following instruments and equipment may not be included in the Minimum Equipment List:

(1) Instruments and equipment that are either specifically or otherwise required by the airworthiness requirements under which the airplane is type certificated and which are essential for

safe operations under all operating conditions.

(2) Instruments and equipment required by an airworthiness directive to be in operable condition unless the airworthiness directive provides otherwise.

(3) Instruments and equipment required for specific operations by this part.

(c) Notwithstanding paragraphs (b)(1) and (b)(3) of this section, an airplane with inoperable instruments or equipment may be operated under a special flight permit under §§ 21.197 and 21.199 of this chapter.

[Doc. No. 25780, 56 FR 12310, Mar. 22, 1991; Amdt. 121–222, 56 FR 14290, Apr. 8, 1991; Amdt. 121–253, 61 FR 2615, Jan. 26, 1996]

§ 121.629 Operation in icing conditions.

(a) No person may dispatch or release an aircraft, continue to operate an aircraft en route, or land an aircraft when in the opinion of the pilot in command or aircraft dispatcher (domestic and flag operations only), icing conditions are expected or met that might adversely affect the safety of the flight.

(b) No person may take off an aircraft when frost, ice, or snow is adhering to the wings, control surfaces, propellers, engine inlets, or other critical surfaces of the aircraft or when the takeoff would not be in compliance with paragraph (c) of this section. Takeoffs with frost under the wing in the area of the fuel tanks may be authorized by the Administrator.

(c) Except as provided in paragraph (d) of this section, no person may dispatch, release, or take off an aircraft any time conditions are such that frost, ice, or snow may reasonably be expected to adhere to the aircraft, unless the certificate holder has an approved ground deicing/anti-icing program in its operations specifications and unless the dispatch, release, and takeoff comply with that program. The approved ground deicing/anti-icing program must include at least the following items:

(1) A detailed description of—

(i) How the certificate holder determines that conditions are such that frost, ice, or snow may reasonably be expected to adhere to the aircraft and that ground deicing/anti-icing operational procedures must be in effect;

(ii) Who is responsible for deciding that ground deicing/anti-icing operational procedures must be in effect;

(iii) The procedures for implementing ground deicing/anti-icing operational procedures;

(iv) The specific duties and responsibilities of each operational position or group responsible for getting the aircraft safely airborne while ground deicing/anti-icing operational procedures are in effect.

(2) Initial and annual recurrent ground training and testing for flight crewmembers and qualification for all other affected personnel (e.g., aircraft dispatchers, ground crews, contract personnel) concerning the specific requirements of the approved program and each person's responsibilities and duties under the approved program, specifically covering the following areas:

(i) The use of holdover times.

(ii) Aircraft deicing/anti-icing procedures, including inspection and check procedures and responsibilities.

(iii) Communications procedures.

(iv) Aircraft surface contamination (i.e., adherence of frost, ice, or snow) and critical area identification, and how contamination adversely affects aircraft performance and flight characteristics.

(v) Types and characteristics of deicing/anti-icing fluids.

(vi) Cold weather preflight inspection procedures;

(vii) Techniques for recognizing contamination on the aircraft.

(3) The certificate holder's holdover timetables and the procedures for the use of these tables by the certificate holder's personnel. Holdover time is the estimated time deicing/anti-icing fluid will prevent the formation of frost or ice and the accumulation of snow on the protected surfaces of an aircraft. Holdover time begins when the final application of deicing/anti-icing fluid commences and expires when the deicing/anti-icing fluid applied to the aircraft loses its effectiveness. The holdover times must be supported by data acceptable to the Administrator. The certificate holder's program must include procedures for

flight crewmembers to increase or decrease the determined holdover time in changing conditions. The program must provide that takeoff after exceeding any maximum holdover time in the certificate holder's holdover timetable is permitted only when at least one of the following conditions exists:

(i) A pretakeoff contamination check, as defined in paragraph (c)(4) of this section, determines that the wings, control surfaces, and other critical surfaces, as defined in the certificate holder's program, are free of frost, ice, or snow.

(ii) It is otherwise determined by an alternate procedure approved by the Administrator in accordance with the certificate holder's approved program that the wings, control surfaces, and other critical surfaces, as defined in the certificate holder's program, are free of frost, ice, or snow.

(iii) The wings, control surfaces, and other critical surfaces are redeiced and a new holdover time is determined.

(4) Aircraft deicing/anti-icing procedures and responsibilities, pretakeoff check procedures and responsibilities, and pretakeoff contamination check procedures and responsibilities. A pretakeoff check is a check of the aircraft's wings or representative aircraft surfaces for frost, ice, or snow within the aircraft's holdover time. A pretakeoff contamination check is a check to make sure the wings, control surfaces, and other critical surfaces, as defined in the certificate holder's program, are free of frost, ice, and snow. It must be conducted within five minutes prior to beginning take off. This check must be accomplished from outside the aircraft unless the program specifies otherwise.

(d) A certificate holder may continue to operate under this section without a program as required in paragraph (c) of this section, if it includes in its operations specifications a requirement that, any time conditions are such that frost, ice, or snow may reasonably be expected to adhere to the aircraft, no aircraft will take off unless it has been checked to ensure that the wings, control surfaces, and other critical surfaces are free of frost, ice, and snow. The check must occur within five minutes prior to beginning takeoff. This check must be accomplished from outside the aircraft.

[Doc. No. 6258, 29 FR 19222, Dec. 31, 1964, as amended by Amdt. 121–231, 57 FR 44942, Sept. 29, 1992; Amdt. 121–253, 61 FR 2615, Jan. 26, 1996]

§ 121.631 Original dispatch or flight release, redispatch or amendment of dispatch or flight release.

(a) A certificate holder may specify any regular, provisional, or refueling airport, authorized for the type of aircraft, as a destination for the purpose of original dispatch or release.

(b) No person may allow a flight to continue to an airport to which it has been dispatched or released unless the weather conditions at an alternate airport that was specified in the dispatch or flight release are forecast to be at or above the alternate minimums specified in the operations specifications for that airport at the time the aircraft would arrive at the alternate airport. However, the dispatch or flight release may be amended en route to include any alternate airport that is within the fuel range of the aircraft as specified in §§ 121.639 through 121.647.

(c) No person may allow a flight to continue beyond the ETOPS Entry Point unless—

(1) Except as provided in paragraph (d) of this section, the weather conditions at each ETOPS Alternate Airport required by § 121.624 are forecast to be at or above the operating minima for that airport in the certificate holder's operations specifications when it might be used (from the earliest to the latest possible landing time); and

(2) All ETOPS Alternate Airports within the authorized ETOPS maximum diversion time are reviewed and the flight crew advised of any changes in conditions that have occurred since dispatch.

(d) If paragraph (c)(1) of this section cannot be met for a specific airport, the dispatch or flight release may be amended to add an ETOPS Alternate Airport within the maximum ETOPS diversion time that could be authorized for that flight with weather conditions at or above operating minima.

(e) Before the ETOPS Entry Point, the pilot in command for a supplemental operator or a dispatcher for a

flag operator must use company communications to update the flight plan if needed because of a re-evaluation of aircraft system capabilities.

(f) No person may change an original destination or alternate airport that is specified in the original dispatch or flight release to another airport while the aircraft is en route unless the other airport is authorized for that type of aircraft and the appropriate requirements of §§121.593 through 121.661 and 121.173 are met at the time of redispatch or amendment of the flight release.

(g) Each person who amends a dispatch or flight release en route shall record that amendment.

[Doc. No. 628, 29 FR 19222, Dec. 31, 1964, as amended by Amdt. 121–65, 35 FR 12709, Aug. 11, 1970; Amdt. 121–329, 72 FR 1881, Jan. 16, 2007]

§ 121.633 Considering time-limited systems in planning ETOPS alternates.

(a) For ETOPS up to and including 180 minutes, no person may list an airport as an ETOPS Alternate Airport in a dispatch or flight release if the time needed to fly to that airport (at the approved one-engine inoperative cruise speed under standard conditions in still air) would exceed the approved time for the airplane's most limiting ETOPS Significant System (including the airplane's most limiting fire suppression system time for those cargo and baggage compartments required by regulation to have fire-suppression systems) minus 15 minutes.

(b) For ETOPS beyond 180 minutes, no person may list an airport as an ETOPS Alternate Airport in a dispatch or flight release if the time needed to fly to that airport:

(1) at the all engine operating cruise speed, corrected for wind and temperature, exceeds the airplane's most limiting fire suppression system time minus 15 minutes for those cargo and baggage compartments required by regulation to have fire suppression systems (except as provided in paragraph (c) of this section), or

(2) at the one-engine-inoperative cruise speed, corrected for wind and temperature, exceeds the airplane's most limiting ETOPS Significant System time (other than the airplane's most limiting fire suppression system time minus 15 minutes for those cargo and baggage compartments required by regulation to have fire-suppression systems).

(c) For turbine-engine powered airplanes with more than two engines, the certificate holder need not meet paragraph (b)(1) of this section until February 15, 2013.

[Doc. No. FAA–2002–6717, 72 FR 1882, Jan. 16, 2007]

§ 121.635 Dispatch to and from refueling or provisional airports: Domestic and flag operations.

No person may dispatch an airplane to or from a refueling or provisional airport except in accordance with the requirements of this part applicable to dispatch from regular airports and unless that airport meets the requirements of this part applicable to regular airports.

[Doc. No. 16383, 43 FR 22649, May 25, 1978]

§ 121.637 Takeoffs from unlisted and alternate airports: Domestic and flag operations.

(a) No pilot may takeoff an airplane from an airport that is not listed in the operations specifications unless—

(1) The airport and related facilities are adequate for the operation of the airplane;

(2) He can comply with the applicable airplane operating limitations;

(3) The airplane has been dispatched according to dispatching rules applicable to operation from an approved airport; and

(4) The weather conditions at that airport are equal to or better than the following:

(i) *Airports in the United States.* The weather minimums for takeoff prescribed in part 97 of this chapter; or where minimums are not prescribed for the airport, 800–2, 900–1½, or 1,000–1.

(ii) *Airports outside the United States.* The weather minimums for takeoff prescribed or approved by the government of the country in which the airport is located; or where minimums are not prescribed or approved for the airport, 800–2, 900–1½, or 1,000–1.

(b) No pilot may take off from an alternate airport unless the weather conditions are at least equal to the minimums prescribed in the certificate holder's operations specifications for alternate airports.

[Doc. No. 6258, 29 FR 19222, Dec. 31, 1964, as amended by Amdt. 121–33, 32 FR 13912, Oct. 6, 1967; Amdt. 121–253, 61 FR 2615, Jan. 26, 1996]

§ 121.639 Fuel supply: All domestic operations.

No person may dispatch or take off an airplane unless it has enough fuel—

(a) To fly to the airport to which it is dispatched;

(b) Thereafter, to fly to and land at the most distant alternate airport (where required) for the airport to which dispatched; and

(c) Thereafter, to fly for 45 minutes at normal cruising fuel consumption or, for certificate holders who are authorized to conduct day VFR operations in their operations specifications and who are operating nontransport category airplanes type certificated after December 31, 1964, to fly for 30 minutes at normal cruising fuel consumption for day VFR operations.

[Doc. No. 6258, 29 FR 19222, Dec. 31, 1964, by Amdt. 121–251, 60 FR 65935, Dec. 20, 1995]

§ 121.641 Fuel supply: Nonturbine and turbo-propeller-powered airplanes: Flag operations.

(a) No person may dispatch or take off a nonturbine or turbo-propeller-powered airplane unless, considering the wind and other weather conditions expected, it has enough fuel—

(1) To fly to and land at the airport to which it is dispatched;

(2) Thereafter, to fly to and land at the most distant alternate airport specified in the dispatch release; and

(3) Thereafter, to fly for 30 minutes plus 15 percent of the total time required to fly at normal cruising fuel consumption to the airports specified in paragraphs (a) (1) and (2) of this section or to fly for 90 minutes at normal cruising fuel consumption, whichever is less.

(b) No person may dispatch a nonturbine or turbo-propeller-powered airplane to an airport for which an alternate is not specified under §121.621(a)(2), unless it has enough fuel, considering wind and forecast weather conditions, to fly to that airport and thereafter to fly for three hours at normal cruising fuel consumption.

§ 121.643 Fuel supply: Nonturbine and turbo-propeller-powered airplanes: Supplemental operations.

(a) Except as provided in paragraph (b) of this section, no person may release for flight or takeoff a nonturbine or turbo-propeller-powered airplane unless, considering the wind and other weather conditions expected, it has enough fuel—

(1) To fly to and land at the airport to which it is released;

(2) Thereafter, to fly to and land at the most distant alternate airport specified in the flight release; and

(3) Thereafter, to fly for 45 minutes at normal cruising fuel consumption or, for certificate holders who are authorized to conduct day VFR operations in their operations specifications and who are operating nontransport category airplanes type certificated after December 31, 1964, to fly for 30 minutes at normal cruising fuel consumption for day VFR operations.

(b) If the airplane is released for any flight other than from one point in the contiguous United States to another point in the contiguous United States, it must carry enough fuel to meet the requirements of paragraphs (a) (1) and (2) of this section and thereafter fly for 30 minutes plus 15 percent of the total time required to fly at normal cruising fuel consumption to the airports specified in paragraphs (a) (1) and (2) of this section, or to fly for 90 minutes at normal cruising fuel consumption, whichever is less.

(c) No person may release a nonturbine or turbo-propeller-powered airplane to an airport for which an alternate is not specified under §121.623(b), unless it has enough fuel, considering wind and other weather conditions expected, to fly to that airport and thereafter to fly for three hours at normal cruising fuel consumption.

[Doc. No. 6258, 29 FR 19222, Dec. 31, 1964, as amended by Amdt. 121–10, 30 FR 10025, Aug. 12, 1965; Amdt. 121–251, 60 FR 65935, Dec. 20, 1995]

§ 121.645 Fuel supply: Turbine-engine powered airplanes, other than turbo propeller: Flag and supplemental operations.

(a) Any flag operation within the 48 contiguous United States and the District of Columbia may use the fuel requirements of § 121.639.

(b) For any certificate holder conducting flag or supplemental operations outside the 48 contiguous United States and the District of Columbia, unless authorized by the Administrator in the operations specifications, no person may release for flight or takeoff a turbine-engine powered airplane (other than a turbo-propeller powered airplane) unless, considering wind and other weather conditions expected, it has enough fuel—

(1) To fly to and land at the airport to which it is released;

(2) After that, to fly for a period of 10 percent of the total time required to fly from the airport of departure to, and land at, the airport to which it was released;

(3) After that, to fly to and land at the most distant alternate airport specified in the flight release, if an alternate is required; and

(4) After that, to fly for 30 minutes at holding speed at 1,500 feet above the alternate airport (or the destination airport if no alternate is required) under standard temperature conditions.

(c) No person may release a turbine-engine powered airplane (other than a turbo-propeller airplane) to an airport for which an alternate is not specified under § 121.621(a)(2) or § 121.623(b) unless it has enough fuel, considering wind and other weather conditions expected, to fly to that airport and thereafter to fly for at least two hours at normal cruising fuel consumption.

(d) The Administrator may amend the operations specifications of a certificate holder conducting flag or supplemental operations to require more fuel than any of the minimums stated in paragraph (a) or (b) of this section if he finds that additional fuel is necessary on a particular route in the interest of safety.

(e) For a supplemental operation within the 48 contiguous States and the District of Columbia with a turbine engine powered airplane the fuel requirements of § 121.643 apply.

[Doc. No. 6258, 29 FR 19222, Dec. 31, 1964, as amended by Amdt. 121–10, 30 FR 10025, Aug. 12, 1965; Amdt. 121–144, 43 FR 22649, May 25, 1978; Amdt. 121–253, 61 FR 2615, Jan. 26, 1996]

§ 121.646 En-route fuel supply: flag and supplemental operations.

(a) No person may dispatch or release for flight a turbine-engine powered airplane with more than two engines for a flight more than 90 minutes (with all engines operating at cruise power) from an Adequate Airport unless the following fuel supply requirements are met:

(1) The airplane has enough fuel to meet the requirements of § 121.645(b);

(2) The airplane has enough fuel to fly to the Adequate Airport—

(i) Assuming a rapid decompression at the most critical point;

(ii) Assuming a descent to a safe altitude in compliance with the oxygen supply requirements of § 121.333; and

(iii) Considering expected wind and other weather conditions.

(3) The airplane has enough fuel to hold for 15 minutes at 1500 feet above field elevation and conduct a normal approach and landing.

(b) No person may dispatch or release for flight an ETOPS flight unless, considering wind and other weather conditions expected, it has the fuel otherwise required by this part and enough fuel to satisfy each of the following requirements:

(1) Fuel to fly to an ETOPS Alternate Airport.

(i) Fuel to account for rapid decompression and engine failure. The airplane must carry the greater of the following amounts of fuel:

(A) Fuel sufficient to fly to an ETOPS Alternate Airport assuming a rapid decompression at the most critical point followed by descent to a safe altitude in compliance with the oxygen supply requirements of § 121.333 of this chapter;

(B) Fuel sufficient to fly to an ETOPS Alternate Airport (at the one-engine-inoperative cruise speed) assuming a rapid decompression and a simultaneous engine failure at the most critical point followed by descent to a safe altitude in compliance with the

oxygen requirements of §121.133 of this chapter; or

(C) Fuel sufficient to fly to an ETOPS Alternate Airport (at the one engine inoperative cruise speed) assuming an engine failure at the most critical point followed by descent to the one engine inoperative cruise altitude.

(ii) Fuel to account for errors in wind forecasting. In calculating the amount of fuel required by paragraph (b)(1)(i) of this section, the certificate holder must increase the actual forecast wind speed by 5% (resulting in an increase in headwind or a decrease in tailwind) to account for any potential errors in wind forecasting. If a certificate holder is not using the actual forecast wind based on a wind model accepted by the FAA, the airplane must carry additional fuel equal to 5% of the fuel required for paragraph (b)(1)(i) of this section, as reserve fuel to allow for errors in wind data.

(iii) Fuel to account for icing. In calculating the amount of fuel required by paragraph (b)(1)(i) of this section (after completing the wind calculation in paragraph (b)(1)(ii) of this section), the certificate holder must ensure that the airplane carries the greater of the following amounts of fuel in anticipation of possible icing during the diversion:

(A) Fuel that would be burned as a result of airframe icing during 10 percent of the time icing is forecast (including the fuel used by engine and wing anti-ice during this period).

(B) Fuel that would be used for engine anti-ice, and if appropriate wing anti-ice, for the entire time during which icing is forecast.

(iv) Fuel to account for engine deterioration. In calculating the amount of fuel required by paragraph (b)(1)(i) of this section (after completing the wind calculation in paragraph (b)(1)(ii) of this section), the airplane also carries fuel equal to 5% of the fuel specified above, to account for deterioration in cruise fuel burn performance unless the certificate holder has a program to monitor airplane in-service deterioration to cruise fuel burn performance.

(2) Fuel to account for holding, approach, and landing. In addition to the fuel required by paragraph (b)(1) of this section, the airplane must carry fuel sufficient to hold at 1500 feet above field elevation for 15 minutes upon reaching an ETOPS Alternate Airport and then conduct an instrument approach and land.

(3) Fuel to account for APU use. If an APU is a required power source, the certificate holder must account for its fuel consumption during the appropriate phases of flight.

[Doc. No. FAA–2002–6717, 72 FR 1882, Jan. 16, 2007]

§121.647 Factors for computing fuel required.

Each person computing fuel required for the purposes of this subpart shall consider the following:

(a) Wind and other weather conditions forecast.

(b) Anticipated traffic delays.

(c) One instrument approach and possible missed approach at destination.

(d) Any other conditions that may delay landing of the aircraft.

For the purposes of this section, required fuel is in addition to unusable fuel.

§121.649 Takeoff and landing weather minimums: VFR: Domestic operations.

(a) Except as provided in paragraph (b) of this section, regardless of any clearance from ATC, no pilot may takeoff or land an airplane under VFR when the reported ceiling or visibility is less than the following:

(1) For day operations—1,000-foot ceiling and one-mile visibility.

(2) For night operations—1,000-foot ceiling and two-mile visibility.

(b) Where a local surface restriction to visibility exists (e.g., smoke, dust, blowing snow or sand) the visibility for day and night operations may be reduced to ½ mile, if all turns after takeoff and prior to landing, and all flight beyond one mile from the airport boundary can be accomplished above or outside the area of local surface visibility restriction.

(c) The weather minimums in this section do not apply to the VFR operation of fixed-wing aircraft at any of the locations where the special weather minimums of §91.157 of this chapter are not applicable (See part 91, appendix D, section 3 of this chapter). The basic

VFR weather minimums of §91.155 of this chapter apply at those locations.

[Doc. No. 6258, 29 FR 19222, Dec. 31, 1964 as amended by Amdt. 121–39, 33 FR 4097, Mar. 2, 1968; Amdt. 121–206, 54 FR 34331, Aug. 18, 1989; Amdt. 121–226, 56 FR 65663, Dec. 17, 1991]

§ 121.651 Takeoff and landing weather minimums: IFR: All certificate holders.

(a) Notwithstanding any clearance from ATC, no pilot may begin a takeoff in an airplane under IFR when the weather conditions reported by the U.S. National Weather Service, a source approved by that Service, or a source approved by the Administrator, are less than those specified in—

(1) The certificate holder's operations specifications; or

(2) Parts 91 and 97 of this chapter, if the certificate holder's operations specifications do not specify takeoff minimums for the airport.

(b) Except as provided in paragraph (d) of this section, no pilot may continue an approach past the final approach fix, or where a final approach fix is not used, begin the final approach segment of an instrument approach procedure—

(1) At any airport, unless the U.S. National Weather Service, a source approved by that Service, or a source approved by the Administrator, issues a weather report for that airport; and

(2) At airports within the United States and its territories or at U.S. military airports, unless the latest weather report for that airport issued by the U.S. National Weather Service, a source approved by that Service, or a source approved by the Administrator, reports the visibility to be equal to or more than the visibility minimums prescribed for that procedure. For the purpose of this section, the term ''U.S. military airports'' means airports in foreign countries where flight operations are under the control of U.S. military authority.

(c) If a pilot has begun the final approach segment of an instrument approach procedure in accordance with paragraph (b) of this section, and after that receives a later weather report indicating below-minimum conditions, the pilot may continue the approach to DA/DH or MDA. Upon reaching DA/DH or at MDA, and at any time before the missed approach point, the pilot may continue the approach below DA/DH or MDA if either the requirements of §91.175(l) of this chapter, or the following requirements are met:

(1) The aircraft is continuously in a position from which a descent to a landing on the intended runway can be made at a normal rate of descent using normal maneuvers, and where that descent rate will allow touchdown to occur within the touchdown zone of the runway of intended landing;

(2) The flight visibility is not less than the visibility prescribed in the standard instrument approach procedure being used;

(3) Except for Category II or Category III approaches where any necessary visual reference requirements are specified by authorization of the Administrator, at least one of the following visual references for the intended runway is distinctly visible and identifiable to the pilot:

(i) The approach light system, except that the pilot may not descend below 100 feet above the touchdown zone elevation using the approach lights as a reference unless the red terminating bars or the red side row bars are also distinctly visible and identifiable.

(ii) The threshold.

(iii) The threshold markings.

(iv) The threshold lights.

(v) The runway end identifier lights.

(vi) The visual approach slope indicator.

(vii) The touchdown zone or touchdown zone markings.

(viii) The touchdown zone lights.

(ix) The runway or runway markings.

(x) The runway lights; and

(4) When the aircraft is on a straight-in nonprecision approach procedure which incorporates a visual descent point, the aircraft has reached the visual descent point, except where the aircraft is not equipped for or capable of establishing that point, or a descent to the runway cannot be made using normal procedures or rates of descent if descent is delayed until reaching that point.

(d) A pilot may begin the final approach segment of an instrument approach procedure other than a Category II or Category III procedure at

an airport when the visibility is less than the visibility minimums prescribed for that procedure if that airport is served by an operative ILS and an operative PAR, and both are used by the pilot. However, no pilot may continue an approach below the authorized DA/DH unless the requirements of §91.175(l) of this chapter, or the following requirements are met:

(1) The aircraft is continuously in a position from which a descent to a landing on the intended runway can be made at a normal rate of descent using normal maneuvers and where such a descent rate will allow touchdown to occur within the touchdown zone of the runway of intended landing;

(2) The flight visibility is not less than the visibility prescribed in the standard instrument approach procedure being used; and

(3) Except for Category II or Category III approaches where any necessary visual reference requirements are specified by the authorization of the Administrator, at least one of the following visual references for the intended runway is distinctly visible and identifiable to the pilot:

(i) The approach light system, except that the pilot may not descend below 100 feet above the touchdown zone elevation using the approach lights as a reference unless the red terminating bars or the red side row bars are also distinctly visible and identifiable.

(ii) The threshold.

(iii) The threshold markings.

(iv) The threshold lights.

(v) The runway end identifier lights.

(vi) The visual approach slope indicator.

(vii) The touchdown zone or touchdown zone markings.

(viii) The touchdown zone lights.

(ix) The runway or runway markings.

(x) The runway lights.

(e) For the purpose of this section, the final approach segment begins at the final approach fix or facility prescribed in the instrument approach procedure. When a final approach fix is not prescribed for a procedure that includes a procedure turn, the final approach segment begins at the point where the procedure turn is completed and the aircraft is established inbound toward the airport on the final approach course within the distance prescribed in the procedure.

(f) Unless otherwise authorized in the certificate holder's operations specifications, each pilot making an IFR takeoff, approach, or landing at a foreign airport shall comply with the applicable instrument approach procedures and weather minimums prescribed by the authority having jurisdiction over the airport.

[Doc. No. 20060, 46 FR 2291, Jan. 8, 1981, as amended by Amdt. 121–303, 69 FR 1641, Jan. 9, 2004; Amdt. 121–333, 72 FR 31682, June 7, 2007]

§121.652 Landing weather minimums: IFR: All certificate holders.

(a) If the pilot in command of an airplane has not served 100 hours as pilot in command in operations under this part in the type of airplane he is operating, the MDA or DA/DH and visibility landing minimums in the certificate holder's operations specification for regular, provisional, or refueling airports are increased by 100 feet and one-half mile (or the RVR equivalent). The MDA or DA/DH and visibility minimums need not be increased above those applicable to the airport when used as an alternate airport, but in no event may the landing minimums be less than 300 and 1. However, a Pilot in command employed by a certificate holder conducting operations in large aircraft under part 135 of this chapter, may credit flight time acquired in operations conducted for that operator under part 91 in the same type airplane for up to 50 percent of the 100 hours of pilot in command experience required by this paragraph.

(b) The 100 hours of pilot in command experience required by paragraph (a) of this section may be reduced (not to exceed 50 percent) by substituting one landing in operations under this part in the type of airplane for 1 required hour of pilot in command experience, if the pilot has at least 100 hours as pilot in command of another type airplane in operations under this part.

(c) Category II minimums and the sliding scale when authorized in the certificate holder's operations specifications do not apply until the pilot in command subject to paragraph (a) of this section meets the requirements of

that paragraph in the type of airplane he is operating.

[Doc. No. 7594, 33 FR 10843, July 31, 1968, as amended by Amdt. 121–143, 43 FR 22642, May 25, 1978; Amdt. 121–253, 61 FR 2615, Jan. 26, 1996; Amdt. 121–333, 72 FR 31682, June 7, 2007]

§ 121.653 [Reserved]

§ 121.655 Applicability of reported weather minimums.

In conducting operations under §§ 121.649 through 121.653, the ceiling and visibility values in the main body of the latest weather report control for VFR and IFR takeoffs and landings and for instrument approach procedures on all runways of an airport. However, if the latest weather report, including an oral report from the control tower, contains a visibility value specified as runway visibility or runway visual range for a particular runway of an airport, that specified value controls for VFR and IFR landings and takeoffs and straight-in instrument approaches for that runway.

§ 121.657 Flight altitude rules.

(a) *General.* Notwithstanding § 91.119 or any rule applicable outside the United States, no person may operate an aircraft below the minimums set forth in paragraphs (b) and (c) of this section, except when necessary for takeoff or landing, or except when, after considering the character of the terrain, the quality and quantity of meteorological services, the navigational facilities available, and other flight conditions, the Administrator prescribes other minimums for any route or part of a route where he finds that the safe conduct of the flight requires other altitudes. Outside of the United States the minimums prescribed in this section are controlling unless higher minimums are prescribed in the certificate holder's operations specifications or by the foreign country over which the aircraft is operating.

(b) *Day VFR operations.* No certificate holder conducting domestic operations may operate a passenger-carrying aircraft and no certificate holder conducting flag or supplemental operations may operate any aircraft under VFR during the day at an altitude less than 1,000 feet above the surface or less than 1,000 feet from any mountain, hill, or other obstruction to flight.

(c) *Night VFR, IFR, and over-the-top operations.* No person may operate an aircraft under IFR including over-the-top or at night under VFR at an altitude less than 1,000 feet above the highest obstacle within a horizontal distance of five miles from the center of the intended course, or, in designated mountainous areas, less than 2,000 feet above the highest obstacle within a horizontal distance of five miles from the center of the intended course.

(d) *Day over-the-top operations below minimum en route altitudes.* A person may conduct day over-the-top operations in an airplane at flight altitudes lower than the minimum en route IFR altitudes if—

(1) The operation is conducted at least 1,000 feet above the top of lower broken or overcast cloud cover;

(2) The top of the lower cloud cover is generally uniform and level;

(3) Flight visibility is at least five miles; and

(4) The base of any higher broken or overcast cloud cover is generally uniform and level and is at least 1,000 feet above the minimum en route IFR altitude for that route segment.

[Doc. No. 6258, 29 FR 19222, Dec. 31, 1964, as amended by Amdt. 121–144, 43 FR 22649, May 25, 1978; Amdt. 121–206, 54 FR 34331, Aug. 18, 1989; Amdt. 121–253, 61 FR 2615, Jan. 26, 1996]

§ 121.659 Initial approach altitude: Domestic and supplemental operations.

(a) Except as provided in paragraph (b) of this section, when making an initial approach to a radio navigation facility under IFR, no person may descend an aircraft below the pertinent minimum altitude for initial approach (as specified in the instrument approach procedure for that facility) until his arrival over that facility has been definitely established.

(b) When making an initial approach on a flight being conducted under § 121.657(d), no pilot may commence an instrument approach until his arrival over the radio facility has definitely been established. In making an instrument approach under these circumstances no person may descend an aircraft lower than 1,000 feet above the

top of the lower cloud or the minimum altitude determined by the Administrator for that part of the IFR approach, whichever is lower.

§ 121.661 Initial approach altitude: Flag operations.

When making an initial approach to a radio navigation facility under IFR, no person may descend below the pertinent minimum altitude for initial approach (as specified in the instrument approach procedure for that facility) until his arrival over that facility has been definitely established.

§ 121.663 Responsibility for dispatch release: Domestic and flag operations.

Each certificate holder conducting domestic or flag operations shall prepare a dispatch release for each flight between specified points, based on information furnished by an authorized aircraft dispatcher. The pilot in command and an authorized aircraft dispatcher shall sign the release only if they both believe that the flight can be made with safety. The aircraft dispatcher may delegate authority to sign a release for a particular flight, but he may not delegate his authority to dispatch.

[Doc. No. 28154, 61 FR 2615, Jan. 26, 1996]

§ 121.665 Load manifest.

Each certificate holder is responsible for the preparation and accuracy of a load manifest form before each takeoff. The form must be prepared and signed for each flight by employees of the certificate holder who have the duty of supervising the loading of aircraft and preparing the load manifest forms or by other qualified persons authorized by the certificate holder.

§ 121.667 Flight plan: VFR and IFR: Supplemental operations.

(a) No person may take off an aircraft unless the pilot in command has filed a flight plan, containing the appropriate information required by part 91, with the nearest FAA communication station or appropriate military station or, when operating outside the United States, with other appropriate authority. However, if communications facilities are not readily available, the pilot in command shall file the flight plan as soon as practicable after the aircraft is airborne. A flight plan must continue in effect for all parts of the flight.

(b) When flights are operated into military airports, the arrival or completion notice required by §§ 91.153 and 91.169 may be filed with the appropriate airport control tower or aeronautical communication facility used for that airport.

[Doc. No. 6258, 29 FR 19222, Dec. 31, 1964 as amended by Amdt. 121–206, 54 FR 34331, Aug. 18, 1989]

Subpart V—Records and Reports

SOURCE: Docket No. 6258, 29 FR 19226, Dec. 31, 1964, unless otherwise noted.

§ 121.681 Applicability.

This subpart prescribes requirements for the preparation and maintenance of records and reports for all certificate holders.

§ 121.683 Crewmember and dispatcher record.

(a) Each certificate holder shall—

(1) Maintain current records of each crewmember and each aircraft dispatcher (domestic and flag operations only) that show whether the crewmember or aircraft dispatcher complies with the applicable sections of this chapter, including, but not limited to, proficiency and route checks, airplane and route qualifications, training, any required physical examinations, flight, duty, and rest time records; and

(2) Record each action taken concerning the release from employment or physical or professional disqualification of any flight crewmember or aircraft dispatcher (domestic and flag operations only) and keep the record for at least six months thereafter.

(b) Each certificate holder conducting supplemental operations shall maintain the records required by paragraph (a) of this section at its principal base of operations, or at another location used by it and approved by the Administrator.

(c) Computer record systems approved by the Administrator may be

used in complying with the requirements of paragraph (a) of this section.

[Doc. No. 6258, 29 FR 19226, Dec. 31, 1964, as amended by Amdt. 121–144, 43 FR 22649, May 25, 1978; Amdt. 121–241, 59 FR 42993, Aug. 19, 1994; Amdt. 121–253, 61 FR 2615, Jan. 26, 1996]

§ 121.685 Aircraft record: Domestic and flag operations.

Each certificate holder conducting domestic or flag operations shall maintain a current list of each aircraft that it operates in scheduled air transportation and shall send a copy of the record and each change to the certificate-holding district office. Airplanes of another certificate holder operated under an interchange agreement may be incorporated by reference.

[Doc. No. 28154, 61 FR 2615, Jan. 26, 1996]

§ 121.687 Dispatch release: Flag and domestic operations.

(a) The dispatch release may be in any form but must contain at least the following information concerning each flight:

(1) Identification number of the aircraft.

(2) Trip number.

(3) Departure airport, intermediate stops, destination airports, and alternate airports.

(4) A statement of the type of operation (e.g., IFR, VFR).

(5) Minimum fuel supply.

(6) For each flight dispatched as an ETOPS flight, the ETOPS diversion time for which the flight is dispatched.

(b) The dispatch release must contain, or have attached to it, weather reports, available weather forecasts, or a combination thereof, for the destination airport, intermediate stops, and alternate airports, that are the latest available at the time the release is signed by the pilot in command and dispatcher. It may include any additional available weather reports or forecasts that the pilot in command or the aircraft dispatcher considers necessary or desirable.

[Docket No. 6258, 29 FR 19226, Dec. 31, 1964, as amended by Amdt. 121–329, 72 FR 1883, Jan. 16, 2007]

§ 121.689 Flight release form: Supplemental operations.

(a) Except as provided in paragraph (c) of this section, the flight release may be in any form but must contain at least the following information concerning each flight:

(1) Company or organization name.

(2) Make, model, and registration number of the aircraft being used.

(3) Flight or trip number, and date of flight.

(4) Name of each flight crewmember, flight attendant, and pilot designated as pilot in command.

(5) Departure airport, destination airports, alternate airports, and route.

(6) Minimum fuel supply (in gallons or pounds).

(7) A statement of the type of operation (e.g., IFR, VFR).

(8) For each flight released as an ETOPS flight, the ETOPS diversion time for which the flight is released.

(b) The aircraft flight release must contain, or have attached to it, weather reports, available weather forecasts, or a combination thereof, for the destination airport, and alternate airports, that are the latest available at the time the release is signed. It may include any additional available weather reports or forecasts that the pilot in command considers necessary or desirable.

(c) Each certificate holder conducting domestic or flag operations under the rules of this part applicable to supplemental operations shall comply with the dispatch or flight release forms required for scheduled operations under this subpart.

[Doc. No. 6258, 29 FR 19226, Dec. 31, 1964, as amended by Amdt. 121–253, 61 FR 2615, Jan. 26, 1996; Amdt. 121–329, 72 FR 1883, Jan. 16, 2007]

§ 121.691 [Reserved]

§ 121.693 Load manifest: All certificate holders.

The load manifest must contain the following information concerning the loading of the airplane at takeoff time:

(a) The weight of the aircraft, fuel and oil, cargo and baggage, passengers and crewmembers.

(b) The maximum allowable weight for that flight that must not exceed the least of the following weights:

(1) Maximum allowable takeoff weight for the runway intended to be used (including corrections for altitude and gradient, and wind and temperature conditions existing at the takeoff time).

(2) Maximum takeoff weight considering anticipated fuel and oil consumption that allows compliance with applicable en route performance limitations.

(3) Maximum takeoff weight considering anticipated fuel and oil consumption that allows compliance with the maximum authorized design landing weight limitations on arrival at the destination airport.

(4) Maximum takeoff weight considering anticipated fuel and oil consumption that allows compliance with landing distance limitations on arrival at the destination and alternate airports.

(c) The total weight computed under approved procedures.

(d) Evidence that the aircraft is loaded according to an approved schedule that insures that the center of gravity is within approved limits.

(e) Names of passengers, unless such information is maintained by other means by the certificate holder.

[Doc. No. 6258, 29 FR 19226, Dec. 31, 1964, as amended by Amdt. 121–159, 45 FR 41595, June 19, 1980; Amdt. 121–253, 61 FR 2615, Jan. 26, 1996]

§ 121.695 Disposition of load manifest, dispatch release, and flight plans: Domestic and flag operations.

(a) The pilot in command of an airplane shall carry in the airplane to its destination—

(1) A copy of the completed load manifest (or information from it, except information concerning cargo and passenger distribution);

(2) A copy of the dispatch release; and

(3) A copy of the flight plan.

(b) The certificate holder shall keep copies of the records required in this section for at least three months.

[Doc. No. 6258, 29 FR 19226, Dec. 31, 1964, as amended by Amdt. 121–178, 47 FR 13316, Mar. 29, 1982; Amdt. 121–253, 61 FR 2616, Jan. 26, 1996]

§ 121.697 Disposition of load manifest, flight release, and flight plans: Supplemental operations.

(a) The pilot in command of an airplane shall carry in the airplane to its destination the original or a signed copy of the—

(1) Load manifest;

(2) Flight release;

(3) Airworthiness release;

(4) Pilot route certification; and

(5) Flight plan.

(b) If a flight originates at the certificate holder's principal base of operations, it shall retain at that base a signed copy of each document listed in paragraph (a) of this section.

(c) Except as provided in paragraph (d) of this section, if a flight originates at a place other than the certificate holder's principal base of operations, the pilot in command (or another person not aboard the airplane who is authorized by the certificate holder) shall, before or immediately after departure of the flight, mail signed copies of the documents listed in paragraph (a) of this section, to the principal base of operations.

(d) If a flight originates at a place other than the certificate holder's principal base of operations, and there is at that place a person to manage the flight departure for the certificate holder who does not himself or herself depart on the airplane, signed copies of the documents listed in paragraph (a) of this section may be retained at that place for not more than 30 days before being sent to the certificate holder's principal base of operations. However, the documents for a particular flight need not be further retained at that place or be sent to the principal base of operations, if the originals or other copies of them have been previously returned to the principal base of operations.

(e) The certificate holder conducting supplemental operations shall:

(1) Identify in its operations manual the person having custody of the copies of documents retained in accordance with paragraph (d) of this section; and

(2) Retain at its principal base of operations either an original or a copy of

the records required by this section for at least three months.

[Doc. No. 6258, 29 FR 19226, Dec. 31, 1964, as amended by Amdt. 121–123, 40 FR 44541, Sept. 29, 1975; Amdt. 121–143, 43 FR 22642, May 25, 1978; Amdt. 121–178, 47 FR 13316, Mar. 29, 1982; Amdt. 121–253, 61 FR 2616, Jan. 26, 1996]

§§ 121.698–121.699 [Reserved]

§ 121.701 Maintenance log: Aircraft.

(a) Each person who takes action in the case of a reported or observed failure or malfunction of an airframe, engine, propeller, or appliance that is critical to the safety of flight shall make, or have made, a record of that action in the airplane's maintenance log.

(b) Each certificate holder shall have an approved procedure for keeping adequate copies of the record required in paragraph (a) of this section in the airplane in a place readily accessible to each flight crewmember and shall put that procedure in the certificate holder's manual.

§ 121.703 Service difficulty reports.

(a) Each certificate holder shall report the occurrence or detection of each failure, malfunction, or defect concerning—

(1) Fires during flight and whether the related fire-warning system functioned properly;

(2) Fires during flight not protected by a related fire-warning system;

(3) False fire warning during flight;

(4) An engine exhaust system that causes damage during flight to the engine, adjacent structure, equipment, or components;

(5) An aircraft component that causes accumulation or circulation of smoke, vapor, or toxic or noxious fumes in the crew compartment or passenger cabin during flight;

(6) Engine shutdown during flight because of flameout;

(7) Engine shutdown during flight when external damage to the engine or airplane structure occurs;

(8) Engine shutdown during flight due to foreign object ingestion or icing;

(9) Engine shutdown during flight of more than one engine;

(10) A propeller feathering system or ability of the system to control overspeed during flight;

(11) A fuel or fuel-dumping system that affects fuel flow or causes hazardous leakage during flight;

(12) An unwanted landing gear extension or retraction, or an unwanted opening or closing of landing gear doors during flight;

(13) Brake system components that result in loss of brake actuating force when the airplane is in motion on the ground;

(14) Aircraft structure that requires major repair;

(15) Cracks, permanent deformation, or corrosion of aircraft structures, if more than the maximum acceptable to the manufacturer or the FAA;

(16) Aircraft components or systems that result in taking emergency actions during flight (except action to shut down an engine); and

(17) Emergency evacuation systems or components including all exit doors, passenger emergency evacuation lighting systems, or evacuation equipment that are found defective, or that fail to perform the intended functions during an actual emergency or during training, testing, maintenance, demonstrations, or inadvertent deployments.

(b) For the purpose of this section *during flight* means the period from the moment the aircraft leaves the surface of the earth on takeoff until it touches down on landing.

(c) In addition to the reports required by paragraph (a) of this section, each certificate holder shall report any other failure, malfunction, or defect in an aircraft that occurs or is detected at any time if, in its opinion, that failure, malfunction, or defect has endangered or may endanger the safe operation of an aircraft used by it.

(d) Each certificate holder shall submit each report required by this section, covering each 24-hour period beginning at 0900 local time of each day and ending at 0900 local time on the next day, to the FAA offices in Oklahoma City, Oklahoma. Each report of occurrences during a 24-hour period shall be submitted to the collection point within the next 96 hours. However, a report due on Saturday or Sunday may be submitted on the following

Monday, and a report due on a holiday may be submitted on the next work day.

(e) The certificate holder shall submit the reports required by this section on a form or in another format acceptable to the Administrator. The reports shall include the following information:

(1) Type and identification number of the aircraft.

(2) The name of the operator.

(3) The date, flight number, and stage during which the incident occurred (e.g., preflight, takeoff, climb, cruise, desent landing, and inspection).

(4) The emergency procedure effected (e.g., unscheduled landing and emergency descent).

(5) The nature of the failure, malfunction, or defect.

(6) Identification of the part and system involved, including available information pertaining to type designation of the major component and time since overhaul.

(7) Apparent cause of the failure, malfunction, or defect (e.g., wear, crack, design deficiency, or personnel error).

(8) Whether the part was repaired, replaced, sent to the manufacturer, or other action taken.

(9) Whether the aircraft was grounded.

(10) Other pertinent information necessary for more complete identification, determination of seriousness, or corrective action.

(f) A certificate holder that is also the holder of a Type Certificate (including a Supplemental Type Certificate), a Parts Manufacturer Approval, or a Technical Standard Order Authorization, or that is the licensee of a type certificate holder, need not report a failure, malfunction, or defect under this section if the failure, malfunction, or defect has been reported by it under §21.3 of this chapter or under the accident reporting provisions of 14 CFR part 830.

(g) No person may withhold a report required by this section even though all information required in this section is not available.

(h) When certificate holder gets additional information, including information from the manufacturer or other agency, concerning a report required by this section, it shall expeditiously submit it as a supplement to the first report and reference the date and place of submission of the first report.

[Doc. No. 6258, 29 FR 19226, Dec. 31, 1964, as amended by Doc. No. 8084, 32 FR 5770, Apr. 11, 1967; Amdt. 121–72, 35 FR 18188, Nov. 28, 1970; Amdt. 121–143, 43 FR 22642, May 25, 1978; Amdt. 121–178, 47 FR 13316, Mar. 29, 1982; Amdt. 121–187, 50 FR 32375, Aug. 9, 1985; Amdt. 121–195, 53 FR 8728, Mar. 16, 1988; Amdt. 121–251, 60 FR 65936, Dec. 20, 1995; Amdt. 121–319, 70 FR 76979, Dec. 29, 2005]

§121.705 Mechanical interruption summary report.

Each certificate holder shall submit to the Administrator, before the end of the 10th day of the following month, a summary report for the previous month of:

(a) Each interruption to a flight, unscheduled change of aircraft en route, or unscheduled stop or diversion from a route, caused by known or suspected mechanical difficulties or malfunctions that are not required to be reported under §121.703.

(b) The number of engines removed prematurely because of malfunction, failure or defect, listed by make and model and the aircraft type in which it was installed.

(c) The number of propeller featherings in flight, listed by type of propeller and engine and aircraft on which it was installed. Propeller featherings for training, demonstration, or flight check purposes need not be reported.

[Doc. No. 6258, 29 FR 19226, Dec. 31, 1964, as amended by Amdt. 121–10, 30 FR 10025, Aug. 12, 1965; Amdt. 121–319, 70 FR 76979, Dec. 29, 2005]

§121.707 Alteration and repair reports.

(a) Each certificate holder shall, promptly upon its completion, prepare a report of each major alteration or major repair of an airframe, aircraft engine, propeller, or appliance of an aircraft operated by it.

(b) The certificate holder shall submit a copy of each report of a major alteration to, and shall keep a copy of each report of a major repair available for inspection by, the representative of

the Administrator who is assigned to it.

§ 121.709 Airworthiness release or aircraft log entry.

(a) No certificate holder may operate an aircraft after maintenance, preventive maintenance or alterations are performed on the aircraft unless the certificate holder, or the person with whom the certificate holder arranges for the performance of the maintenance, preventive maintenance, or alterations, prepares or causes to be prepared—

(1) An airworthiness release; or

(2) An appropriate entry in the aircraft log.

(b) The airworthiness release or log entry required by paragraph (a) of this section must—

(1) Be prepared in accordance with the procedures set forth in the certificate holder's manual;

(2) Include a certification that—

(i) The work was performed in accordance with the requirements of the certificate holder's manual;

(ii) All items required to be inspected were inspected by an authorized person who determined that the work was satisfactorily completed;

(iii) No known condition exists that would make the airplane unairworthy; and

(iv) So far as the work performed is concerned, the aircraft is in condition for safe operation; and

(3) Be signed by an authorized certificated mechanic or repairman except that a certificated repairman may sign the release or entry only for the work for which he is employed and certificated.

(c) Notwithstanding paragraph (b)(3) of this section, after maintenance, preventive maintenance, or alterations performed by a repair station that is located outside the United States, the airworthiness release or log entry required by paragraph (a) of this section may be signed by a person authorized by that repair station.

(d) When an airworthiness release form is prepared the certificate holder must give a copy to the pilot in command and must keep a record thereof for at least 2 months.

(e) Instead of restating each of the conditions of the certification required by paragraph (b) of this section, the air carrier may state in its manual that the signature of an authorized certificated mechanic or repairman constitutes that certification.

[Doc. No. 6258, 29 FR 19226, Dec. 31, 1964, as amended by Amdt. 121–6, 30 FR 6432, May 8, 1965; Amdt. 121–21, 31 FR 10613, Aug. 9, 1966; Amdt. 121–286, 66 FR 41116, Aug. 6, 2001]

§ 121.711 Communication records: Domestic and flag operations.

Each certificate holder conducting domestic or flag operations shall record each en route radio contact between the certificate holder and its pilots and shall keep that record for at least 30 days.

[Doc. No. 28154, 61 FR 2616, Jan. 26, 1996]

§ 121.713 Retention of contracts and amendments: Commercial operators who conduct intrastate operations for compensation or hire.

(a) Each commercial operator who conducts intrastate operations for compensation or hire shall keep a copy of each written contract under which it provides services as a commercial operator for a period of at least 1 year after the date of execution of the contract. In the case of an oral contract, it shall keep a memorandum stating its elements, and of any amendments to it, for a period of at least one year after the execution of that contract or change.

(b) Each commercial operator who conducts intrastate operations for compensation or hire shall submit a financial report for the first 6 months of each fiscal year and another financial report for each complete fiscal year. If that person's operating certificate is suspended for more than 29 days, that person shall submit a financial report as of the last day of the month in which the suspension is terminated. The report required to be submitted by this section shall be submitted within 60 days of the last day of the period covered by the report and must include—

(1) A balance sheet that shows assets, liabilities, and net worth on the last day of the reporting period;

(2) The information required by §119.36 (e)(2), (e)(7), and (e)(8) of this chapter;

(3) An itemization of claims in litigation against the applicant, if any, as of the last day of the period covered by the report;

(4) A profit and loss statement with the separation of items relating to the applicant's commercial operator activities from his other business activities, if any; and

(5) A list of each contract that gave rise to operating income on the profit and loss statement, including the names and addresses of the contracting parties and the nature, scope, date, and duration of each contract.

[Doc. No. 28154, 60 FR 65936, Dec. 20, 1995, as amended by Amdt. 121–262, 62 FR 13257, Mar. 19, 1997]

Subpart W—Crewmember Certificate: International

§ 121.721 Applicability.

This section describes the certificates that were issued to United States citizens who were employed by air carriers at the time of issuance as flight crewmembers on United States registered aircraft engaged in international air commerce. The purpose of the certificate is to facilitate the entry and clearance of those crewmembers into ICAO contracting states. They were issued under Annex 9, as amended, to the Convention on International Civil Aviation.

[Doc. No. 28154, 61 FR 30435, June 14, 1996]

§ 121.723 Surrender of international crewmember certificate.

The holder of a certificate issued under this section, or the air carrier by whom the holder is employed, shall surrender the certificate for cancellation at the nearest FAA Flight Standards District Office at the termination of the holder's employment with that air carrier.

[Doc. No. 28154, 61 FR 30435, June 14, 1996]

Subpart X—Emergency Medical Equipment and Training

SOURCE: Docket No. FAA–2000–7119, 66 FR 19044, Apr. 12, 2001, unless otherwise noted.

§ 121.801 Applicability.

This subpart prescribes the emergency medical equipment and training requirements applicable to all certificate holders operating passenger-carrying airplanes under this part. Nothing in this subpart is intended to require certificate holders or its agents to provide emergency medical care or to establish a standard of care for the provision of emergency medical care.

§ 121.803 Emergency medical equipment.

(a) No person may operate a passenger-carrying airplane under this part unless it is equipped with the emergency medical equipment listed in this section.

(b) Each equipment item listed in this section—

(1) Must be inspected regularly in accordance with inspection periods established in the operations specifications to ensure its condition for continued serviceability and immediate readiness to perform its intended emergency purposes;

(2) Must be readily accessible to the crew and, with regard to equipment located in the passenger compartment, to passengers;

(3) Must be clearly identified and clearly marked to indicate its method of operation; and

(4) When carried in a compartment or container, must be carried in a compartment or container marked as to contents and the compartment or container, or the item itself, must be marked as to date of last inspection.

(c) For treatment of injuries, medical events, or minor accidents that might occur during flight time each airplane must have the following equipment that meets the specifications and requirements of appendix A of this part:

(1) Approved first-aid kits.

(2) In airplanes for which a flight attendant is required, an approved emergency medical kit.

(3) In airplanes for which a flight attendant is required, an approved emergency medical kit as modified effective April 12, 2004.

(4) In airplanes for which a flight attendant is required and with a maximum payload capacity of more than 7,500 pounds, an approved automated external defibrillator as of April 12, 2004.

§ 121.805 Crewmember training for in-flight medical events.

(a) Each training program must provide the instruction set forth in this section with respect to each airplane type, model, and configuration, each required crewmember, and each kind of operation conducted, insofar as appropriate for each crewmember and the certificate holder.

(b) Training must provide the following:

(1) Instruction in emergency medical event procedures, including coordination among crewmembers.

(2) Instruction in the location, function, and intended operation of emergency medical equipment.

(3) Instruction to familiarize crewmembers with the content of the emergency medical kit.

(4) Instruction to familiarize crewmembers with the content of the emergency medical kit as modified on April 12, 2004.

(5) For each flight attendant—

(i) Instruction, to include performance drills, in the proper use of automated external defibrillators.

(ii) Instruction, to include performance drills, in cardiopulmonary resuscitation.

(iii) Recurrent training, to include performance drills, in the proper use of an automated external defibrillators and in cardiopulmonary resuscitation at least once every 24 months.

(c) The crewmember instruction, performance drills, and recurrent training required under this section are not required to be equivalent to the expert level of proficiency attained by professional emergency medical personnel.

Subpart Y—Avanced Qualification Program

SOURCE: Docket No. FAA–2005–20750, 70 FR 54815, Sept. 16, 2005, unless otherwise noted.

§ 121.901 Purpose and eligibility.

(a) Contrary provisions of parts 61, 63, 65, 121, 135, and 142 of this chapter notwithstanding, this subpart provides for approval of an alternative method (known as ''Advanced Qualification Program'' or ''AQP'') for qualifying, training, certifying, and otherwise ensuring competency of crewmembers, aircraft dispatchers, other operations personnel, instructors, and evaluators who are required to be trained under parts 121 and 135 of this chapter.

(b) A certificate holder is eligible under this subpart if the certificate holder is required or elects to have an approved training program under §§ 121.401, 135.3(c), or 135.341 of this chapter.

(c) A certificate holder obtains approval of each proposed curriculum under this AQP as specified in § 121.909.

§ 121.903 General requirements for Advanced Qualification Programs.

(a) A curriculum approved under an AQP may include elements of existing training programs under part 121 and part 135 of this chapter. Each curriculum must specify the make, model, series or variant of aircraft and each crewmember position or other positions to be covered by that curriculum. Positions to be covered by the AQP must include all flight crewmember positions, flight instructors, and evaluators and may include other positions, such as flight attendants, aircraft dispatchers, and other operations personnel.

(b) Each certificate holder that obtains approval of an AQP under this subpart must comply with all the requirements of the AQP and this subpart instead of the corresponding provisions of parts 61, 63, 65, 121, or 135 of this chapter. However, each applicable requirement of parts 61, 63, 65, 121, or 135 of this chapter, including but not limited to practical test requirements, that is not specifically addressed in the AQP continues to apply to the certificate holder and to the individuals

being trained and qualified by the certificate holder. No person may be trained under an AQP unless that AQP has been approved by the FAA and the person complies with all the requirements of the AQP and this subpart.

(c) No certificate holder that conducts its training program under this subpart may use any person nor may any person serve in any duty position as a required crewmember, an aircraft dispatcher, an instructor, or an evaluator, unless that person has satisfactorily accomplished, in a training program approved under this subpart for the certificate holder, the training and evaluation of proficiency required by the AQP for that type airplane and duty position.

(d) All documentation and data required under this subpart must be submitted in a form and manner acceptable to the FAA.

(e) Any training or evaluation required under an AQP that is satisfactorily completed in the calendar month before or the calendar month after the calendar month in which it is due is considered to have been completed in the calendar month it was due.

§ 121.905 Confidential commercial information.

(a) Each certificate holder that claims that AQP information or data it is submitting to the FAA is entitled to confidential treatment under 5 U.S.C. 552(b)(4) because it constitutes confidential commercial information as described in 5 U.S.C. 552(b)(4), and should be withheld from public disclosure, must include its request for confidentiality with each submission.

(b) When requesting confidentiality for submitted information or data, the certificate holder must:

(1) If the information or data is transmitted electronically, embed the claim of confidentiality within the electronic record so the portions claimed to be confidential are readily apparent when received and reviewed.

(2) If the information or data is submitted in paper format, place the word ''CONFIDENTIAL'' on the top of each page containing information or data claimed to be confidential.

(3) Justify the basis for a claim of confidentiality under 5 U.S.C. 552(b)(4).

§ 121.907 Definitions.

The following definitions apply to this subpart:

Crew Resource Management (CRM) means the effective use of all the resources available to crewmembers, including each other, to achieve a safe and efficient flight.

Curriculum outline means a listing of each segment, module, lesson, and lesson element in a curriculum, or an equivalent listing acceptable to the FAA.

Evaluation of proficiency means a Line Operational Evaluation (LOE) or an equivalent evaluation under an AQP acceptable to the FAA.

Evaluator means a person who assesses or judges the performance of crewmembers, instructors, other evaluators, aircraft dispatchers, or other operations personnel.

First Look means the assessment of performance to determine proficiency on designated flight tasks before any briefing, training, or practice on those tasks is given in the training session for a continuing qualification curriculum. First Look is conducted during an AQP continuing qualification cycle to determine trends of degraded proficiency, if any, due in part to the length of the interval between training sessions.

Instructional systems development means a systematic methodology for developing or modifying qualification standards and associated curriculum content based on a documented analysis of the job tasks, skills, and knowledge required for job proficiency.

Job task listing means a listing of all tasks, subtasks, knowledge, and skills required for accomplishing the operational job.

Line Operational Evaluation (LOE) means a simulated line environment, the scenario content of which is designed to test integrating technical and CRM skills.

Line Operational Simulation (LOS) means a training or evaluation session, as applicable, that is conducted in a simulated line environment using equipment qualified and approved for its intended purpose in an AQP.

Planned hours means the estimated amount of time (as specified in a curriculum outline) that it takes a typical

student to complete a segment of instruction (to include all instruction, demonstration, practice, and evaluation, as appropriate, to reach proficiency).

Qualification standard means a statement of a minimum required performance, applicable parameters, criteria, applicable flight conditions, evaluation strategy, evaluation media, and applicable document references.

Qualification standards document means a single document containing all the qualification standards for an AQP together with a prologue that provides a detailed description of all facets of the evaluation process.

Special tracking means assigning a person to an augmented schedule of training, checking, or both.

Training session means a contiguously scheduled period devoted to training activities at a facility approved by the FAA for that purpose.

Variant means a specifically configured aircraft for which the FAA has identified training and qualifications that are significantly different from those applicable to other aircraft of the same make, model, and series.

§ 121.909 Approval of Advanced Qualification Program.

(a) *Approval process.* Application for approval of an AQP curriculum under this subpart is made, through the FAA office responsible for approval of the certificate holder's operations specifications, to the Manager of the Advanced Qualification Program.

(b) *Approval criteria.* Each AQP must have separate curriculums for indoctrination, qualification, and continuing qualification (including upgrade, transition, and requalification), as specified in §§ 121.911, 121.913, and 121.915. All AQP curriculums must be based on an instructional systems development methodology. This methodology must incorporate a thorough analysis of the certificate holder's operations, aircraft, line environment and job functions. All AQP qualification and continuing qualification curriculums must integrate the training and evaluation of CRM and technical skills and knowledge. An application for approval of an AQP curriculum may be approved if the program meets the following requirements:

(1) The program must meet all the requirements of this subpart.

(2) Each indoctrination, qualification, and continuing qualification AQP, and derivatives must include the following documentation:

(i) Initial application for AQP.

(ii) Initial job task listing.

(iii) Instructional systems development methodology.

(iv) Qualification standards document.

(v) Curriculum outline.

(vi) Implementation and operations plan.

(3) Subject to approval by the FAA, certificate holders may elect, where appropriate, to consolidate information about multiple programs within any of the documents referenced in paragraph (b)(2) of this section.

(4) The Qualification Standards Document must indicate specifically the requirements of the parts 61, 63, 65, 121, or 135 of this chapter, as applicable, that would be replaced by an AQP curriculum. If a practical test requirement of parts 61, 63, 65, 121, or 135 of this chapter is replaced by an AQP curriculum, the certificate holder must establish an initial justification and a continuing process approved by the FAA to show how the AQP curriculum provides an equivalent level of safety for each requirement that is to be replaced.

(c) *Application and transition.* Each certificate holder that applies for one or more advanced qualification curriculums must include as part of its application a proposed transition plan (containing a calendar of events) for moving from its present approved training to the advanced qualification program training.

(d) *Advanced Qualification Program revisions or rescissions of approval.* If after a certificate holder begins training and qualification under an AQP, the FAA finds the certificate holder is not meeting the provisions of its approved AQP, the FAA may require the certificate holder, pursuant to § 121.405(e), to make revisions. Or if otherwise warranted, the FAA may withdraw AQP approval and require the certificate holder to submit and obtain approval for a plan

(containing a schedule of events) that the certificate holder must comply with and use to transition to an approved training program under subpart N of this part or under subpart H of part 135 of this chapter, as appropriate. The certificate holder may also voluntarily submit and obtain approval for a plan (containing a schedule of events) to transition to an approved training program under subpart N of this part or under subpart H of part 135 of this chapter, as appropriate.

(e) *Approval by the FAA.* Final approval of an AQP by the FAA indicates the FAA has accepted the justification provided under paragraph (b)(4) of this section and the applicant's initial justification and continuing process establish an equivalent level of safety for each requirement of parts 61, 63, 65, 121, and 135 of this chapter that is being replaced.

§ 121.911 Indoctrination curriculum.

Each indoctrination curriculum must include the following:

(a) For newly hired persons being trained under an AQP: The certificate holder's policies and operating practices and general operational knowledge.

(b) For newly hired crewmembers and aircraft dispatchers: General aeronautical knowledge appropriate to the duty position.

(c) For instructors: The fundamental principles of the teaching and learning process; methods and theories of instruction; and the knowledge necessary to use aircraft, flight training devices, flight simulators, and other training equipment in advanced qualification curriculums, as appropriate.

(d) For evaluators: General evaluation requirements of the AQP; methods of evaluating crewmembers and aircraft dispatchers and other operations personnel, as appropriate, and policies and practices used to conduct the kinds of evaluations particular to an AQP (*e.g.*, LOE).

§ 121.913 Qualification curriculum.

Each qualification curriculum must contain training, evaluation, and certification activities, as applicable for specific positions subject to the AQP, as follows:

(a) The certificate holder's planned hours of training, evaluation, and supervised operating experience.

(b) For crewmembers, aircraft dispatchers, and other operations personnel, the following:

(1) Training, evaluation, and certification activities that are aircraft- and equipment-specific to qualify a person for a particular duty position on, or duties related to the operation of, a specific make, model, series, or variant aircraft.

(2) A list of and text describing the knowledge requirements, subject materials, job skills, and qualification standards of each proficiency objective to be trained and evaluated.

(3) The requirements of the certificate holder's approved AQP program that are in addition to or in place of, the requirements of parts 61, 63, 65, 121 or 135 of this chapter, including any applicable practical test requirements.

(4) A list of and text describing operating experience, evaluation/remediation strategies, provisions for special tracking, and how recency of experience requirements will be accomplished.

(c) For flight crewmembers: Initial operating experience and line check.

(d) For instructors, the following as appropriate:

(1) Training and evaluation activities to qualify a person to conduct instruction on how to operate, or on how to ensure the safe operation of a particular make, model, and series aircraft (or variant).

(2) A list of and text describing the knowledge requirements, subject materials, job skills, and qualification standards of each procedure and proficiency objective to be trained and evaluated.

(3) A list of and text describing evaluation/remediation strategies, standardization policies and recency requirements.

(e) For evaluators: The requirements of paragraph (d)(1) of this section plus the following, as appropriate:

(1) Training and evaluation activities that are aircraft and equipment specific to qualify a person to assess the performance of persons who operate or

who ensure the safe operation of, a particular make, model, and series aircraft (or variant).

(2) A list of and text describing the knowledge requirements, subject materials, job skills, and qualification standards of each procedure and proficiency objective to be trained and evaluated.

(3) A list of and text describing evaluation/remediation strategies, standardization policies and recency requirements.

§ 121.915 Continuing qualification curriculum.

Each continuing qualification curriculum must contain training and evaluation activities, as applicable for specific positions subject to the AQP, as follows:

(a) *Continuing qualification cycle.* A continuing qualification cycle that ensures that during each cycle each person qualified under an AQP, including instructors and evaluators, will receive a mix that will ensure training and evaluation on all events and subjects necessary to ensure that each person maintains proficiency in knowledge, technical skills, and cognitive skills required for initial qualification in accordance with the approved continuing qualification AQP, evaluation/remediation strategies, and provisions for special tracking. Each continuing qualification cycle must include at least the following:

(1) *Evaluation period.* Initially the continuing qualification cycle is comprised of two or more evaluation periods of equal duration. Each person qualified under an AQP must receive ground training and flight training, as appropriate, and an evaluation of proficiency during each evaluation period at a training facility. The number and frequency of training sessions must be approved by the FAA.

(2) *Training.* Continuing qualification must include training in all tasks, procedures and subjects required in accordance with the approved program documentation, as follows:

(i) For pilots in command, seconds in command, and flight engineers, First Look in accordance with the certificate holder's FAA-approved program documentation.

(ii) For pilots in command, seconds in command, flight engineers, flight attendants, instructors and evaluators: Ground training including a general review of knowledge and skills covered in qualification training, updated information on newly developed procedures, and safety information.

(iii) For crewmembers, instructors, evaluators, and other operational personnel who conduct their duties in flight: Proficiency training in an aircraft, flight training device, flight simulator, or other equipment, as appropriate, on normal, abnormal, and emergency flight procedures and maneuvers.

(iv) For dispatchers and other operational personnel who do not conduct their duties in flight: ground training including a general review of knowledge and skills covered in qualification training, updated information on newly developed procedures, safety related information, and, if applicable, a line observation program.

(v) For instructors and evaluators: Proficiency training in the type flight training device or the type flight simulator, as appropriate, regarding training equipment operation. For instructors and evaluators who are limited to conducting their duties in flight simulators or flight training devices: Training in operational flight procedures and maneuvers (normal, abnormal, and emergency).

(b) *Evaluation of performance.* Continuing qualification must include evaluation of performance on a sample of those events and major subjects identified as diagnostic of competence and approved for that purpose by the FAA. The following evaluation requirements apply:

(1) Evaluation of proficiency as follows:

(i) For pilots in command, seconds in command, and flight engineers: An evaluation of proficiency, portions of which may be conducted in an aircraft, flight simulator, or flight training device as approved in the certificate holder's curriculum that must be completed during each evaluation period.

(ii) For any other persons covered by an AQP, a means to evaluate their proficiency in the performance of their duties in their assigned tasks in an operational setting.

(2) Line checks as follows:

(i) Except as provided in paragraph (b)(2)(ii) of this section, for pilots in command: A line check conducted in an aircraft during actual flight operations under part 121 or part 135 of this chapter or during operationally (line) oriented flights, such as ferry flights or proving flights. A line check must be completed in the calendar month at the midpoint of the evaluation period.

(ii) With the FAA's approval, a no-notice line check strategy may be used in lieu of the line check required by paragraph (b)(2)(i) of this section. The certificate holder who elects to exercise this option must ensure the ''no-notice'' line checks are administered so the flight crewmembers are not notified before the evaluation. In addition, the AQP certificate holder must ensure that each pilot in command receives at least one ''no-notice'' line check every 24 months. As a minimum, the number of ''no-notice'' line checks administered each calendar year must equal at least 50% of the certificate holder's pilot-in-command workforce in accordance with a strategy approved by the FAA for that purpose. In addition, the line checks to be conducted under this paragraph must be conducted over all geographic areas flown by the certificate holder in accordance with a sampling methodology approved by the FAA for that purpose.

(iii) During the line checks required under paragraph (b)(2)(i) and (ii) of this section, each person performing duties as a pilot in command, second in command, or flight engineer for that flight, must be individually evaluated to determine whether the person remains adequately trained and currently proficient with respect to the particular aircraft, crew position, and type of operation in which he or she serves; and the person has sufficient knowledge and skills to operate effectively as part of a crew. The evaluator must be a check airman, an APD, or an FAA inspector and must hold the certificates and ratings required of the pilot in command.

(c) *Recency of experience.* For pilots in command, seconds in command, flight engineers, aircraft dispatchers, instructors, evaluators, and flight attendants, approved recency of experience requirements appropriate to the duty position.

(d) *Duration of cycles and periods.* Initially, the continuing qualification cycle approved for an AQP must not exceed 24 calendar months in duration, and must include two or more evaluation periods of equal duration. After that, upon demonstration by a certificate holder that an extension is warranted, the FAA may approve an extension of the continuing qualification cycle to a maximum of 36 calendar months in duration.

(e) *Requalification.* Each continuing qualification curriculum must include a curriculum segment that covers the requirements for requalifying a crewmember, aircraft dispatcher, other operations personnel, instructor, or evaluator who has not maintained continuing qualification.

§ 121.917 Other requirements.

In addition to the requirements of §§ 121.913 and 121.915, each AQP qualification and continuing qualification curriculum must include the following requirements:

(a) Integrated Crew Resource Management (CRM) or Dispatcher Resource Management (DRM) ground and if appropriate flight training applicable to each position for which training is provided under an AQP.

(b) Approved training on and evaluation of skills and proficiency of each person being trained under AQP to use his or her resource management skills and his or her technical (piloting or other) skills in an actual or simulated operations scenario. For flight crewmembers this training and evaluation must be conducted in an approved flight training device, flight simulator, or, if approved under this subpart, in an aircraft.

(c) Data collection and analysis processes acceptable to the FAA that will ensure the certificate holder provides performance information on its crewmembers, dispatchers, instructors, evaluators, and other operations personnel that will enable the certificate holder and the FAA to determine whether the form and content of training and evaluation activities are satisfactorily accomplishing the overall objectives of the curriculum.

§ 121.919 Certification.

A person subject to an AQP is eligible to receive a commercial or airline transport pilot, flight engineer, or aircraft dispatcher certificate or appropriate rating based on the successful completion of training and evaluation events accomplished under that program if the following requirements are met:

(a) Training and evaluation of required knowledge and skills under the AQP must meet minimum certification and rating criteria established by the FAA in parts 61, 63, or 65 of this chapter. The FAA may approve alternatives to the certification and rating criteria of parts 61, 63, or 65 of this chapter, including practical test requirements, if it can be demonstrated that the newly established criteria or requirements represent an equivalent or better measure of crewmember or dispatcher competence, operational proficiency, and safety.

(b) The applicant satisfactorily completes the appropriate qualification curriculum.

(c) The applicant shows competence in required technical knowledge and skills (*e.g.*, piloting or other) and crew resource management (*e.g.*, CRM or DRM) knowledge and skills in scenarios (*i.e.*, LOE) that test both types of knowledge and skills together.

(d) The applicant is otherwise eligible under the applicable requirements of part 61, 63, or 65 of this chapter.

(e) The applicant has been trained to proficiency on the certificate holder's approved AQP Qualification Standards as witnessed by an instructor, check airman, or APD and has passed an LOE administered by an APD or the FAA.

§ 121.921 Training devices and simulators.

(a) Each flight training device or airplane simulator that will be used in an AQP for one of the following purposes must be evaluated by the FAA for assignment of a flight training device or flight simulator qualification level:

(1) Required evaluation of individual or crew proficiency.

(2) Training to proficiency or training activities that determine if an individual or crew is ready for an evaluation of proficiency.

(3) Activities used to meet recency of experience requirements.

(4) Line Operational Simulations (LOS).

(b) Approval of other training equipment.

(1) Any training equipment that is intended to be used in an AQP for purposes other than those set forth in paragraph (a) of this section must be approved by the FAA for its intended use.

(2) An applicant for approval of training equipment under this paragraph must identify the device by its nomenclature and describe its intended use.

(3) Each training device approved for use in an AQP must be part of a continuing program to provide for its serviceability and fitness to perform its intended function as approved by the FAA.

§ 121.923 Approval of training, qualification, or evaluation by a person who provides training by arrangement.

(a) A certificate holder operating under part 121 or part 135 of this chapter may arrange to have AQP training, qualification, evaluation, or certification functions performed by another person (a ''training provider'') if the following requirements are met:

(1) The training provider is certificated under part 119 or 142 of this chapter.

(2) The training provider's AQP training and qualification curriculums, curriculum segments, or portions of curriculum segments must be provisionally approved by the FAA. A training provider may apply for provisional approval independently or in conjunction with a certificate holder's application for AQP approval. Application for provisional approval must be made, through the FAA office directly responsible for oversight of the training provider, to the Manager of the Advanced Qualification Program.

(3) The specific use of provisionally approved curriculums, curriculum segments, or portions of curriculum segments in a certificate holder's AQP must be approved by the FAA as set forth in § 121.909.

(b) An applicant for provisional approval of a curriculum, curriculum segment, or portion of a curriculum segment under this paragraph must show the following requirements are met:

(1) The applicant must have a curriculum for the qualification and continuing qualification of each instructor and evaluator used by the applicant.

(2) The applicant's facilities must be found by the FAA to be adequate for any planned training, qualification, or evaluation for a certificate holder operating under part 121 or part 135 of this chapter.

(3) Except for indoctrination curriculums, the curriculum, curriculum segment, or portion of a curriculum segment must identify the specific make, model, and series aircraft (or variant) and crewmember or other positions for which it is designed.

(c) A certificate holder who wants approval to use a training provider's provisionally approved curriculum, curriculum segment, or portion of a curriculum segment in its AQP, must show the following requirements are met:

(1) Each instructor or evaluator used by the training provider must meet all the qualification and continuing qualification requirements that apply to employees of the certificate holder that has arranged for the training, including knowledge of the certificate holder's operations.

(2) Each provisionally approved curriculum, curriculum segment, or portion of a curriculum segment must be approved by the FAA for use in the certificate holder's AQP. The FAA will either provide approval or require modifications to ensure that each curriculum, curriculum segment, or portion of a curriculum segment is applicable to the certificate holder's AQP.

§ 121.925 Recordkeeping requirements.

Each certificate holder conducting an approved AQP must establish and maintain records in sufficient detail to demonstrate the certificate holder is in compliance with all the requirements of the AQP and this subpart.

Subpart Z—Hazardous Materials Training Program

SOURCE: Doc. No. FAA–2003–15085, 70 FR 58823, Nov. 7, 2005, unless otherwise noted.

§ 121.1001 Applicability and definitions.

(a) This subpart prescribes the requirements applicable to each certificate holder for training each crewmember and person performing or directly supervising any of the following job functions involving any item for transport on board an aircraft:

(1) Acceptance;

(2) Rejection;

(3) Handling;

(4) Storage incidental to transport;

(5) Packaging of company material; or

(6) Loading.

(b) *Definitions.* For purposes of this subpart, the following definitions apply:

(1) *Company material (COMAT)*—Material owned or used by a certificate holder.

(2) *Initial hazardous materials training*—The basic training required for each newly hired person, or each person changing job functions, who performs or directly supervises any of the job functions specified in paragraph (a) of this section.

(3) *Recurrent hazardous materials training*—The training required every 24 months for each person who has satisfactorily completed the certificate holder's approved initial hazardous materials training program and performs or directly supervises any of the job functions specified in paragraph (a) of this section.

§ 121.1003 Hazardous materials training: General.

(a) Each certificate holder must establish and implement a hazardous materials training program that:

(1) Satisfies the requirements of Appendix O of this part;

(2) Ensures that each person performing or directly supervising any of the job functions specified in §121.1001(a) is trained to comply with all applicable parts of 49 CFR parts 171 through 180 and the requirements of this subpart; and

(3) Enables the trained person to recognize items that contain, or may contain, hazardous materials regulated by 49 CFR parts 171 through 180.

(b) Each certificate holder must provide initial hazardous materials training and recurrent hazardous materials training to each crewmember and person performing or directly supervising any of the job functions specified in §121.1001(a).

(c) Each certificate holder's hazardous materials training program must be approved by the FAA prior to implementation.

§121.1005 Hazardous materials training required.

(a) *Training requirement.* Except as provided in paragraphs (b), (c) and (f) of this section, no certificate holder may use any crewmember orperson to perform any of the job functions or direct supervisory responsibilities, and no person may perform any of the job functions or direct supervisory responsibilities, specified in §121.1001(a) unless that person has satisfactorily completed the certificate holder's FAA-approved initial or recurrent hazardous materials training program within the past 24 months.

(b) *New hire or new job function.* A person who is a new hire and has not yet satisfactorily completed the required initial hazardous materials training, or a person who is changing job functions and has not received initial or recurrent training for a job function involving storage incidental to transport, or loading of items for transport on an aircraft, may perform those job functions for not more than 30 days from the date of hire or a change in job function, if the person is under the direct visual supervision of a person who is authorized by the certificate holder to supervise that person and who has successfully completed the certificate holder's FAA-approved initial or recurrent training program within the past 24 months.

(c) *Persons who work for more than one certificate holder.* A certificate holder that uses or assigns a person to perform or directly supervise a job function specified in §121.1001(a), when that person also performs or directly supervises the same job function for another certificate holder, need only train that person in its own policies and procedures regarding those job functions, if all of the following are met:

(1) The certificate holder using this exception receives written verification from the person designated to hold the training records representing the other certificate holder that the person has satisfactorily completed hazardous materials training for the specific job function under the other certificate holder's FAA approved hazardous material training program under Appendix O of this part; and

(2) The certificate holder who trained the person has the same operations specifications regarding the acceptance, handling, and transport of hazardous materials as the certificate holder using this exception.

(d) *Recurrent hazardous materials training—Completion date.* A person who satisfactorily completes recurrent hazardous materials training in the calendar month before, or the calendar month after, the month in which the recurrent training is due, is considered to have taken that training during the month in which it is due. If the person completes this training earlier than the month before it is due, the month of the completion date becomes his or her new anniversary month.

(e) *Repair stations.* A certificate holder must ensure that each repair station performing work for, or on the certificate holder's behalf is notified in writing of the certificate holder's policies and operations specification authorization permitting or prohibition against the acceptance, rejection, handling, storage incidental to transport, and transportation of hazardous materials, including company material. This notification requirement applies only to repair stations that are regulated by 49 CFR parts 171 through 180.

(f) *Certificate holders operating at foreign locations.* This exception applies if a certificate holder operating at a foreign location where the country requires the certificate holder to use persons working in that country to load aircraft. In such a case, the certificate holder may use those persons even if they have not been trained in accordance with the certificate holder's FAA approved hazardous materials training

program. Those persons, however, must be under the direct visual supervision of someone who has successfully completed the certificate holder's approved initial or recurrent hazardous materials training program in accordance with this part. This exception applies only to those persons who load aircraft.

§ 121.1007 Hazardous materials training records.

(a) *General requirement.* Each certificate holder must maintain a record of all training required by this part received within the preceding three years for each person who performs or directly supervises a job function specified in §121.1001(a). The record must be maintained during the time that the person performs or directly supervises any of those job functions, and for 90 days thereafter. These training records must be kept for direct employees of the certificate holder, as well as independent contractors, subcontractors, and any other person who performs or directly supervises these job functions for or on behalf of the certificate holder.

(b) *Location of records.* The certificate holder must retain the training records required by paragraph (a) of this section for all initial and recurrent training received within the preceding 3 years for all persons performing or directly supervising the job functions listed in Appendix O at a designated location. The records must be available upon request at the location where the trained person performs or directly supervises the job function specified in §121.1001(a). Records may be maintained electronically and provided on location electronically. When the person ceases to perform or directly supervise a hazardous materials job function, the certificate holder must retain the hazardous materials training records for an additional 90 days and make them available upon request at the last location where the person worked.

(c) *Content of records.* Each record must contain the following:

(1) The individual's name;

(2) The most recent training completion date;

(3) A description, copy or reference to training materials used to meet the training requirement;

(4) The name and address of the organization providing the training; and

(5) A copy of the certification issued when the individual was trained, which shows that a test has been completed satisfactorily.

(d) *New hire or new job function.* Each certificate holder using a person under the exception in §121.1005(b) must maintain a record for that person. The records must be available upon request at the location where the trained person performs or directly supervises the job function specified in §121.1001(a). Records may be maintained electronically and provided on location electronically. The record must include the following:

(1) A signed statement from an authorized representative of the certificate holder authorizing the use of the person in accordance with the exception;

(2) The date of hire or change in job function;

(3) The person's name and assigned job function;

(4) The name of the supervisor of the job function; and

(5) The date the person is to complete hazardous materials training in accordance with appendix O of this part.

Subpart AA—Continued Airworthiness and Safety Improvements

SOURCE: Amdt. 121–336, 72 FR 63411, Nov. 8, 2007, unless otherwise noted.

§ 121.1101 Purpose and definition.

(a) This subpart requires persons holding an air carrier or operating certificate under part 119 of this chapter to support the continued airworthiness of each airplane. These requirements may include, but are not limited to, revising the maintenance program, incorporating design changes, and incorporating revisions to Instructions for Continued Airworthiness.

(b) For purposes of this subpart, the ''FAA Oversight Office'' is the aircraft certification office or office of the Transport Airplane Directorate with

oversight responsibility for the relevant type certificate or supplemental type certificate, as determined by the Administrator.

§ 121.1103 [Reserved]

§ 121.1105 Aging airplane inspections and records reviews.

(a) *Applicability*. This section applies to all airplanes operated by a certificate holder under this part, except for those airplanes operated between any point within the State of Alaska and any other point within the State of Alaska.

(b) *Operation after inspection and records review*. After the dates specified in this paragraph, a certificate holder may not operate an airplane under this part unless the Administrator has notified the certificate holder that the Administrator has completed the aging airplane inspection and records review required by this section. During the inspection and records review, the certificate holder must demonstrate to the Administrator that the maintenance of age-sensitive parts and components of the airplane has been adequate and timely enough to ensure the highest degree of safety.

(1) *Airplanes exceeding 24 years in service on December 8, 2003; initial and repetitive inspections and records reviews*. For an airplane that has exceeded 24 years in service on December 8, 2003, no later than December 5, 2007, and thereafter at intervals not to exceed 7 years.

(2) *Airplanes exceeding 14 years in service but not 24 years in service on December 8, 2003; initial and repetitive inspections and records reviews*. For an airplane that has exceeded 14 years in service but not 24 years in service on December 8, 2003, no later than December 4, 2008, and thereafter at intervals not to exceed 7 years.

(3) *Airplanes not exceeding 14 years in service on December 8, 2003; initial and repetitive inspections and records reviews*. For an airplane that has not exceeded 14 years in service on December 8, 2003, no later than 5 years after the start of the airplane's 15th year in service and thereafter at intervals not to exceed 7 years.

(c) *Unforeseen schedule conflict*. In the event of an unforeseen scheduling conflict for a specific airplane, the Administrator may approve an extension of up to 90 days beyond an interval specified in paragraph (b) of this section.

(d) *Airplane and records availability*. The certificate holder must make available to the Administrator each airplane for which an inspection and records review is required under this section, in a condition for inspection specified by the Administrator, together with records containing the following information:

(1) Total years in service of the airplane;

(2) Total time in service of the airframe;

(3) Total flight cycles of the airframe;

(4) Date of the last inspection and records review required by this section;

(5) Current status of life-limited parts of the airframe;

(6) Time since the last overhaul of all structural components required to be overhauled on a specific time basis;

(7) Current inspection status of the airplane, including the time since the last inspection required by the inspection program under which the airplane is maintained;

(8) Current status of applicable airworthiness directives, including the date and methods of compliance, and if the airworthiness directive involves recurring action, the time and date when the next action is required;

(9) A list of major structural alterations; and

(10) A report of major structural repairs and the current inspection status for those repairs.

(e) *Notification to Administrator*. Each certificate holder must notify the Administrator at least 60 days before the date on which the airplane and airplane records will be made available for the inspection and records review.

[Doc. No. FAA–1999–5401, 67 FR 72761, Dec. 6, 2002, as amended by Amdt. 121–284, 70 FR 5532, Feb. 2, 2005; Amdt. 121–310, 70 FR 23936, May 6, 2005. Redesignated by Amdt. 121–336, 72 FR 63412, Nov. 8, 2007]

§ 121.1107 Repairs assessment for pressurized fuselages.

(a) No certificate holder may operate an Airbus Model A300 (excluding the –600 series), British Aerospace Model

BAC 1–11, Boeing Model 707, 720, 727, 737, or 747, McDonnel Douglas Model DC–8, DC–9/MD–80 or DC–10, Fokker Model F28, or Lockheed Model L–1011 airplane beyond the applicable flight cycle implementation time specified below, or May 25, 2001, whichever occurs later, unless operations specifications have been issued to reference repair assessment guidelines applicable to the fuselage pressure boundary (fuselage skin, door skin, and bulkhead webs), and those guidelines are incorporated in its maintenance program. The repair assessment guidelines must be approved by the FAA Aircraft Certification Office (ACO), or office of the Transport Airplane Directorate, having cognizance over the type certificate for the affected airplane.

(1) For the Airbus Model A300 (excluding the –600 series), the flight cycle implementation time is:

(i) Model B2: 36,000 flights.

(ii) Model B4–100 (including Model B4–2C): 30,000 flights above the window line, and 36,000 flights below the window line.

(iii) Model B4–200: 25,500 flights above the window line, and 34,000 flights below the window line.

(2) For all models of the British Aerospace BAC 1–11, the flight cycle implementation time is 60,000 flights.

(3) For all models of the Boeing 707, the flight cycle implementation time is 15,000 flights.

(4) For all models of the Boeing 720, the flight cycle implementation time is 23,000 flights.

(5) For all models of the Boeing 727, the flight cycle implementation time is 45,000 flights.

(6) For all models of the Boeing 737, the flight cycle implementation time is 60,000 flights.

(7) For all models of the Boeing 747, the flight cycle implementation time is 15,000 flights.

(8) For all models of the McDonnell Douglas DC–8, the flight cycle implementation time is 30,000 flights.

(9) For all models of the McDonnell Douglas DC–9/MD–80, the flight cycle implementation time is 60,000 flights.

(10) For all models of the McDonnell Douglas DC–10, the flight cycle implementation time is 30,000 flights.

(11) For all models of the Lockheed L–1011, the flight cycle implementation time is 27,000 flights.

(12) For the Fokker F–28 Mark 1000, 2000, 3000, and 4000, the flight cycle implementation time is 60,000 flights.

(b) [Reserved]

[Doc. No. 29104, 65 FR 24125, Apr. 25, 2000; 65 FR 50744, Aug. 21, 2000, as amended by Amdt. 121–282, 66 FR 23130, May 7, 2001; ; Amdt. 121–305, 69 FR 45942, July 30, 2004. Redesignated and amended by Amdt. 121–336, 72 FR 63412, Nov. 8, 2007]

§ 121.1109 Supplemental inspections.

(a) *Applicability*. Except as specified in paragraph (b) of this section, this section applies to transport category, turbine powered airplanes with a type certificate issued after January 1, 1958, that as a result of original type certification or later increase in capacity have—

(1) A maximum type certificated passenger seating capacity of 30 or more; or

(2) A maximum payload capacity of 7,500 pounds or more.

(b) *Exception*. This section does not apply to an airplane operated by a certificate holder under this part between any point within the State of Alaska and any other point within the State of Alaska.

(c) *General requirements*. After December 20, 2010, a certificate holder may not operate an airplane under this part unless the following requirements have been met:

(1) The maintenance program for the airplane includes FAA-approved damage-tolerance-based inspections and procedures for airplane structure susceptible to fatigue cracking that could contribute to a catastrophic failure. These inspections and procedures must take into account the adverse affects repairs, alterations, and modifications may have on fatigue cracking and the inspection of this airplane structure.

(2) The damage-tolerance-based inspections and procedures identified in this section and any revisions to these inspections and procedures must be approved by the Aircraft Certification Office or office of the Transport Airplane Directorate with oversight responsibility for the relevant type certificate

or supplemental type certificate, as determined by the Administrator. The certificate holder must include the damage-tolerance-based inspections and procedures in the certificate holder's FAA-approved maintenance program.

[Doc. No. FAA–1999–5401, 70 FR 5532, Feb. 2, 2005. Redesignated by Amdt. 121–336, 72 FR 63412, Nov. 8, 2007]

EFFECTIVE DATE NOTE: At 72 FR 70508, Dec. 12, 2007, §121.1109 was amended by revising paragraph (c), effective Jan. 11, 2008. For the convenience of the user, the revised text is set forth as follows:

§ 121.1109 Supplemental inspections.

* * * * *

(c) *General requirements.* After December 20, 2010, a certificate holder may not operate an airplane under this part unless the following requirements have been met:

(1) *Baseline Structure.* The certificate holder's maintenance program for the airplane includes FAA-approved damage-tolerance-based inspections and procedures for airplane structure susceptible to fatigue cracking that could contribute to a catastrophic failure. For the purpose of this section, this structure is termed ''fatigue critical structure.''

(2) *Adverse effects of repairs, alterations, and modifications.* The maintenance program for the airplane includes a means for addressing the adverse effects repairs, alterations, and modifications may have on fatigue critical structure and on inspections required by paragraph (c)(1) of this section. The means for addressing these adverse effects must be approved by the FAA Oversight Office.

(3) *Changes to maintenance program.* The changes made to the maintenance program required by paragraphs (c)(1) and (c)(2) of this section, and any later revisions to these changes, must be submitted to the Principal Maintenance Inspector for review and approval.

§ 121.1111 Electrical wiring interconnection systems (EWIS) maintenance program.

(a) Except as provided in paragraph (f) of this section, this section applies to transport category, turbine-powered airplanes with a type certificate issued after January 1, 1958, that, as a result of original type certification or later increase in capacity, have—

(1) A maximum type-certificated passenger capacity of 30 or more, or

(2) A maximum payload capacity of 7500 pounds or more.

(b) After March 10, 2011, no certificate holder may operate an airplane identified in paragraph (a) of this section unless the maintenance program for that airplane includes inspections and procedures for electrical wiring interconnection systems (EWIS).

(c) The proposed EWIS maintenance program changes must be based on EWIS Instructions for Continued Airworthiness (ICA) that have been developed in accordance with the provisions of Appendix H of part 25 of this chapter applicable to each affected airplane (including those ICA developed for supplemental type certificates installed on each airplane) and that have been approved by the FAA Oversight Office.

(1) For airplanes subject to §26.11 of this chapter, the EWIS ICA must comply with paragraphs H25.5(a)(1) and (b).

(2) For airplanes subject to §25.1729 of this chapter, the EWIS ICA must comply with paragraph H25.4 and all of paragraph H25.5.

(d) After March 10, 2011, before returning an airplane to service after any alterations for which EWIS ICA are developed, the certificate holder must include in the airplane's maintenance program inspections and procedures for EWIS based on those ICA.

(e) The EWIS maintenance program changes identified in paragraphs (c) and (d) of this section and any later EWIS revisions must be submitted to the Principal Inspector for review and approval.

(f) This section does not apply to the following airplane models:

(1) Lockheed L–188
(2) Bombardier CL–44
(3) Mitsubishi YS–11
(4) British Aerospace BAC 1–11
(5) Concorde
(6) deHavilland D.H. 106 Comet 4C
(7) VFW-Vereinigte Flugtechnische Werk VFW–614
(8) Illyushin Aviation IL 96T
(9) Bristol Aircraft Britannia 305
(10) Handley Page Herald Type 300
(11) Avions Marcel Dassault—Breguet Aviation Mercure 100C
(12) Airbus Caravelle
(13) Lockheed L–300

§ 121.1113 Fuel tank system maintenance program.

(a) Except as provided in paragraph (g) of this section, this section applies to transport category, turbine-powered airplanes with a type certificate issued after January 1, 1958, that, as a result of original type certification or later increase in capacity, have—

(1) A maximum type-certificated passenger capacity of 30 or more, or

(2) A maximum payload capacity of 7500 pounds or more.

(b) For each airplane on which an auxiliary fuel tank is installed under a field approval, before June 16, 2008, the certificate holder must submit to the FAA Oversight Office proposed maintenance instructions for the tank that meet the requirements of Special Federal Aviation Regulation No. 88 (SFAR 88) of this chapter.

(c) After December 16, 2008, no certificate holder may operate an airplane identified in paragraph (a) of this section unless the maintenance program for that airplane has been revised to include applicable inspections, procedures, and limitations for fuel tanks systems.

(d) The proposed fuel tank system maintenance program revisions must be based on fuel tank system Instructions for Continued Airworthiness (ICA) that have been developed in accordance with the applicable provisions of SFAR 88 of this chapter or § 25.1529 and part 25, Appendix H, of this chapter, in effect on June 6, 2001 (including those developed for auxiliary fuel tanks, if any, installed under supplemental type certificates or other design approval) and that have been approved by the FAA Oversight Office.

(e) After December 16, 2008, before returning an aircraft to service after any alteration for which fuel tank ICA are developed under SFAR 88 or under § 25.1529 in effect on June 6, 2001, the certificate holder must include in the maintenance program for the airplane inspections and procedures for the fuel tank system based on those ICA.

(f) The fuel tank system maintenance program changes identified in paragraphs (d) and (e) of this section and any later fuel tank system revisions must be submitted to the Principal Inspector for review and approval.

(g) This section does not apply to the following airplane models:

(1) Bombardier CL–44
(2) Concorde
(3) deHavilland D.H. 106 Comet 4C
(4) VFW–Vereinigte Flugtechnische Werk VFW–614
(5) Illyushin Aviation IL 96T
(6) Bristol Aircraft Britannia 305
(7) Handley Page Herald Type 300
(8) Avions Marcel Dassault—Breguet Aviation Mercure 100C
(9) Airbus Caravelle
(10) Lockheed L–300

APPENDIX A TO PART 121—FIRST AID KITS AND EMERGENCY MEDICAL KITS

Approved first-aid kits, at least one approved emergency medical kit, and at least one approved automated external defibrillator required under § 121.803 of this part must be readily accessible to the crew, stored securely, and kept free from dust, moisture, and damaging temperatures.

FIRST-AID KITS

1. The minimum number of first aid kits required is set forth in the following table:

No. of passenger seats	No. of first-aid kits
0–50	1
51–150	2
151–250	3
More than 250	4

2. Except as provided in paragraph (3), each approved first-aid kit must contain at least the following appropriately maintained contents in the specified quantities:

Contents	Quantity
Adhesive bandage compresses, 1-inch	16
Antiseptic swabs	20

Contents	Quantity
Ammonia inhalants	10
Bandage compresses, 4-inch	8
Triangular bandage compresses, 40-inch	5
Arm splint, noninflatable	1
Leg splint, noninflatable	1
Roller bandage, 4-inch	4
Adhesive tape, 1-inch standard roll	2
Bandage scissors	1

3. Arm and leg splints which do not fit within a first-aid kit may be stowed in a readily accessible location that is as near as practicable to the kit.

EMERGENCY MEDICAL KITS

1. Until April 12, 2004, at least one approved emergency medical kit that must contain at least the following appropriately maintained contents in the specified quantities:

Contents	Quantity
Sphygmomanometer	1
Stethoscope	1
Airways, cropharyngeal (3 sizes)	3
Syringes (sizes necessary to administer required drugs)	4
Needles (sizes necessary to administer required drugs)	6
50% Dextrose injection, 50cc	1
Epinephrine 1:1000, single dose ampule or equivalent)	2
Diphenhydramine HC1 injection, single dose ampule or equivalent	2
Nitroglycerin tablets	10
Basic instructions for use of the drugs in the kit	1
protective nonpermeable gloves or equivalent	1 pair

2. As of April 12, 2004, at least one approved emergency medical kit that must contain at least the following appropriately maintained contents in the specified quantities:

Contents	Quantity
Sphygmonanometer	1
Stethoscope	1
Airways, oropharyngeal (3 sizes): 1 pediatric, 1 small adult, 1 large adult or equivalent	3
Self-inflating manual resuscitation device with 3 masks (1 pediatric, 1 small adult, 1 large adult or equivalent).	1:3 masks
CPR mask (3 sizes), 1 pediatric, 1 small adult, 1 large adult, or equivalent	3
IV Admin Set: Tubing w/ 2 Y connectors	1
Alcohol sponges	2
Adhesive tape, 1-inch standard roll adhesive	1
Tape scissors	1 pair
Tourniquet	1
Saline solution, 500 cc	1
Protective nonpermeable gloves or equivalent	1 pair
Needles (2–18 ga., 2–20 ga., 2–22 ga., or sizes necessary to administer required medications)	6
Syringes (1–5 cc, 2–10 cc, or sizes necessary to administer required medications)	4
Analgesic, non-narcotic, tablets, 325 mg	4
Antihistamine tablets, 25 mg	4
Antihistamine injectable, 50 mg, (single dose ampule or equivalent)	2
Atropine, 0.5 mg, 5 cc (single dose ampule or equivalent)	2
Aspirin tablets, 325 mg	4
Bronchodilator, inhaled (metered dose inhaler or equivalent)	1
Dextrose, 50%/50 cc injectable, (single dose ampule or equivalent)	1
Epinephrine 1:1000, 1 cc, injectable, (single dose ampule or equivalent)	2
Epinephrine 1:10,000, 2 cc, injectable, (single dose ampule or equivalent)	2
Lidocaine, 5 cc, 20 mg/ml, injectable (single dose ampule or equivalent)	2
Nitroglycerin tablets, 0.4 mg	10
Basic instructions for use of the drugs in the kit	1

3. If all of the above-listed items do not fit into one container, more than one container may be used.

AUTOMATED EXTERNAL DEFIBRILLATORS

At least one approved automated external defibrillator, legally marketed in the United

States in accordance with Food and Drug Administration requirements, that must:

1. Be stored in the passenger cabin.

2. After April 30, 2005:

(a) Have a power source that meets FAA Technical Standard Order requirements for power sources for electronic devices used in aviation as approved by the Administrator; or

(b) Have a power source that was manufactured before July 30, 2004, and been found by the FAA to be equivalent to a power source that meets the Technical Standard Order requirements of paragraph (a) of this section.

3. Be maintained in accordance with the manufacturer's specifications.

[Doc. No. FAA–2000–7119, 66 FR 19044, Apr. 12, 2001, as amended by Amdt. 121–280, 69 FR 19762, Apr. 14, 2004; Amdt. 121–309, 70 FR 15196, Mar. 24, 2005]

APPENDIX B TO PART 121—AIRPLANE FLIGHT RECORDER SPECIFICATION

Parameters	Range	Accuracy sensor input to DFDR readout	Sampling interval (per second)	Resolution [4] readout
Time (GMT or Frame Counter) (range 0 to 4095, sampled 1 per frame).	24 Hrs	±0.125% Per Hour	0.25 (1 per 4 seconds).	1 sec.
Altitude	−1,000 ft to max certificated altitude of aircraft.	±100 to ±700 ft (See Table 1, TSO-C51a).	1	5′ to 35′ [1]
Airspeed	50 KIAS to V_{so}, and V_{so} to 1.2 V_D.	±5%, ±3%	1	1 kt.
Heading	360°	±2°	1	0.5°
Normal Acceleration (Vertical)	−3g to +6g	±1% of max range excluding datum error of ±5%.	8	0.01g.
Pitch Attitude	±75°	±2°	1	0.5°
Roll Attitude	±180°	±2°	1	0.5°
Radio Transmitter Keying	On-Off (Discrete)	±2°	±2%	
Thrust/Power on Each Engine	Full Range Forward	±2°	1 (per engine)	0.2% [2]
Trailing Edge Flap or Cockpit Control Selection.	Full Range or Each Discrete Position.	±3° or as Pilot's Indicator	0.5	0.5% [2]
Leading Edge Flap or Cockpit Control Selection.	Full Range or Each Discrete Position.	±3° or as Pilot's Indicator	0.5	0.5% [2]
Thrust Reverser Position	Stowed, In Transit, and Reverse (Discrete).		1 (per 4 seconds per engine).	
Ground Spoiler Position/ Speed Brake Selection.	Full Range or Each Discrete Position.	±2% Unless Higher Accuracy Uniquely Required.	1	0.2% [2].
Marker Beacon Passage	Discrete		1	
Autopilot Engagement	Discrete		1	
Longitudinal Acceleration	±1g	±1.5% max range excluding datum error of ±5%.	4	0.01g.
Pilot Input and/or Surface Position—Primary Controls (Pitch, Roll, Yaw) [3].	Full Range	±2° Unless Higher Accuracy Uniquely Required.	1	0.2% [2].
Lateral Acceleration	±1g	±1.5% max range excluding datum error of ±5%.	4	0.01g.
Pitch Trim Position	Full Range	±3% Unless Higher Accuracy Uniquely Required.	1	0.3% [2].
Glideslope Deviation	±400 Microamps	±3%	1	0.3% [2].
Localizer Deviation	±400 Microamps	±3%	1	0.3% [2].
AFCS Mode and Engagement Status.	Discrete		1	
Radio Altitude	−20 ft to 2,500 ft	±2 Ft or ±3% Whichever is Greater Below 500 Ft and ±5% Above 500 Ft.	1	1 ft + 5% [2] above 500′.
Master Warning	Discrete		1	
Main Gear Squat Switch Status.	Discrete		1	
Angle of Attack (if recorded directly)..	As installed	As installed	2	0.3% [2]
Outside Air Temperature or Total Air Temperature..	−50° C to +90° C	±2° c	0.5	0.3° c
Hydraulics, Each System Low Pressure.	Discrete		0.5	or 0.5% [2]
Groundspeed.	As installed	Most Accurate Systems Installed (IMS Equipped Aircraft Only).	1	0.2% [2]

Parameters	Range	Accuracy sensor input to DFDR readout	Sampling interval (per second)	Resolution [4] readout
If additional recording capacity is available, recording of the following parameters is recommended. The parameters are listed in order of significance:				
Drift Angle	When available, As installed.	As installed	4	
Wind Speed and Direction	When available, As installed.	As installed	4	
Latitude and Longitude	When available, As installed.	As installed	4	
Brake pressure/Brake pedal position.	As installed	As installed	1	
Additional engine parameters:				
EPR	As installed	As installed	1 (per engine).	
N1	As installed	As installed	1 (per engine).	
N2	As installed	As installed	1 (per engine).	
EGT	As installed	As installed	1 (per engine).	
Throttle Lever Position	As installed	As installed	1 (per engine).	
Fuel Flow	As installed	As installed	1 (per engine).	
TCAS:				
TA	As installed	As installed	1	
RA	As installed	As installed	1	
Sensitivity level (as selected by crew).	As installed	As installed	2	
GPWS (ground proximity warning system).	Discrete		1	
Landing gear or gear selector position.	Discrete		0.25 (1 per 4 seconds).	
DME 1 and 2 Distance	0–200 NM;	As installed	0.25	1 mi.
Nav 1 and 2 Frequency Selection.	Full range	As installed	0.25	

[1] When altitude rate is recorded. Altitude rate must have sufficient resolution and sampling to permit the derivation of altitude to 5 feet.
[2] Per cent of full range.
[3] For airplanes that can demonstrate the capability of deriving either the control input on control movement (one from the other) for all modes of operation and flight regimes, the ''or'' applies. For airplanes with non-mechanical control systems (fly-by-wire) the ''and'' applies. In airplanes with split surfaces, suitable combination of inputs is acceptable in lieu of recording each surface separately.
[4] This column applies to aircraft manufactured after October 11, 1991.

[Doc. No. 25530, 53 FR 26147, July 11, 1988; 53 FR 30906, Aug. 16, 1988]

APPENDIX C TO PART 121—C–46 NONTRANSPORT CATEGORY AIRPLANES

Cargo Operations

1. *Required engines.* (a) Except as provided in paragraph (b) of this section, the engines specified in subparagraphs (1) or (2) of this section must be installed in C–46 nontransport category airplanes operated at gross weights exceeding 45,000 pounds:

(1) Pratt and Whitney R2800–51–M1 or R2800–75–M1 engines (engines converted from basic model R2800–51 or R2800–75 engines in accordance with FAA approved data) that—

(i) Conform to Engine Specification 5E–8;

(ii) Conform to the applicable portions of the operator's manual;

(iii) Comply with all the applicable airworthiness directives; and

(iv) Are equipped with high capacity oil pump drive gears in accordance with FAA approved data.

(2) Other engines found acceptable by the FAA Regional Flight Standards Division having type certification responsibility for the C–46 airplane.

(b) Upon application by an operator conducting cargo operations with nontransport category C–46 airplanes between points within the State of Alaska, the appropriate FAA Flight Standards District Office, Alaskan Region, may authorize the operation of such airplanes, between points within the State of Alaska; without compliance with paragraph (a) of this section if the operator shows that, in its area of operation, installation of the modified engines is not necessary to provide adequate cooling for single-engine operations. Such authorization and any conditions or limitations therefor is made a part of the Operations Specifications of the operator.

2. *Minimum acceptable means of complying with the special airworthiness requirements.* Unless otherwise authorized under §121.213, the data set forth in sections 3 through 34 of this appendix, as correlated to the C–46 nontransport category airplane, is the minimum means of compliance with the special airworthiness requirements of §§121.215 through 121.281.

3. *Susceptibility of material to fire.* [Deleted as unnecessary]

4. *Cabin interiors.* C–46 crew compartments must meet all the requirements of §121.215, and, as required in §121.221, the door between the crew compartment and main cabin (cargo) compartment must be flame resistant.

5. *Internal doors.* Internal doors, including the crew to main cabin door, must meet all the requirements of §121.217.

6. *Ventilation.* Standard C–46 crew compartments meet the ventilation requirements of §121.219 if a means of ventilation for controlling the flow of air is available between the crew compartment and main cabin. The ventilation requirement may be met by use of a door between the crew compartment and main cabin. The door need not have louvers installed; however, if louvers are installed, they must be controllable.

7. *Fire precautions.* Compliance is required with all the provisions of §121.221.

(a) In establishing compliance with this section, the C–46 main cabin is considered as a Class A compartment if—

(1) The operator utilizes a standard system of cargo loading and tiedown that allows easy access in flight to all cargo in such compartment, and, such system is included in the appropriate portion of the operator's manual; and

(2) A cargo barrier is installed in the forward end of the main cabin cargo compartment. The barrier must—

(i) Establish the most forward location beyond which cargo cannot be carried;

(ii) Protect the components and systems of the airplane that are essential to its safe operation from cargo damage; and

(iii) Permit easy access, in flight, to cargo in the main cabin cargo compartment.

The barrier may be a cargo net or a network of steel cables or other means acceptable to the Administrator which would provide equivalent protection to that of a cargo net. The barrier need not meet crash load requirements of FAR §25.561; however, it must be attached to the cargo retention fittings and provide the degree of cargo retention that is required by the operators' standard system of cargo loading and tiedown.

(b) C–46 forward and aft baggage compartments must meet, as a minimum, Class B requirements of this section or be placarded in a manner to preclude their use as cargo or baggage compartments.

8. *Proof of compliance.* The demonstration of compliance required by §121.223 is not required for C–46 airplanes in which—

(1) The main cabin conforms to Class A cargo compartment requirements of §121.219; and

(2) Forward and aft baggage compartments conform to Class B requirements of §121.221, or are placarded to preclude their use as cargo or baggage compartments.

9. *Propeller deicing fluid.* No change from the requirements of §121.225. Isopropyl alcohol is a combustible fluid within the meaning of this section.

10. *Pressure cross-feed arrangements, location of fuel tanks, and fuel system lines and fittings.* C–46 fuel systems which conform to all applicable Curtiss design specifications and which comply with the FAA type certification requirements are in compliance with the provisions of §§121.227 through 121.231.

11. *Fuel lines and fittings in designated fire zones.* No change from the requirements of §121.233.

12. *Fuel valves.* Compliance is required with all the provisions of §121.235. Compliance can be established by showing that the fuel system conforms to all the applicable Curtiss design specifications, the FAA type certification requirements, and, in addition, has explosion-proof fuel booster pump electrical selector switches installed in lieu of the open contact type used originally.

13. *Oil lines and fittings in designated fire zones.* No change from the requirements of §121.237.

14. *Oil valves.* C–46 oil shutoff valves must conform to the requirements of §121.239. In addition, C–46 airplanes using Hamilton Standard propellers must provide, by use of stand pipes in the engine oil tanks or other approved means, a positive source of oil for feathering each propeller.

15. *Oil system drains.* The standard C–46 ''Y'' drains installed in the main oil inlet line for each engine meet the requirements of §121.241.

16. *Engine breather line.* The standard C–46 engine breather line installation meets the requirements of §121.243 if the lower breather lines actually extend to the trailing edge of the oil cooler air exit duct.

17. *Firewalls and firewall construction.* Compliance is required with all of the provisions of §§121.245 and 121.247. The following requirements must be met in showing compliance with these sections:

(a) *Engine compartment.* The engine firewalls of the C–46 airplane must—

(1) Conform to type design, and all applicable airworthiness directives;

(2) Be constructed of stainless steel or approved equivalent; and

(3) Have fireproof shields over the fairleads used for the engine control cables that pass through each firewall.

(b) *Combustion heater compartment.* C–46 airplanes must have a combustion heater fire extinguishing system which complies with AD–49–18–1 or an FAA approved equivalent.

18. *Cowling.* Standard C–46 engine cowling (cowling of aluminum construction employing stainless steel exhaust shrouds) which conforms to the type design and cowling configurations which conform to the C–46 transport category requirements meet the requirements of §121.249.

19. *Engine accessory section diaphragm.* C–46 engine nacelles which conform to the C–46

transport category requirements meet the requirements of §121.251. As provided for in that section, a means of equivalent protection which does not require provision of a diaphragm to isolate the engine power section and exhaust system from the engine accessory compartment is the designation of the entire engine compartment forward of and including the firewall as a designated fire zone, and the installation of adequate fire detection and fire extinguishing systems which meet the requirements of §121.263 and §121.273, respectively, in such zone.

20. *Powerplant fire protection.* C–46 engine compartments and combustion heater compartments are considered as designated fire zones within the meaning of §121.253.

21. *Flammable fluids*—

(a) *Engine compartment.* C–46 engine compartments which conform to the type design and which comply with all applicable airworthiness directives meet the requirements of §121.255.

(b) *Combustion heater compartment.* C–46 combustion heater compartments which conform to type design and which meet all the requirements of AD–49–18–1 or an FAA approved equivalent meet the requirements of §121.255.

22. *Shutoff means*—

(a) *Engine compartment.* C–46 engine compartments which comply with AD–62–10–2 or FAA approved equivalent meet the requirements of §121.257 applicable to engine compartments, if, in addition, a means satisfactory to the Administrator is provided to shut off the flow of hydraulic fluid to the cowl flap cylinder in each engine nacelle. The shutoff means must be located aft of the engine firewall. The operator's manual must include, in the emergency portion, adequate instructions for proper operation of the additional shutoff means to assure correct sequential positioning of engine cowl flaps under emergency conditions. In accordance with §121.315, this positioning must also be incorporated in the emergency section of the pilot's checklist.

(b) *Combustion heater compartment.* C–46 heater compartments which comply with paragraph (5) of AD–49–18–1 or FAA approved equivalent meet the requirements of §121.257 applicable to heater compartments if, in addition, a shutoff valve located above the main cabin floor level is installed in the alcohol supply line or lines between the alcohol supply tank and those alcohol pumps located under the main cabin floor. If all of the alcohol pumps are located above the main cabin floor, the alcohol shutoff valve need not be installed. In complying with paragraph (5) of AD–49–18–1, a fail-safe electric fuel shutoff valve may be used in lieu of the manually operated valve.

23. *Lines and fittings*—(a) *Engine compartment.* C–46 engine compartments which comply with all applicable airworthiness directives, including AD–62–10–2, by using FAA approved fire-resistant lines, hoses, and end fittings, and engine compartments which meet the C–46 transport category requirements, meet the requirements of §121.259.

(b) *Combustion heater compartments* All lines, hoses, and end fittings, and couplings which carry fuel to the heaters and heater controls, must be of FAA approved fire-resistant construction.

24. *Vent and drain lines*—(a) *Enginecompartment.* C–46 engine compartments meet the requirements of §121.261 if—

(1) The compartments conform to type design and comply with all applicable airworthiness directives or FAA approved equivalent; and

(2) Drain lines from supercharger case, engine-driven fuel pump, and engine-driven hydraulic pump reach into the scupper drain located in the lower cowling segment.

(b) *Combustion heater compartment.* C–46 heater compartments meet the requirements of §121.261 if they conform to AD–49–18–1 or FAA approved equivalent.

25. *Fire-extinguishing system.* (a) To meet the requirements of §121.263, C–46 airplanes must have installed fire extinguishing systems to serve all designated fire zones. The fire-extinguishing systems, the quantity of extinguishing agent, and the rate of discharge shall be such as to provide a minimum of one adequate discharge for each designated fire zone. Compliance with this provision requires the installation of a separate fire extinguisher for each engine compartment. Insofar as the engine compartment is concerned, the system shall be capable of protecting the entire compartment against the various types of fires likely to occur in the compartment.

(b) Fire-extinguishing systems which conform to the C–46 transport category requirements meet the requirements set forth in paragraph (a). Furthermore, fire-extinguishing systems for combustion heater compartments which conform to the requirements of AD–49–18–1 or an FAA approved equivalent also meet the requirements in paragraph (a).

In addition, a fire-extinguishing system for C–46 airplanes meets the adequacy requirement of paragraph (a) if it provides the same or equivalent protection to that demonstrated by the CAA in tests conducted in 1941 and 1942, using a CW–20 type engine nacelle (without diaphragm). These tests were conducted at the Bureau of Standards facilities in Washington, DC, and copies of the test reports are available through the FAA Regional Engineering Offices. In this connection, the flow rates and distribution of extinguishing agent substantiated in American Airmotive Report No. 128–52–d, FAA approved February 9, 1953, provides protection equivalent to that demonstrated by the CAA in the CW–20 tests. In evaluating any C–46

fire-extinguishing system with respect to the aforementioned CW–20 tests, the Administration would require data in a narrative form, utilizing drawings or photographs to show at least the following:

Installation of containers; installation and routing of plumbing; type, number, and location of outlets or nozzles; type, total volume, and distribution of extinguishing agent; length of time required for discharging; means for thermal relief, including type and location of discharge indicators; means of discharging, e.g., mechanical cutterheads, electric cartridge, or other method; and whether a one- or two-shot system is used; and if the latter is used, means of cross-feeding or otherwise selecting distribution of extinguishing agent; and types of materials used in makeup of plumbing.

High rate discharge (HRD) systems using agents such as bromotrifluoromethane, dibrodifluoromethane and chlorobromomethane (CB), may also meet the requirements of paragraph (a).

26. *Fire-extinguishing agents, Extinguishing agent container pressure relief, Extinguishing agent container compartment temperatures, and Fire-extinguishing system materials.* No change from the requirements of §§121.265 through 121.271.

27. *Fire-detector system.* Compliance with the requirements of §121.273 requires that C–46 fire detector systems conform to:

(a) AD–62–10–2 or FAA approved equivalent for engine compartments; and

(b) AD–49–18–1 or FAA approved equivalent for combustion heater compartments

28. *Fire detectors.* No change from the requirements of §121.275.

29. *Protection of other airplane components against fire.* To meet the requirements of §121.277, C–46 airplanes must—

(a) Conform to the type design and all applicable airworthiness directives; and

(b) Be modified or have operational procedures established to provide additional fire protection for the wheel well door aft of each engine compartment. Modifications may consist of improvements in sealing of the main landing gear wheel well doors. An operational procedure which is acceptable to the Agency is one requiring the landing gear control to be placed in the up position in case of in-flight engine fire. In accordance with §121.315, such procedure must be set forth in the emergency portion of the operator's emergency checklist pertaining to in-flight engine fire.

30. *Control of engine rotation.* C–46 propeller feathering systems which conform to the type design and all applicable airworthiness directives meet the requirements of §121.279.

31. *Fuel system independence.* C–46 fuel systems which conform to the type design and all applicable airworthiness directives meet the requirements of §121.281.

32. *Induction system ice prevention.* The C–46 carburetor anti-icing system which conforms to the type design and all applicable airworthiness directives meets the requirements of §121.283.

33. *Carriage of cargo in passenger compartments.* Section 121.285 is not applicable to nontransport category C–46 cargo airplanes.

34. *Carriage of cargo in cargo compartments.* A standard cargo loading and tiedown arrangement set forth in the operator's manual and found acceptable to the Administrator must be used in complying with §121.287.

35. *Performance data.* Performance data on Curtiss model C–46 airplane certificated for maximum weight of 45,000 and 48,000 pounds for cargo-only operations.

1. The following performance limitation data, applicable to the Curtiss model C–46 airplane for cargo-only operation, must be used in determining compliance with §§121.199 through 121.205. These data are presented in the tables and figures of this appendix.

TABLE 1—TAKEOFF LIMITATIONS

(a) Curtiss C–46 certificated for maximum weight of 45,000 pounds.

(1) *Effective length* of runway required when effective length is determined in accordance with §121.171 (distance to accelerate to 93 knots TIAS and stop, with zero wind and zero gradient). (Factor=1.00)

[Distance in feet]

Standard altitude in feet	Airplane weight in pounds		
	39,000	42,000	45,000 [1]
S.L	4,110	4,290	4,570
1,000	4,250	4,440	4,720
2,000	4,400	4,600	4,880
3,000	4,650	4,880	5,190
4,000	4,910	5,170	5,500
5,000	5,160	5,450	5,810
6,000	5,420	5,730	6,120
7,000	5,680	6,000	6,440
8,000	5,940	6,280	([1])

[1] Ref. Fig. 1(a)(1) for weight and distance for altitudes above 7,000′.

(2) Actual length of runway required when *effective length*, considering obstacles, is not determined (distance to accelerate to 93 knots TIAS and stop, divided by the factor 0.85).

[Distance in feet]

Standard altitude in feet	Airplane weight in pounds		
	39,000	42,000	45,000 [1]
S.L	4,830	5,050	5,370
1,000	5,000	5,230	5,550
2,000	5,170	5,410	5,740
3,000	5,470	5,740	6,100
4,000	5,770	6,080	6,470
5,000	6,070	6,410	6,830
6,000	6,380	6,740	7,200
7,000	6,680	7,070	7,570

[Distance in feet]

Standard altitude in feet	Airplane weight in pounds		
	39,000	42,000	45,000 [1]
8,000	6,990	7,410	(1)

[1] Ref. Fig. 1(a)(2) for weight and distance for altitudes above 7,000′.

(b) Curtiss C–46 certificated for maximum weight 48,000 pounds.

(1) *Effective length* of runway required when effective length is determined in accordance with §121.171 (distance to accelerate to 93 knots TIAS and stop, with zero wind and zero gradient). (Factor=1.00)

[Distance in feet]

Standard altitude in feet	Airplane weight in pounds			
	39,000	42,000	45,000	48,000 [1]
S.L	4,110	4,290	4,570	4,950
1,000	4,250	4,440	4,720	5,130
2,000	4,400	4,600	4,880	5,300
3,000	4,650	4,880	5,190	5,670
4,000	4,910	5,170	5,500	6,050
5,000	5,160	5,450	5,810	6,420
6,000	5,420	5,730	6,120	6,800
7,000	5,680	6,000	6,440	(1)
8,000	5,940	6,280	6,750	(1)

[1] Ref. Fig. 1(b)(1) for weight and distance for altitudes above 6,000′.

(2) Actual length of runway required when *effective length*, considering obstacles, is not determined (distance to accelerate to 93 knots TIAS and stop, divided by the factor 0.85).

[Distance in feet]

Standard altitude in feet	Airplane weight in pounds			
	39,000	42,000	45,000	48,000 [1]
S.L	4,830	5,050	5,370	5,830
1,000	5,000	5,230	5,550	6,030
2,000	5,170	5,410	5,740	6,230
3,000	5,470	5,740	6,100	6,670
4,000	5,770	6,080	6,470	7,120
5,000	6,070	6,410	6,830	7,560
6,000	6,380	6,740	7,200	8,010
7,000	6,680	7,070	7,570	(1)
8,000	6,990	7,410	7,940	(1)

[1] Ref. Fig. 1(b)(2) for weight and distance for altitudes above 6,000′.

TABLE 2—EN ROUTE LIMITATIONS

(a) Curtiss model C–46 certificated for maximum weight of 45,000 pounds (based on a climb speed of 113 knots (TIAS)).

Weight (pounds)	Terrain clearance (feet) [1]	Blower setting
45,000	6,450	Low.
44,000	7,000	Do.
43,000	7,500	Do.
42,200	8,000	High.
41,000	9,600	Do.
40,000	11,000	Do.
39,000	12,300	Do.

[1] Highest altitude of terrain over which airplanes may be operated in compliance with §121.201.
Ref. Fig. 2(a).

(b) Curtiss model C–46 certificated for maximum weight of 48,000 pounds or with engine installation approved for 2,550 revolutions per minute (1,700 brake horsepower). Maximum continuous power in low blower (based on a climb speed of 113 knots (TIAS)).

Weight (pounds)	Terrain clearance (feet) [1]	Blower setting
48,000	5,850	Low.
47,000	6,300	Do.
46,000	6,700	Do.
45,000	7,200	Do.
44,500	7,450	Do.
44,250	8,000	High.
44,000	8,550	Do.
43,000	10,800	Do.
42,000	12,500	Do.
41,000	13,000	Do.

[1] Highest altitude of terrain over which airplanes may be operated in compliance with §121.201.
Ref. Fig. 2(b).

TABLE 3—LANDING LIMITATIONS

(a) Intended Destination.

Effective length of runway required for intended destination when effective length is determined in accordance with §121.171 with zero wind and zero gradient.

(1) Curtiss model C–46 certificated for maximum weight of 45,000 pounds. (0.60 factor)

Distance in feet

Standard altitude in feet	Airplane weight in pounds and approach speeds [1] in knots							
	40,000	V_{50}	42,000	V_{50}	44,000	V_{50}	45,000	V_{50}
S.L	4,320	86	4,500	88	4,700	90	4,800	91
1,000	4,440	86	4,620	88	4,830	90	4,930	91
2,000	4,550	86	4,750	88	4,960	90	5,050	91
3,000	4,670	86	4,880	88	5,090	90	5,190	91
4,000	4,800	86	5,000	88	5,220	90	5,320	91
5,000	4,920	86	5,140	88	5,360	90	5,460	91
6,000	5,040	86	5,270	88	5,550	90	5,600	91
7,000	5,170	86	5,410	88	5,650	90	5,750	91
8,000	5,310	86	5,550	88	5,800	90	5,900	91

[1] Steady approach speed through 50–foot height TIAS denoted by symbol V_{50}.

Ref. Fig. 3(a)(1).

(2) Curtiss model C–46 certificated for maximum weight of 48,000 pounds.[1] (0.60 factor.)

Distance in feet

Standard altitude in feet	Airplane weight in pounds and approach speeds[2] in knots							
	42,000	V_{50}	44,000	V_{50}	46,000	V_{50}	43,000	V_{50}
S.L	3,370	80	3,490	82	3,620	84	3,740	86
1,000	3,460	80	3,580	82	3,710	84	3,830	86
2,000	3,540	80	3,670	82	3,800	84	3,920	86
3,000	3,630	80	3,760	82	3,890	84	4,020	86
4,000	3,720	80	3,850	82	3,980	84	4,110	86
5,000	3,800	80	3,940	82	4,080	84	4,220	86
6,000	3,890	80	4,040	82	4,180	84	4,320	86
7,000	3,980	80	4,140	82	4,280	84	4,440	86
8,000	4,080	80	4,240	82	4,390	84	4,550	86

[1] For use with Curtiss model C–46 airplanes when approved for this weight.
[2] Steady approach speed through 50 height knots TIAS denoted by symbol V_{50}3.
Ref. Fig. 3(a)(2).

(b) Alternate Airports.

Effective length of runway required when effective length is determined in accordance with §121.171 with zero wind and zero gradient.

(1) Curtiss model C–46 certificated for maximum weight of 45,000 pounds. (0.70 factor.)

Distance in feet

Standard altitude in feet	Airplane weight in pounds and approach speeds[1] in knots							
	40,000	V_{50}	42,000	V_{50}	44,000	V_{50}	45,000	V_{50}
S.L	3,700	86	3,860	88	4,030	90	4,110	91
1,000	3,800	86	3,960	88	4,140	90	4,220	91
2,000	3,900	86	4,070	88	4,250	90	4,340	91
3,000	4,000	86	4,180	88	4,360	90	4,450	91
4,000	4,110	86	4,290	88	4,470	90	4,560	91
5,000	4,210	86	4,400	88	4,590	90	4,680	91
6,000	4,330	86	4,510	88	4,710	90	4,800	91
7,000	4,430	86	4,630	88	4,840	90	4,930	91
8,000	4,550	86	4,750	88	4,970	90	5,060	91

[1] Steady approach speed through 50 foot-height-knots TIAS denoted by symbol V_{50}.
Ref. Fig. 3(b)(1).

(2) Curtiss model C–46 certificated for maximum weight of 48,000 pounds.[1] (0.70 factor.)

Distance in feet

Standard altitude in feet	Airplane weight in pounds and approach speeds[2] in knots							
	42,000	V_{50}	44,000	V_{50}	46,000	V_{50}	48,000	V_{50}
S.L	2,890	80	3,000	82	3,110	84	3,220	86
1,000	2,960	80	3,070	82	3,180	84	3,280	86
2,000	3,040	80	3,150	82	3,260	84	3,360	86
3,000	3,110	80	3,220	82	3,340	84	3,440	86
4,000	3,180	80	3,300	82	3,410	84	3,520	86
5,000	3,260	80	3,380	82	3,500	84	3,610	86
6,000	3,330	80	3,460	82	3,580	84	3,700	86
7,000	3,420	80	3,540	82	3,670	84	3,800	86
8,000	3,500	80	3,630	82	3,760	84	3,900	86

[1] For use with Curtiss model C–46 airplanes when approved for this weight.
[2] Steady approach speed through 50 foot-height-knots TIAS denoted by symbol V_{50}.
Ref. Fig. 3(b)(2).

(c) Actual length of runway required when effective length, considering obstacles, is not determined in accordance with §121.171.

(1) Curtiss model C–46 certificated for maximum weight of 45,000 pounds. (0.55 factor.)

Distance in feet

Standard altitude in feet	Airplane weight in pounds and approach speeds [1] in knots							
	40,000	V_{50}	42,000	V_{50}	44,000	V_{50}	45,000	V_{50}
S.L	4,710	86	4,910	88	5,130	90	5,230	91
1,000	4,840	86	5,050	88	5,270	90	5,370	91
2,000	4,960	86	5,180	88	5,410	90	5,510	91
3,000	5,090	86	5,320	88	5,550	90	5,660	91
4,000	5,230	86	5,460	88	5,700	90	5,810	91
5,000	5,360	86	5,600	88	5,850	90	5,960	91
6,000	5,500	86	5,740	88	6,000	90	6,110	91
7,000	5,640	86	5,900	88	6,170	90	6,280	91
8,000	5,790	86	6,050	88	6,340	90	6,450	91

[1] Steady approach speed through 50 foot-height-knots TIAS denoted by symbol V_{50}.
Ref. Fig. 3(c)(1).

(2) Curtiss C–46 certificated for maximum weight of 48,000 pounds.[1] (0.55 factor.)

Distance in feet

Standard altitude in feet	Airplane weight in pounds and approach speeds [2] in knots							
	42,000	V_{50}	44,000	V_{50}	46,000	V_{50}	48,000	V_{50}
S.L	3,680	80	3,820	82	3,960	84	4,090	86
1,000	3,770	80	3,910	82	4,050	84	4,180	86
2,000	3,860	80	4,000	82	4,140	84	4,280	86
3,000	3,960	80	4,090	82	4,240	84	4,380	86
4,000	4,050	80	4,190	82	4,340	84	4,490	86
5,000	4,150	80	4,290	82	4,450	84	4,600	86
6,000	4,240	80	4,400	82	4,560	84	4,710	86
7,000	4,350	80	4,510	82	4,670	84	4,840	86
8,000	4,450	80	4,620	82	4,790	84	4,960	86

[1] For use with Curtiss model C–46 airplanes when approved for this weight.
[2] Steady approach speed through 50 foot-height-knots TIAS denoted by symbol V_{50}.
Ref. Fig. 3(c)(2).

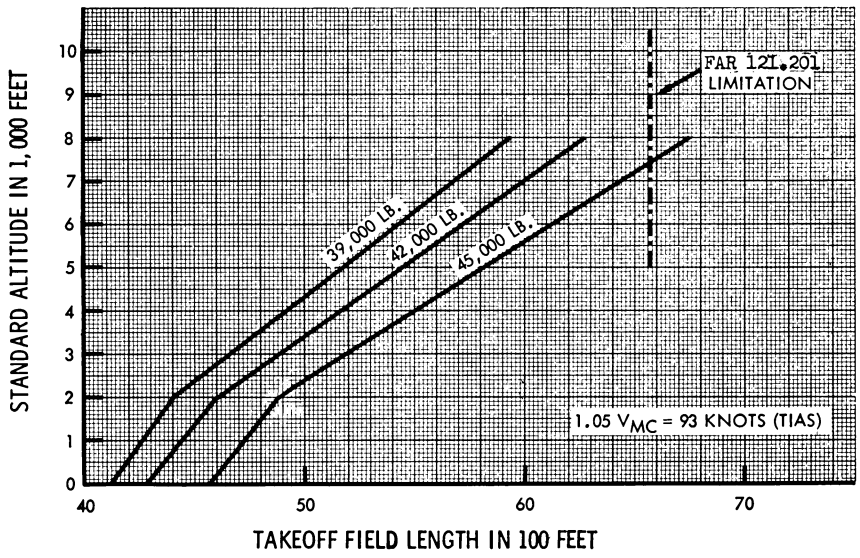
CURTISS C-46 MODELS

CERTIFICATED FOR MAX. WEIGHT OF 45,000 LBS.

TAKEOFF LIMITATION.
ZERO WIND AND ZERO GRADIENT.

BASED ON EFFECTIVE TAKEOFF
LENGTH. (1.00 FACTOR)

FAR 121.199



REFERENCE TABLE 1(a) (1)

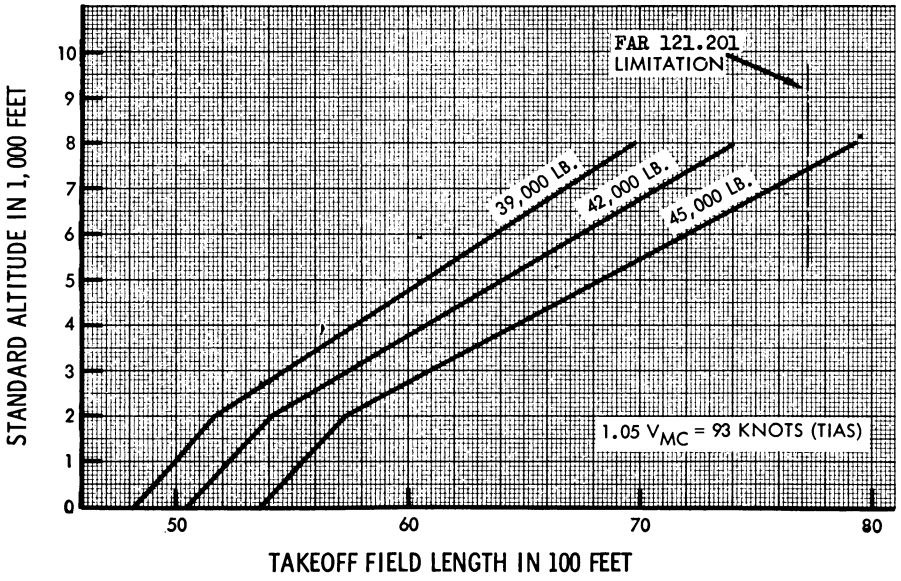
FIG. 1 (a)(1)

CURTISS C-46 MODELS

CERTIFICATED FOR MAX. WEIGHT OF 45,000 LBS.

TAKEOFF LIMITATION
ZERO WIND AND ZERO GRADIENT

BASED ON ACTUAL TAKEOFF LENGTH
WHEN EFFECTIVE LENGTH IS NOT
DETERMINED. (0.85 FACTOR)



REFERENCE TABLE 1 (a) (2) FIG. 1(a) (2)

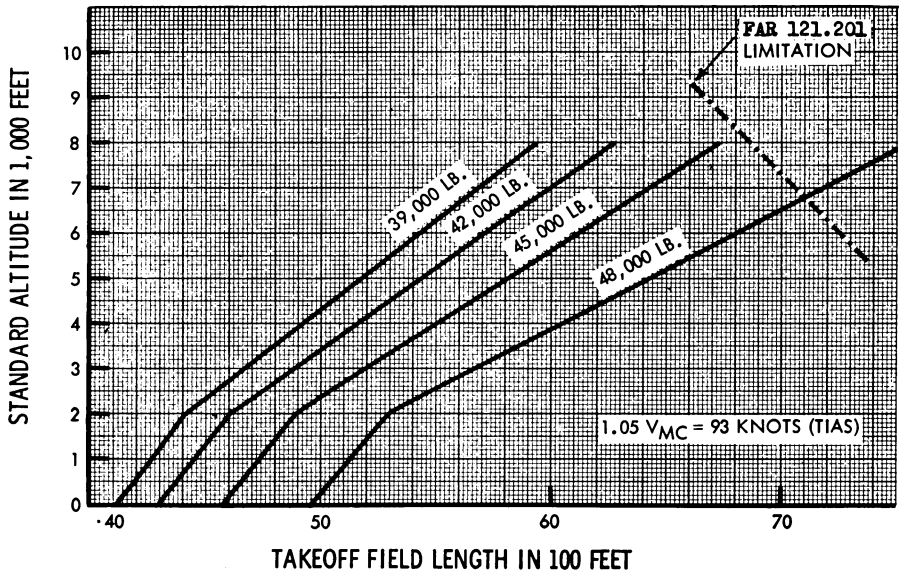
CURTISS C-46 MODELS

CERTIFICATED FOR MAX. WEIGHT OF 48,000 LBS.

TAKEOFF LIMITATION
ZERO WIND AND ZERO GRADIENT

BASED ON EFFECTIVE TAKEOFF LENGTH. (1.00 FACTOR)

FAR 121.199



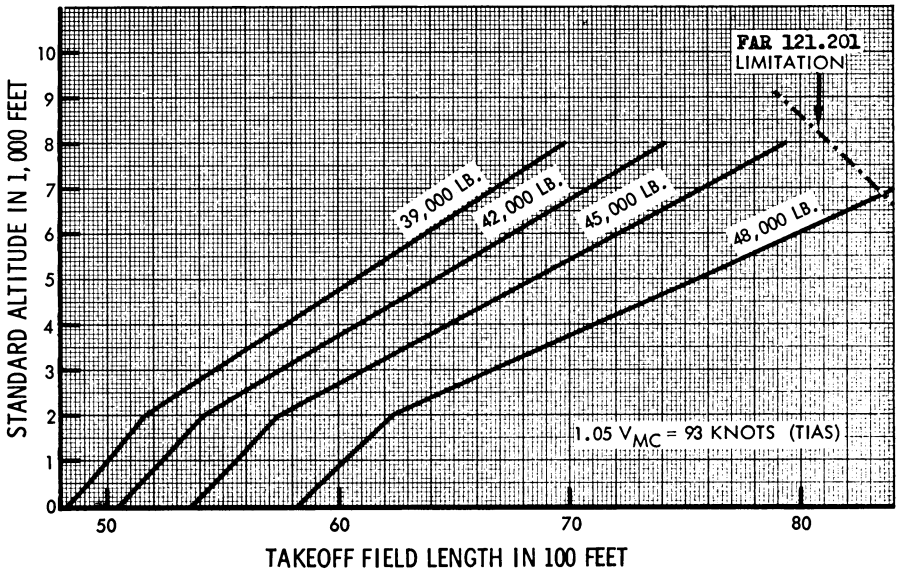
REFERENCE TABLE 1(b) (1) FIG. 1(b) (1)

CURTISS C-46 MODELS

CERTIFICATED FOR MAX. WEIGHT OF 48,000 LBS.

TAKEOFF LIMITATION
ZERO WIND AND ZERO GRADIENT

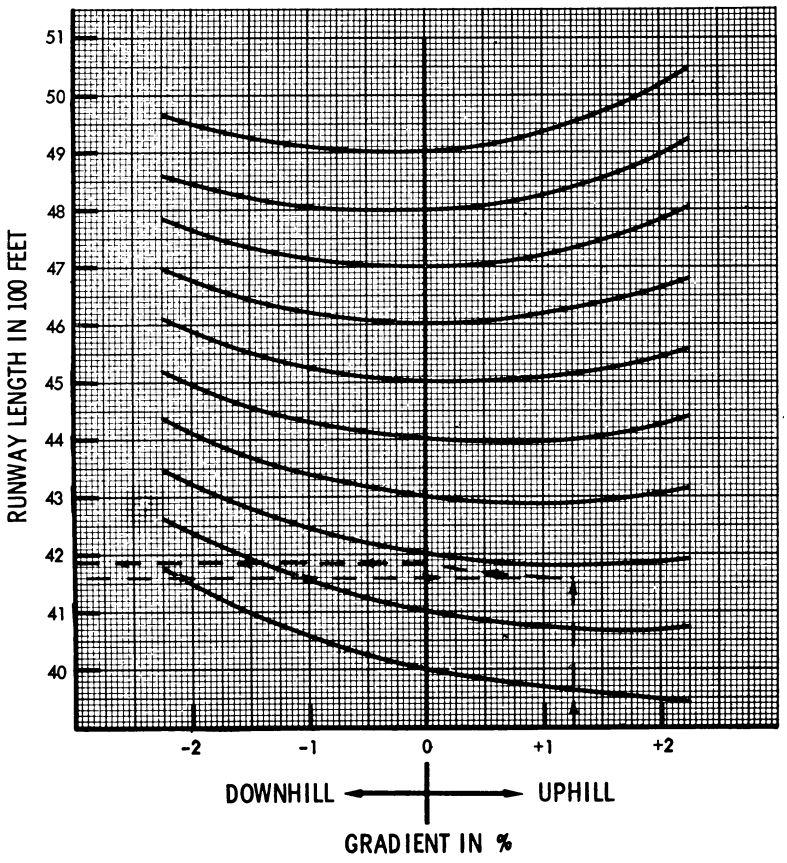
BASED ON ACTUAL TAKEOFF LENGTH
WHEN EFFECTIVE LENGTH IS NOT
DETERMINED. (0.85 FACTOR)



REFERENCE TABLE 1(b) (2) FIG. 1(b) (2)

RUNWAY GRADIENT CORRECTION
FOR ACCELERATE - STOP DISTANCE

FOR C-46 AIRPLANES UNDER FAR 121.199



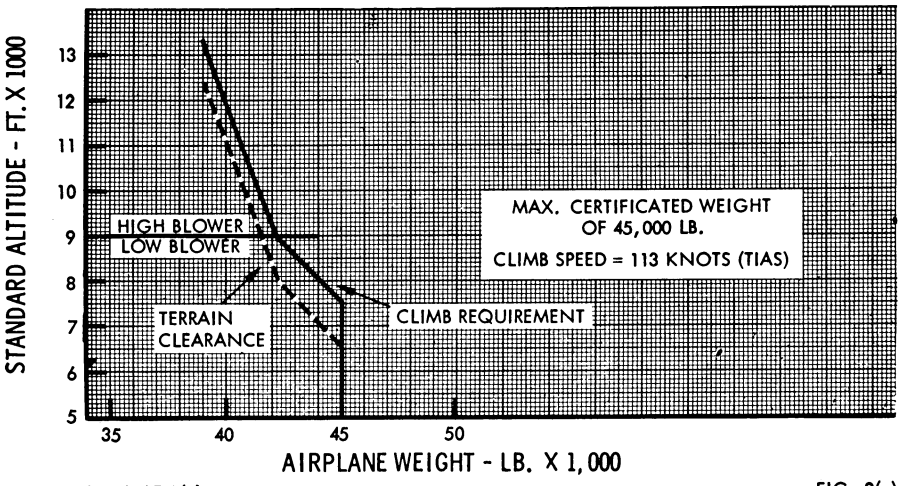
1-27-64

FIG. 1(c)

CURTISS C-46 MODELS

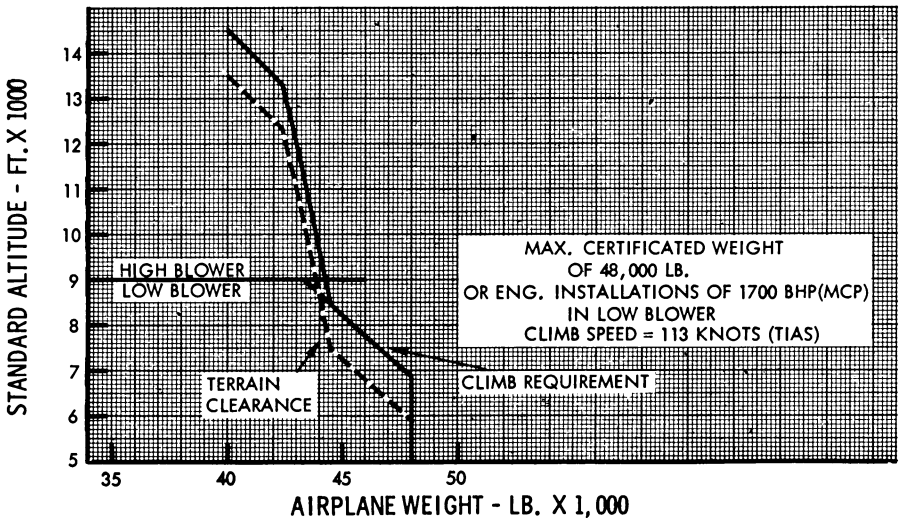
ENROUTE LIMITATIONS - ONE ENGINE INOPERATIVE

FAR 121.201



REFERENCE TABLE 2(a)

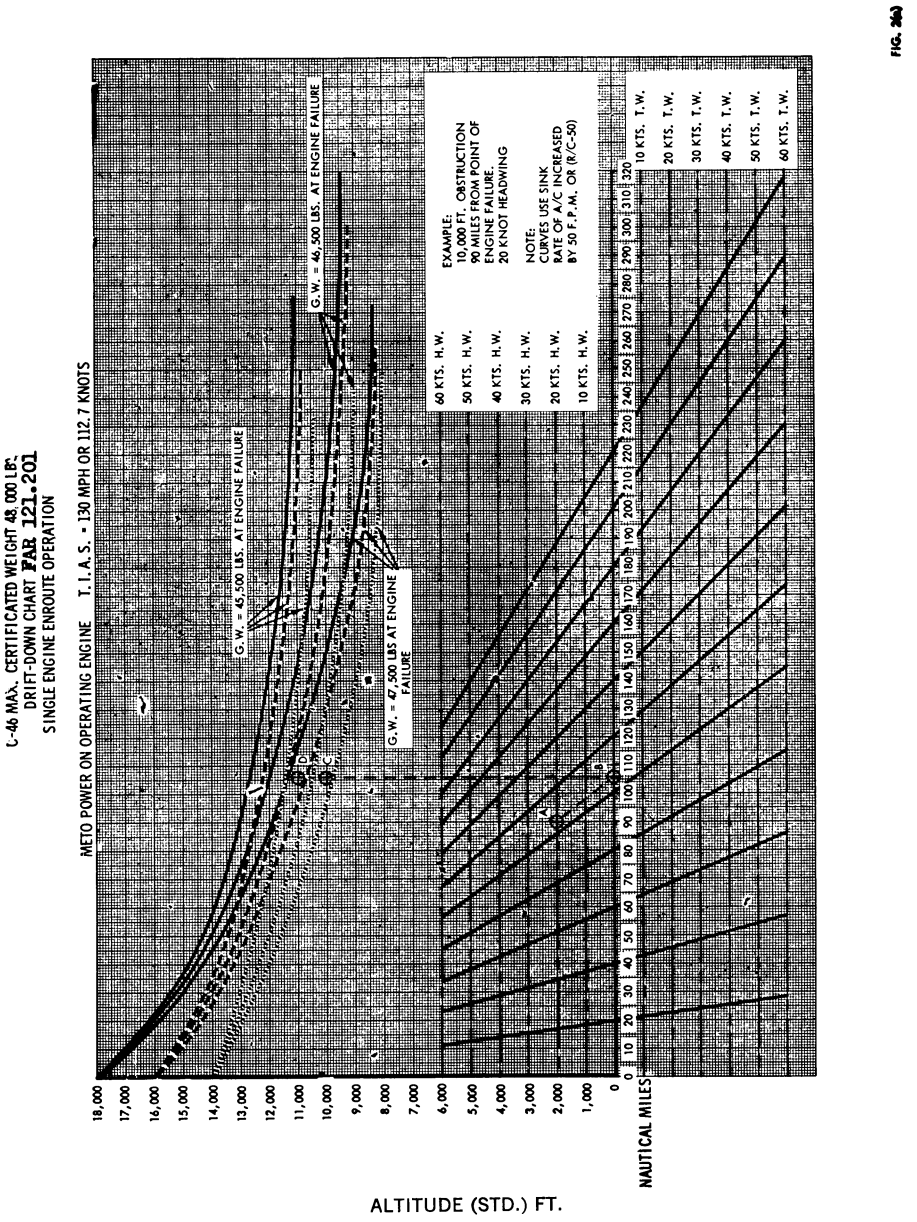
FIG. 2(a)



REFERENCE TABLE 2(b)

FIG. 2(b)

FIG. 2(a)


C-46 MAX. CERTIFICATED WEIGHT 48,000 LBS.
DRIFT-DOWN CHART FAR 121.201
SINGLE ENGINE ENROUTE OPERATION
METO POWER ON OPERATING ENGINE T.I.A.S. - 130 MPH OR 112.7 KNOTS
G.W. = 46,500 LBS. AT ENGINE FAILURE
G.W. = 45,500 LBS. AT ENGINE FAILURE
G.W. = 47,500 LBS AT ENGINE FAILURE
EXAMPLE:
10,000 FT. OBSTRUCTION
90 MILES FROM POINT OF ENGINE FAILURE
20 KNOT HEADWING
NOTE:
CURVES USE SINK RATE OF A/C INCREASED BY 50 F.P.M. OR (R/C-50)
60 KTS. H.W.
50 KTS. H.W.
40 KTS. H.W.
30 KTS. H.W.
20 KTS. H.W.
10 KTS. H.W.
10 KTS. T.W.
20 KTS. T.W.
30 KTS. T.W.
40 KTS. T.W.
50 KTS. T.W.
60 KTS. T.W.
18,000
17,000
16,000
15,000
14,000
13,000
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
NAUTICAL MILES
ALTITUDE (STD.) FT.

C-46 MAX. CERTIFICATED WEIGHT 48,000 LBS.
ENROUTE CLIMB SUMMARY

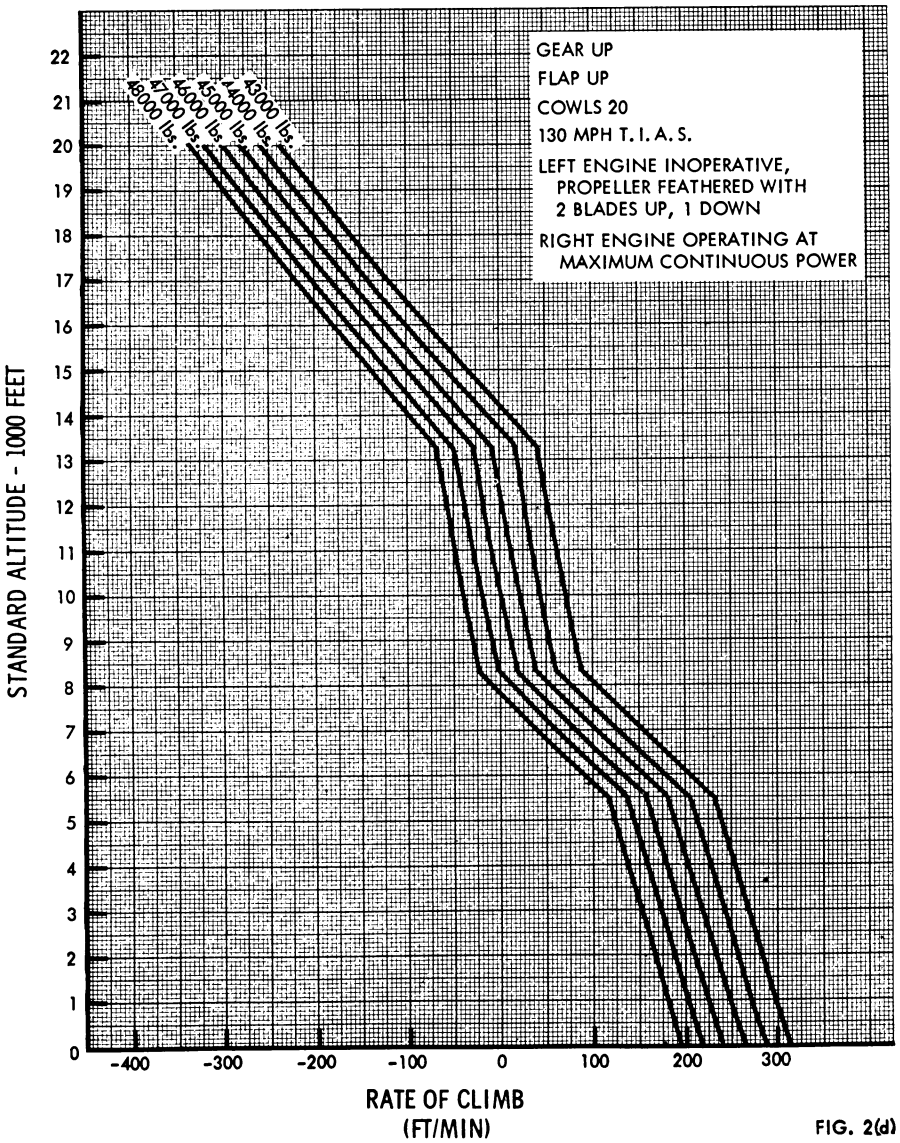


FIG. 2(d)

CURTISS C-46 MODELS

CERTIFICATED FOR MAX. WEIGHT OF 45,000 LBS.

LANDING LIMITATIONS.
ZERO WIND AND ZERO GRADIENT

BASED ON EFFECTIVE LANDING LENGTH
AT INTENDED DESTINATION. (0.60 FACTOR)

FAR 121.203

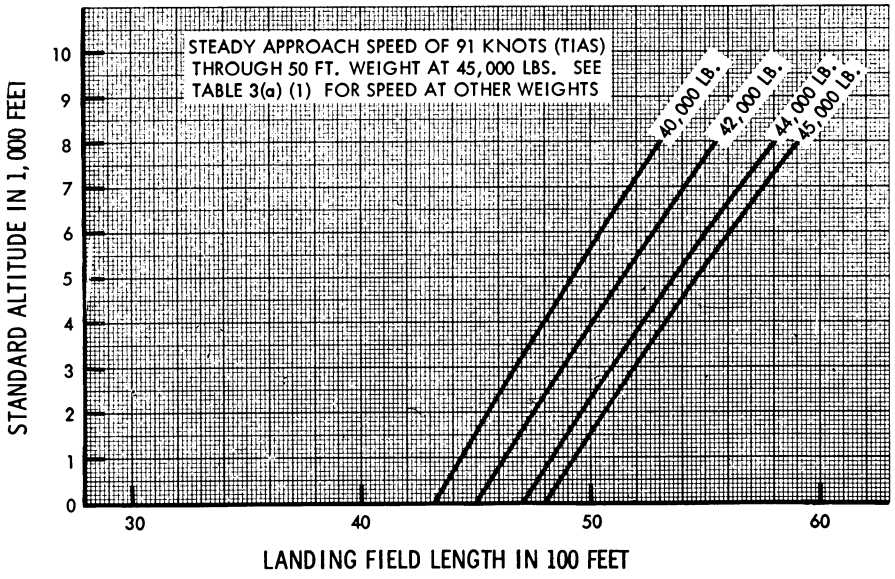


FIG. 3(a) (1)

CURTISS C-46 MODELS

CERTIFICATED FOR MAX. WEIGHT OF 48,000 LBS.

LANDING LIMITATIONS.
ZERO WIND AND ZERO GRADIENT

BASED ON EFFECTIVE LANDING LENGTH
AT INTENDED DESTINATION. (0.60 FACTOR)

FAR 121.203

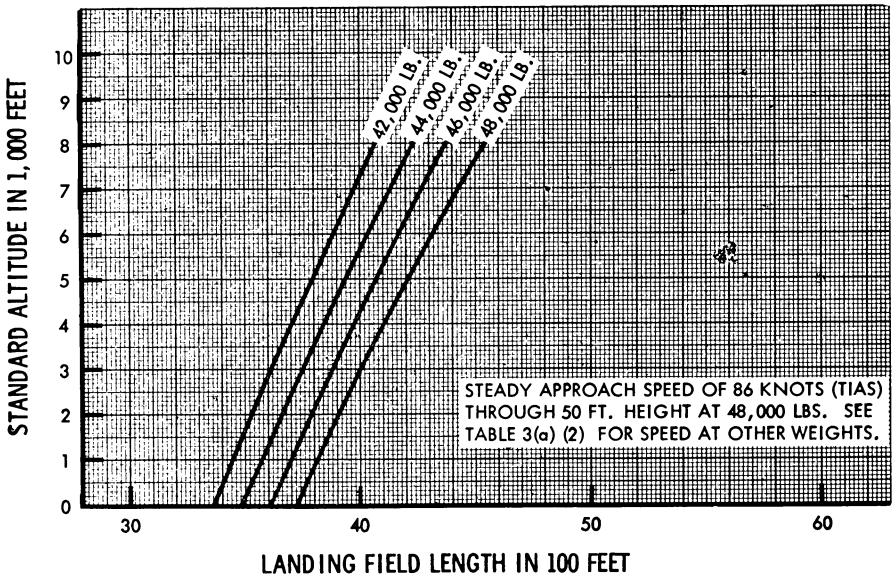


FIG. 3(a) (2)

CURTISS C-46 MODELS

CERTIFICATED FOR MAX. WEIGHT OF 45,000 LBS.

LANDING LIMITATIONS.
ZERO WIND AND ZERO GRADIENT

BASED ON EFFECTIVE LANDING LENGTH
AT ALTERNATE AIRPORTS. (0.70 FACTOR).

FAR 121.205

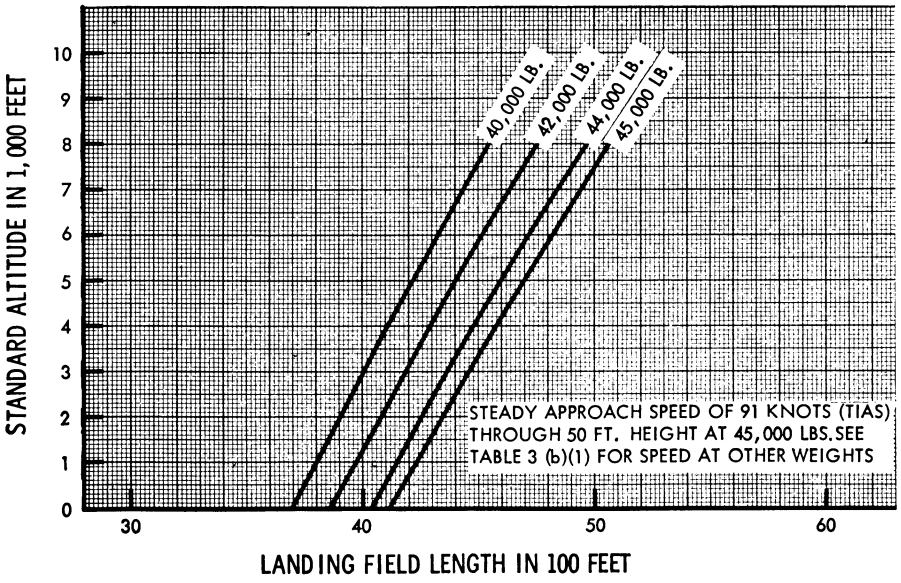


FIG. 3(b) (1)

CURTISS C-46 MODELS

CERTIFICATED FOR MAX. WEIGHT OF 48,000 LBS.

LANDING LIMITATIONS.
ZERO WIND AND ZERO GRADIENT

BASED ON EFFECTIVE LANDING LENGTH
AT ALTERNATE AIRPORTS. (0.70 FACTOR).

FAR 121.205

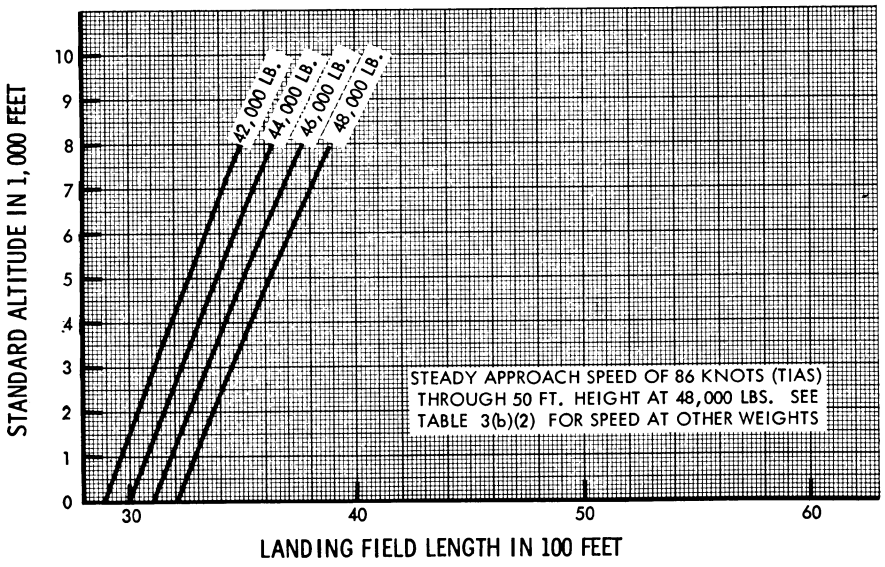


FIG. 3(b) (2)

CURTISS C-46 MODELS

CERTIFICATED FOR MAX. WEIGHT OF 45,000 LBS.

LANDING LIMITATIONS.
ZERO WIND AND ZERO GRADIENT

BASED ON ACTUAL LANDING LENGTH
WHEN EFFECTIVE LENGTH IS NOT
DETERMINED. (0.55 FACTOR)

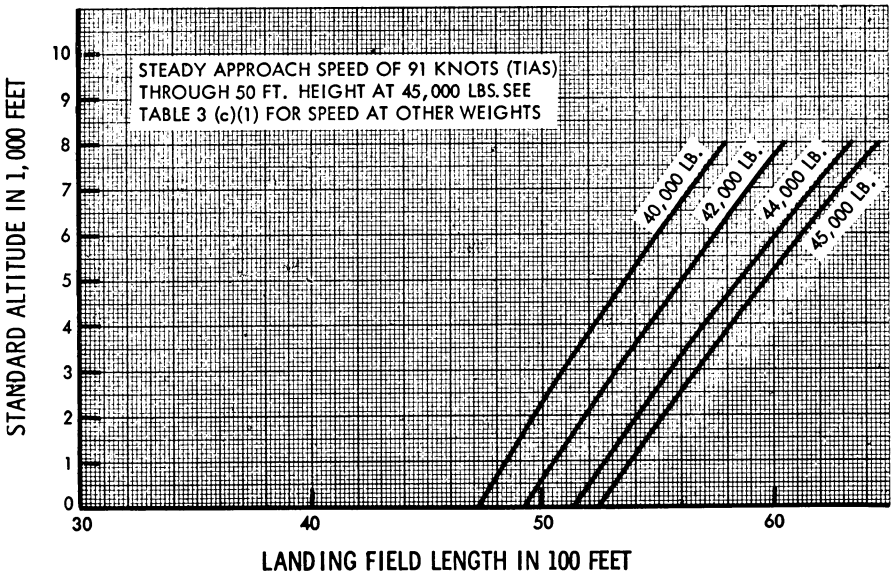


FIG. 3(c) (1)

CURTISS C-46 MODELS

CERTIFICATED FOR MAX. WEIGHT OF 48,000 LBS.

LANDING LIMITATIONS,
ZERO WIND AND ZERO GRADIENT

BASED ON ACTUAL LANDING LENGTH
WHEN EFFECTIVE LENGTH IS NOT
DETERMINED. (0.55 FACTOR)

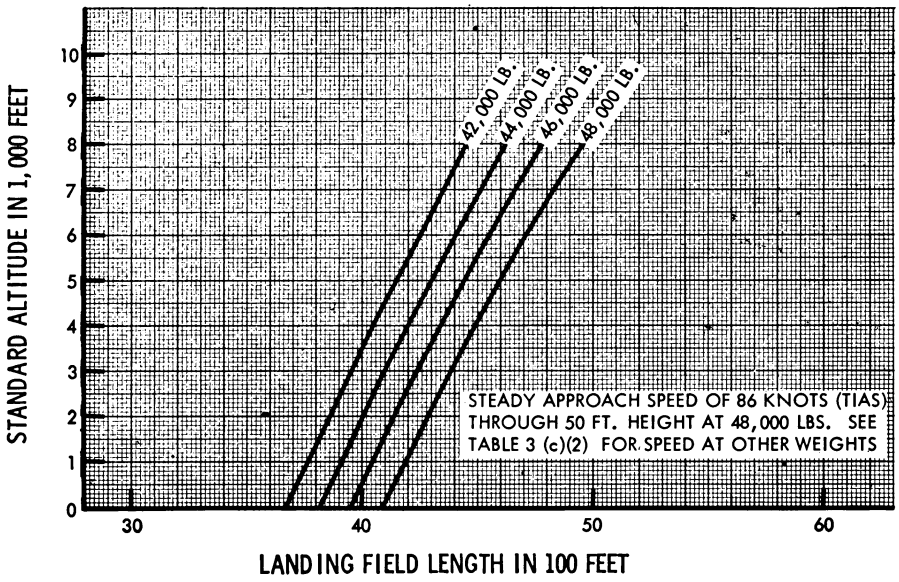


FIG. 3(c) (2)

[Doc. No. 4080, 30 FR 258, Jan. 3, 1965; 30 FR 481, Jan. 14, 1965, as amended by Amdt. 121–207, 54 FR 39293, Sept. 25, 1989]

APPENDIX D TO PART 121—CRITERIA FOR DEMONSTRATION OF EMERGENCY EVACUATION PROCEDURES UNDER § 121.291

(a) *Aborted takeoff demonstration.* (1) The demonstration must be conducted either during the dark of the night or during daylight with the dark of the night simulated. If the demonstration is conducted indoors during daylight hours, it must be conducted with each window covered and each door closed to minimize the daylight effect. Illumination on the floor or ground may be used, but it must be kept low and shielded against shining into the airplane's windows or doors.

(2) The airplane must be a normal ground attitude with landing gear extended.

(3) Unless the airplane is equipped with an off-wing descent means, stands or ramps may be used for descent from the wing to the ground. Safety equipment such as mats or inverted life rafts may be placed on the floor or ground to protect participants. No other equipment that is not part of the emergency evacuation equipment of the airplane may be used to aid the participants in reaching the ground.

(4) The airplane's normal electrical power sources must be deenergized.

(5) All emergency equipment for the type of passenger-carrying operation involved must be installed in accordance with the certificate holder's manual.

(6) Each external door and exit, and each internal door or curtain must be in position to simulate a normal takeoff.

(7) A representative passenger load of persons in normal health must be used. At least 40 percent of the passenger load must be females. At least 35 percent of the passenger load must be over 50 years of age. At least 15 percent of the passenger load must be female and over 50 year of age. Three life-size dolls, not included as part of the total passenger load, must be carried by passengers to simulate live infants 2 years old or younger. Crewmembers, mechanics, and training personnel, who maintain or operate the airplane in the normal course of their duties, may not be used as passengers.

(8) No passenger may be assigned a specific seat except as the Administrator may require. Except as required by item (12) of this paragraph, no employee of the certificate holder may be seated next to an emergency exit.

(9) Seat belts and shoulder harnesses (as required) must be fastened.

(10) Before the start of the demonstration, approximately one-half of the total average amount of carry-on baggage, blankets, pillows, and other similar articles must be distributed at several locations in the aisles and emergency exit access ways to create minor obstructions.

(11) The seating density and arrangement of the airplane must be representative of the highest capacity passenger version of that airplane the certificate holder operates or proposes to operate.

(12) Each crewmember must be a member of a regularly scheduled line crew, except that flight crewmembers need not be members of a regularly scheduled line crew, provided they have knowledge of the airplane. Each crewmember must be seated in the seat the crewmember is normally assigned for takeoff, and must remain in that seat until the signal for commencement of the demonstration is received.

(13) No crewmember or passenger may be given prior knowledge of the emergency exits available for the demonstration.

(14) The certificate holder may not practice, rehearse, or describe the demonstration for the participants nor may any participant have taken part in this type of demonstration within the preceding 6 months.

(15) The pretakeoff passenger briefing required by § 121.571 may be given in accordance with the certificate holder's manual. The passengers may also be warned to follow directions of crewmembers, but may not be instructed on the procedures to be followed in the demonstration.

(16) If safety equipment as allowed by item (3) of this section is provided, either all passenger and cockpit windows must be blacked out or all of the emergency exits must have safety equipment in order to prevent disclosure of the available emergency exits.

(17) Not more than 50 percent of the emergency exits in the sides of the fuselage of an airplane that meet all of the requirements applicable to the required emergency exits for that airplane may be used for the demonstration. Exits that are not to be used in the demonstration must have the exit handle deactivated or must be indicated by red lights, red tape, or other acceptable means, placed outside the exits to indicate fire or other reason that they are unusable. The exits to be used must be representative of all of the emergency exits on the airplane and must be designated by the certificate holder, subject to approval by the Administrator. At least one floor level exit must be used.

(18) Except as provided in paragraph (a)(3) of this appendix, all evacuees must leave the airplane by a means provided as part of the airplane's equipment.

(19) The certificate holder's approved procedures and all of the emergency equipment that is normally available, including slides, ropes, lights, and megaphones, must be fully utilized during the demonstration, except that the flightcrew must take no active role in assisting others inside the cabin during the demonstration.

(20) The evacuation time period is completed when the last occupant has evacuated the airplane and is on the ground. Evacuees

using stands or ramps allowed by item (3) above are considered to be on the ground when they are on the stand or ramp: *Provided*, That the acceptance rate of the stand or ramp is no greater than the acceptance rate of the means available on the airplane for descent from the wing during an actual crash situation.

(b) *Ditching demonstration*. The demonstration must assume that daylight hours exist outside the airplane, and that all required crewmembers are available for the demonstration.

(1) If the certificate holder's manual requires the use of passengers to assist in the launching of liferafts, the needed passengers must be aboard the airplane and participate in the demonstration according to the manual.

(2) A stand must be placed at each emergency exit and wing, with the top of the platform at a height simulating the water level of the airplane following a ditching.

(3) After the ditching signal has been received, each evacuee must don a life vest according to the certificate holder's manual.

(4) Each liferaft must be launched and inflated, according to the certificate holder's manual, and all other required emergency equipment must be placed in rafts.

(5) Each evacuee must enter a liferaft, and the crewmembers assigned to each liferaft must indicate the location of emergency equipment aboard the raft and describe its use.

(6) Either the airplane, a mockup of the airplane or a floating device simulating a passenger compartment must be used.

(i) If a mockup of the airplane is used, it must be a life-size mockup of the interior and representative of the airplane currently used by or proposed to be used by the certificate holder, and must contain adequate seats for use of the evacuees. Operation of the emergency exits and the doors must closely simulate those on the airplane. Sufficient wing area must be installed outside the over-the-wing exits to demonstrate the evacuation.

(ii) If a floating device simulating a passenger compartment is used, it must be representative, to the extent possible, of the passenger compartment of the airplane used in operations. Operation of the emergency exits and the doors must closely simulate operation on that airplane. Sufficient wing area must be installed outside the over-the-wing exits to demonstrate the evacuation. The device must be equipped with the same survival equipment as is installed on the airplane, to accommodate all persons participating in the demonstration.

[Doc. No. 2033, 30 FR 3206, Mar. 9, 1965, as amended by Amdt. 121–30, 32 FR 13268, Sept. 20, 1967; Amdt. 121–41, 33 FR 9067, June 20, 1968; Amdt. 121–46, 34 FR 5545, Mar. 22, 1969; Amdt. 121–47, 34 FR 11489, July 11, 1969; Amdt. 121–233, 58 FR 45230, Aug. 26, 1993]

APPENDIX E TO PART 121—FLIGHT TRAINING REQUIREMENTS

The maneuvers and procedures required by §121.424 of this part for pilot initial, transition, and upgrade flight training are set forth in the certificate holder's approved low-altitude windshear flight training program and in this appendix and must be performed inflight except that windshear maneuvers and procedures must be performed in an airplane simulator in which the maneuvers and procedures are specifically authorized to be accomplished and except to the extent that certain other maneuvers and procedures may be performed in an airplane simulator with a visual system (visual simulator), an airplane simulator without a visual system (nonvisual simulator), a training device, or a static airplane as indicated by the appropriate symbol in the respective column opposite the maneuver or procedure.

Whenever a maneuver or procedure is authorized to be performed in a nonvisual simulator, it may be performed in a visual simulator; when authorized in a training device, it may be performed in a visual or nonvisual simulator, and in some cases, a static airplane. Whenever the requirement may be performed in either a training device or a static airplane, the appropriate symbols are entered in the respective columns.

For the purpose of this appendix, the following symbols mean—

P=Pilot in Command (PIC).
S=Second in Command (SIC).
B=PIC and SIC.
F=Flight Engineer.
PJ=PIC transition Jet to Jet.
PP=PIC transition Prop. to Prop.
SJ=SIC transition Jet to Jet.
SP=SIC transition Prop. to Prop.
AT=All transition categories (PJ, PP, SJ, SP).
PS=SIC upgrading to PIC (same airplane).
SF=Flight Engineer upgrading to SIC (same airplane).
BU=Both SIC and Flight Engineer upgrading (same airplane).

FLIGHT TRAINING REQUIREMENTS

Maneuvers/Procedures	Initial training					Transition training					Upgrade training				
	A/P		Simulator			A/P		Simulator			A/P		Simulator		
	Inflight	Static	Visual simulator	Non-visual simulator	Training device	Inflight	Static	Visual simulator	Non-visual simulator	Training device	Inflight	Static	Visual simulator	Non-visual simulator	Training device
As appropriate to the airplane and the operation involved, flight training for pilots must include the following maneuvers and procedures..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
I. Preflight:															
(a) Visual inspection of the exterior and interior of the airplane, the location of each item to be inspected, and the purpose for inspecting it. If a flight engineer is a required crewmember for the particular type of airplane, the visual inspection may be replaced by using an approved pictorial means that realistically portrays the location and detain of preflight inspection items..	.....	B	.....	.....	.....	.....	AT	.....	.....	.....	.....	BU	.....	.....	
(b) Use of the prestart check list, appropriate control system checks, starting procedures, radio and electronic equipment checks, and the selection of proper navigation and communications radio facilities and frequencies prior to flight.	.....	.....	.....	B	.....	.....	.....	.....	AT	.....	.....	.....	.....	BU	
(c) Taxiing, sailing, and docking procedures in compliance with instructions issued by the appropriate Traffic Control Authority or by the person conducting the training.	B	.....	.....	.....	.....	AT	.....	.....	.....	.....	BU	.....	.....	.....	
(d) Pretakeoff checks that include powerplant checks.	.....	.....	.....	B	.....	.....	.....	.....	AT	.....	.....	.....	.....	BU	
II. Takeoffs:															
(a) Normal takeoffs which, for the purpose of this maneuver, begin when the airplane is taxied into position on the runway to be used.	B	.....	.....	.....	.....	AT	.....	.....	.....	.....	BU	.....	.....	.....	
(b) Takeoffs with instrument conditions simulated at or before reaching an altitude of 100′ above the airport elevation.	.....	.....	B	.....	.....	.....	.....	AT	.....	.....	.....	.....	BU	.....	
(c) Crosswind takeoffs	B	.....	.....	.....	.....	AT	.....	.....	.....	.....	BU	.....	.....	.....	
(d) Takeoffs with a simulated failure of the most critical powerplant—.	.....	.....	B	.....	.....	.....	.....	AT	.....	.....	.....	.....	BU	.....	

(1) At a point after V_1 and before V_2 that in the judgment of the person conducting the training is appropriate to the airplane type under the prevailing conditions; or.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	
(2) At a point as close as possible after V_1 when V_1 and V_2 or V_1 and V_R are identical; or.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	
(3) At the appropriate speed for non-transport category airplanes.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	
For transition training in an airplane group with engines mounted in similar positions, or from wing-mounted engines to aft fuselage-mounted engines, the maneuver may be performed in a nonvisual simulator.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	
(e) Rejected takeoffs accomplished during a normal takeoff run after reaching a reasonable speed determined by giving due consideration to aircraft characteristics, runway length, surface conditions, wind direction and velocity, brake heat energy, and any other pertinent factors that may adversely affect safety or the airplane.	....	....	....	B	....	....	....	....	AT	....	....	....	....	BU	
Training in at least one of the above takeoffs must be accomplished at night. For transitioning pilots this requirement may be met during the operating experience required under § 121.434 of this part by performing a normal takeoff at night when a check airman serving as pilot-in-command is occupying a pilot station.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	
III. Flight Maneuvers and Procedures:															
(a) Turns with and without spoilers	....	....	....	B	....	....	....	....	AT	....	....	....	....	BU	
(b) Tuck and Mach buffet	....	....	....	B	....	....	....	....	AT	....	....	....	....	BU	
(c) Maximum endurance and maximum range procedures.	....	....	....	B	....	....	....	....	AT	....	....	....	....	BU	
(d) Operation of systems and controls at the flight engineer station.	....	....	....	B	....	....	....	....	AT	....	....	....	....	PS	
(e) Runway and jammed stabilizer	....	....	....	B	....	....	....	....	AT	....	....	....	....	BU	
(f) Normal and abnormal or alternate operation of the following systems and procedures:															
(1) Pressurization	....	....	....	....	B	....	....	....	....	AT	....	....	....	....	BU
(2) Pneumatic	....	....	....	....	B	....	....	....	....	AT	....	....	....	....	BU
(3) Air conditioning	....	....	....	....	B	....	....	....	....	AT	....	....	....	....	BU
(4) Fuel and oil	....	B	....	....	B	....	AT	....	....	AT	....	BU	....	....	BU
(5) Electrical	....	B	....	....	B	....	AT	....	....	AT	....	BU	....	....	BU
(6) Hydraulic	....	B	....	....	B	....	AT	....	....	AT	....	BU	....	....	BU
(7) Flight control	....	B	....	....	B	....	AT	....	....	....	....	BU	....	....	BU
(8) Anti-icing and deicing	....	....	....	B	....	....	....	....	AT	....	....	....	....	BU	

FLIGHT TRAINING REQUIREMENTS—Continued

Maneuvers/Procedures	Initial training					Transition training					Upgrade training				
	A/P		Simulator			A/P		Simulator			A/P		Simulator		
	Inflight	Static	Visual simulator	Non-visual simulator	Training device	Inflight	Static	Visual simulator	Non-visual simulator	Training device	Inflight	Static	Visual simulator	Non-visual simulator	Training device
(9) Auto-pilot	.....	.....	.....	B	.....	.....	.....	.....	AT	.....	.....	.....	.....	BU	
(10) Automatic or other approach aids	B	.....	.....	B	.....	.....	.....	.....	AT	.....	SF	.....	.....	BU	
(11) Stall warning devices, stall avoidance devices, and stability augmentation devices.	B	.....	.....	B	.....	.....	.....	.....	AT	.....	SF	.....	.....	BU	
(12) Airborne radar devices	.....	.....	.....	B	.....	.....	.....	.....	AT	.....	.....	.....	.....	BU	
(13) Any other systems, devices, or aids available.	.....	.....	.....	B	.....	.....	.....	.....	AT	.....	.....	.....	.....	BU	
(14) Electrical, hydraulic, flight control, and flight instrument system malfunctioning or failure.	.....	B	.....	.....	B	.....	AT	.....	.....	AT	.....	BU	.....	.....	BU
(15) Landing gear and flap systems failure or malfunction.	.....	B	.....	.....	B	.....	AT	.....	.....	AT	.....	BU	.....	.....	BU
(16) Failure of navigation or communications equipment.	.....	.....	.....	B	.....	.....	.....	.....	AT	.....	.....	.....	.....	BU	
(g) Flight emergency procedures that include at least the following:															
(1) Powerplant, heater, cargo compartment, cabin, flight deck, wing, and electrical fires.	.....	B	.....	.....	B	.....	AT	.....	.....	AT	.....	BU	.....	.....	BU
(2) Smoke control	.....	B	.....	.....	B	.....	AT	.....	.....	AT	.....	BU	.....	BU	BU
(3) Powerplant failures	.....	.....	.....	B	.....	.....	.....	.....	AT	.....	.....	.....	.....	.....	BU
(4) Fuel jettisoning	.....	B	.....	.....	B	.....	B	.....	.....	B	.....	BU	.....	.....	BU
(5) Any other emergency procedures outlined in the appropriate flight manual.	.....	.....	.....	B	.....	.....	.....	.....	AT	.....	.....	.....	.....	BU	
(h) Steep turns in each direction. Each steep turn must involve a bank angle of 45° with a heading change of at least 180° but not more than 360°.	.....	.....	.....	P	.....	.....	.....	.....	PJ	.....	.....	.....	.....	PS	
(i) Approaches to stalls in the takeoff configuration (except where the airplane uses only a zero-flap configuration), in the clean configuration, and in the landing configuration.	.....	.....	.....	B	.....	.....	.....	.....	AT	.....	.....	.....	.....	BU	
Training in at least one of the above configurations must be accomplished while in a turn with a bank angle between 15° and 30°.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
(j) Recovery from specific flight characteristics that are peculiar to the airplane type.	.....	.....	.....	B	.....	.....	.....	.....	AT	.....	.....	.....	.....	BU	

(k) Instrument procedures that include the following:														
(1) Area departure and arrival				B					AT					BU
(2) Use of navigation systems including adherence to assigned radials.				B					AT					BU
(3) Holding				B					AT					BU
(l) ILS instrument approaches that include the following:														
(1) Normal ILS approaches	B					AT					BU			
(2) Manually controlled ILS approaches with a simulated failure of one powerplane which occurs before initiating the final approach course and continues to touchdown or through the missed approach procedure.	B							AT					BU	
(m) Instrument approaches and missed approaches other than ILS which include the following:														
(1) Nonprecision approaches that the trainee is likely to use.					B					AT			BU	
(2) In addition to subparagraph (1) of this paragraph, at least one other nonprecision approach and missed approach procedure that the trainee is likely to use.			B					AT					BU	
In connection with paragraphs III(k) and III(l), each instrument approach must be performed according to any procedures and limitations approved for the approach facility used. The instrument approach begins when the airplane is over the initial approach fix for the approach procedure being used (or turned over to the final approach controller in the case of GCA approach) and ends when the airplane touches down on the runway or when transition to a missed approach configuration is completed.														
(n) Circling approaches which include the following:	B					AT					BU			
(1) That portion of the circling approach to the authorized minimum altitude for the procedure being used must be made under simulated instrument conditions.														

FLIGHT TRAINING REQUIREMENTS—Continued

Maneuvers/Procedures	Initial training					Transition training					Upgrade training				
	A/P		Simulator			A/P		Simulator			A/P		Simulator		
	Inflight	Static	Visual simulator	Non-visual simulator	Training device	Inflight	Static	Visual simulator	Non-visual simulator	Training device	Inflight	Static	Visual simulator	Non-visual simulator	Training device
(2) The circling approach must be made to the authorized minimum circling approach altitude followed by a change in heading and the necessary maneuvering (by visual reference) to maintain a flight path that permits a normal landing on a runway at least 90° from the final approach course of the simulated instrument portion of the approach.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
(3) The circling approach must be performed without excessive maneuvering, and without exceeding the normal operating limits of the airplane. The angle of bank should not exceed 30°.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Training in the circling approach maneuver is not required for a pilot employed by a certificate holder subject to the operating rules of Part 121 of this chapter if the certificate holder's manual prohibits a circling approach in weather conditions below 1000–3 (ceiling and visibility); for a SIC if the certificate holder's manual prohibits the SIC from performing a circling approach in operations under this part.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
(o) Zero-flap approaches. Training in this maneuver is not required for a particular airplane type if the Administrator has determined that the probability of flap extension failure on that type airplane is extremely remote due to system design. In making this determination, the Administrator determines whether training on slats only and partial flap approaches is necessary.	P	.....	.....	.....	.....	.....	.....	PP, PJ.	.....	.....	.....	.....	PS	.....	
(p) Missed approaches which include the following:															
(1) Missed approaches from ILS approaches.	.....	.....	B	.....	.....	.....	.....	AT	.....	.....	.....	.....	BU	.....	

(2) Other missed approaches	....	....	....	....	B	....	....	....	....	AT	....	....	....	....	BU
(3) Missed approaches that include a complete approved missed approach procedure.	....	....	....	....	B	....	....	....	....	AT	....	....	....	....	BU
(4) Missed approaches that include a powerplant failure.	....	....	B	....	....	....	....	AT	....	....	....	....	BU	....	
IV. Landings and Approaches to Landings:															
(a) Normal landings	B	....	....	....	....	AT	....	....	....	....	BU	....	....	....	
(b) Landing and go around with the horizontal stabilizer out of trim.	P	....	....	....	....	....	....	PJ, PP.	....	....	....	....	....	....	PS
(c) Landing in sequence from an ILS instrument approach.	B	....	....	....	....	AT	....	AT	....	....	....	....	BU	....	
(d) Cross wind landing	B	....	....	....	....	AT	....	....	....	....	BU	....	....	....	
(e) Maneuvering to a landing with simulated powerplant failure, as follows:															
(1) Except as provided in subparagraph (3) of this paragraph in the case of 3–engine airplanes, maneuvering to a landing with an approved procedure that approximates the loss of two powerplants (center and one outboard engine).	P	....	....	....	....	....	....	PJ, PP.	....	....	....	....	PS	....	
(2) Except as provided in subparagraph (3) of this paragraph, in the case of other multiengine airplanes, maneuvering to a landing with a simulated failure of 50 percent of available powerplants with the simulated loss of power on one side of the airplane.	P	....	....	....	....	....	....	PJ, PP.	....	....	....	....	PS	....	
(3) Notwithstanding the requirements of subparagraphs (1) and (2) of this paragraph, flight crewmembers who satisfy those requirements in a visual simulator must also:															
(*i*) Take inflight training in one-engine inoperative landings; and.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	
(*ii*) In the case of a second-in-command up-grading to a pilot-in-command and who has not previously performed the maneuvers required by this paragraph in flight, meet the requirements of this paragraph applicable to initial training for pilots-in-command.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	
(4) In the case of flight crewmembers other than the pilot-in-command, perform the maneuver with the simulated loss of power of the most critical powerplant only.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	

FLIGHT TRAINING REQUIREMENTS—Continued

Maneuvers/Procedures	Initial training					Transition training					Upgrade training				
	A/P		Simulator			A/P		Simulator			A/P		Simulator		
	Inflight	Static	Visual simulator	Non-visual simulator	Training device	Inflight	Static	Visual simulator	Non-visual simulator	Training device	Inflight	Static	Visual simulator	Non-visual simulator	Training device
(f) Landing under simulated circling approach conditions (exceptions under III(n) applicable to this requirement).	B							AT					BU		
(g) Rejected landings that include a normal missed approach procedure after the landing is rejected. For the purpose of this maneuver the landing should be rejected at approximately 50 feet and approximately over the runway threshold.	B							AT					BU		
(h) Zero-flap landings if the Administrator finds that maneuver appropriate for training in the airplane.	P							PP, PJ.					PS		
(i) Manual reversion (if appropriate)			B					AT					BU		
Training in landings and approaches to landings must include the types and conditions provided in IV(a) through (i) but more than one type may be combined where appropriate.															
Training in one of the above landings must be accomplished at night. For transitioning pilots, this requirement may be met during the operating experience required under § 121.434 of this part by performing a normal landing when a check pilot serving as pilot-in-command is occupying a pilot station.	B					AT					BU				

[Doc. No. 9509, 35 FR 97, Jan. 3, 1970, as amended by Amdt. 121–91, 37 FR 10730, May 27, 1972; Amdt. 121–108, 38 FR 35446, Dec. 28, 1973; Amdt. 121–159, 45 FR 41595, June 19, 1980; Amdt. 121–199, 53 FR 37697, Sept. 27, 1988]

APPENDIX F TO PART 121—PROFICIENCY CHECK REQUIREMENTS

The maneuvers and procedures required by §121.441 for pilot proficiency checks are set forth in this appendix and must be performed inflight except to the extent that certain maneuvers and procedures may be performed in an airplane simulator with a visual system (visual simulator), an airplane simulator without a visual system (nonvisual simulator), or a training device as indicated by the appropriate symbol in the respective column opposite the maneuver or procedure.

Whenever a maneuver or procedure is authorized to be performed in a nonvisual simulator, it may also be performed in a visual simulator; when authorized in a training device, it may be performed in a visual or nonvisual simulator.

For the purpose of this appendix, the following symbols mean—

P=Pilot in Command.

B=Both Pilot in Command and Second in Command.

=A symbol and asterisk (B) indicates that a particular condition is specified in the maneuvers and procedures column.

#=When a maneuver is preceded by this symbol it indicates the maneuver may be required in the airplane at the discretion of the person conducting the check.

Throughout the maneuvers prescribed in this appendix, good judgment commensurate with a high level of safety must be demonstrated. In determining whether such judgment has been shown, the person conducting the check considers adherence to approved procedures, actions based on analysis of situations for which there is no prescribed procedure or recommended practice, and qualities of prudence and care in selecting a course of action.

Maneuvers/Procedures	Required		Permitted			
	Simulated instrument conditions	Inflight	Visual simulator	Nonvisual simulator	Training device	Waiver provisions of §121.441(d)
The procedures and maneuvers set forth in this appendix must be performed in a manner that satisfactorily demonstrates knowledge and skill with respect to—						
(1) The airplane, its systems and components;	.....	.....	.....	.....	.....	.....
(2) Proper control of airspeed, configuration, direction, altitude, and attitude in accordance with procedures and limitations contained in the approved Airplane Flight Manual, the certificate holder's operations Manual, check lists, or other approved material appropriate to the airplane type; and	.....	.....	.....	.....	.....	.....
(3) Compliance with approach, ATC, or other applicable procedures	.....	.....	.....	.....	.....	.....
I. Preflight:						
(a) Equipment examination (oral or written). As part of the practical test the equipment examination must be closely coordinated with, and related to, the flight maneuvers portion but may not be given during the flight maneuvers portion. The equipment examination must cover—	.....	.....	.....	.....	B	.....
(1) Subjects requiring a practical knowledge of the airplane, its powerplants, systems, components, operational, and performance factors;	.....	.....	.....	.....	.....	.....
(2) Normal, abnormal, and emergency procedures, and the operations and limitations relating thereto; and	.....	.....	.....	.....	.....	.....
(3) The appropriate provisions of the approved Airplane Flight Manual	.....	.....	.....	.....	.....	.....
The person conducting the check may accept, as equal to this equipment test, an equipment test given to the pilot in the certificate holder's ground school within the preceding 6 calendar months						
(b) Preflight inspection. The pilot must—	.....	.....	.....	.....	B	B*
(1) Conduct an actual visual inspection of the exterior and interior of the airplane, locating each item and explaining briefly the purpose for inspecting it; and	.....	.....	.....	.....	.....	.....
(2) Demonstrate the use of the prestart check list, appropriate control system checks, starting procedures, radio and electronic equipment checks, and the selection of proper navigation and communications radio facilities and frequencies prior to flight	.....	.....	.....	.....	.....	.....

Maneuvers/Procedures	Required		Permitted			
	Simulated instrument conditions	Inflight	Visual simulator	Non-visual simulator	Training device	Waiver provisions of § 121.441(d)
Except for flight checks required by § 121.424(d)(2), an approved pictorial means that realistically portrays the location and detail of preflight inspection items and provides for the portrayal of abnormal conditions may be substituted for the preflight inspection. If a flight engineer is a required flight crewmember for the particular type airplane, the visual inspection may be waived under § 121.441(d)						
(c) Taxiing. This maneuver includes taxiing (in the case of a second in command proficiency check to the extent practical from the second in command crew position), sailing, or docking procedures in compliance with instructions issued by the appropriate traffic control authority or by the person conducting the checks	.....	B	.....	.....	.....	.....
(d) Powerplant checks. As appropriate to the airplane type	.....	.....	.....	B	.....	.....
II. Takeoff:						
(a) Normal. One normal takeoff which, for the purpose of this maneuver, begins when the airplane is taxied into position on the runway to be used	.....	B*	.....	.....	.....	.....
(b) Instrument. One takeoff with instrument conditions simulated at or before reaching an altitude of 100′ above the airport elevation	B	.....	B*	.....	.....	.....
(c) Crosswind. One crosswind takeoff, if practicable, under the existing meteorological, airport, and traffic conditions	.....	B*	.....	.....	.....	.....
Requirements (a) and (c) may be combined, and requirements (a), (b), and (c) may be combined if (b) is performed inflight						
#(d) Powerplant failure. One takeoff with a simulated failure of the most critical powerplant—	.....	.....	B	.....	.....	.....
(1) At a point after V_1 and before V_2 that in the judgment of the person conducting the check is appropriate to the airplane type under the prevailing conditions;	.....	.....	.....	.....	.....	.....
(2) At a point as close as possible after V_1 when V_1 and V_2 or V_1 and V_r are identical; or	.....	.....	.....	.....	.....	.....
(3) At the appropriate speed for non-transport category airplanes	.....	.....	.....	.....	.....	.....
In an airplane group with aft fuselage-mounted engines this maneuver may be performed in a non-visual simulator	.....	.....	.....	.....	.....	.....
(e) Rejected. A rejected takeoff may be performed in an airplane during a normal takeoff run after reaching a reasonable speed determined by giving due consideration to aircraft characteristics, runway length, surface conditions, wind direction and velocity, brake heat energy, and any other pertinent factors that may adversely affect safety or the airplane	.....	.....	.....	B*	.....	B
III. Instrument procedures:						
(a) Area departure and area arrival. During each of these maneuvers the applicant must—	B	.....	.....	B	.....	B*
(1) Adhere to actual or simulated ATC clearances (including assigned radials); and	.....	.....	.....	.....	.....	.....
(2) Properly use available navigation facilities	.....	.....	.....	.....	.....	.....
Either area arrival or area departure, but not both, may be waived under § 121.441(d)						
(b) Holding. This maneuver includes entering, maintaining, and leaving holding patterns. It may be performed in connection with either area departure or area arrival	B	.....	.....	B	.....	B
(c) ILS and other instrument approaches. There must be the following:						
(1) At least one normal ILS approach	B	.....	B	.....	.....	.....
(2) At least one manually controlled ILS approach with a simulated failure of one powerplant. The simulated failure should occur before initiating the final approach course and must continue to touchdown or through the missed approach procedure	B	.....	.....	.....	.....	.....
(3) At least one nonprecision approach procedure that is representative of the nonprecision approach procedures that the certificate holder is likely to use	B	.....	B	.....	.....	.....

Maneuvers/Procedures	Required		Permitted			
	Simulated instrument conditions	Inflight	Visual simulator	Non-visual simulator	Training device	Waiver provisions of §121.441(d)
(4) Demonstration of at least one nonprecision approach procedure on a letdown aid other than the approach procedure performed under subparagraph (3) of this paragraph that the certificate holder is approved to use. If performed in a training device, the procedures must be observed by a check pilot or an approved instructor	B	.....	.....	.....	B	.....
Each instrument approach must be performed according to any procedures and limitations approved for the approach facility used. The instrument approach begins when the airplane is over the initial approach fix for the approach procedure being used (or turned over to the final approach controller in the case of GCA approach) and ends when the airplane touches down on the runway or when transition to a missed approach configuration is completed. Instrument conditions need not be simulated below 100′ above touchdown zone elevation						
(d) Circling approaches. If the certificate holder is approved for circling minimums below 1000–3, at least one circling approach must be made under the following conditions—	.....	.....	B*	.....	.....	B*
(1) The portion of the approach to the authorized minimum circling approach altitude must be made under simulated instrument conditions	B	.....	.....	.....	.....	.....
(2) The approach must be made to the authorized minimum circling approach altitude followed by a change in heading and the necessary maneuvering (by visual reference) to maintain a flight path that permits a normal landing on a runway at least 90° from the final approach course of the simulated instrument portion of the approach	.....	.....	.....	.....	.....	.....
(3) The circling approach must be performed without excessive maneuvering, and without exceeding the normal operating limits of the airplane. The angle of bank should not exceed 30°	.....	.....	.....	.....	.....	.....
If local conditions beyond the control of the pilot prohibit the maneuver or prevent it from being performed as required, it may be waived as provided in §121.441(d): Provided, however, That the maneuver may not be waived under this provision for two successive proficiency checks. The circling approach maneuver is not required for a second-in-command if the certificate holder's manual prohibits a second-in-command from performing a circling approach in operations under this part						
(e) Missed approach	.....	.....	.....	.....	.....	.....
(1) Each pilot must perform at least one missed approach from an ILS approach	.....	.....	B*	.....	.....	.....
(2) Each pilot in command must perform at least one additional missed approach	.....	.....	P*	.....	.....	.....
A complete approved missed approach procedure must be accomplished at least once. At the discretion of the person conducting the check a simulated powerplant failure may be required during any of the missed approaches. These maneuvers may be performed either independently or in conjunction with maneuvers required under Sections III or V of this appendix. At least one missed approach must be performed in flight						
IV. Inflight Maneuvers:						
(a) Steep turns. At least one steep turn in each direction must be performed. Each steep turn must involve a bank angle of 45° with a heading change of at least 180° but not more than 360°	P	.....	.....	P	.....	P
(b) Approaches to stalls. For the purpose of this maneuver the required approach to a stall is reached when there is a perceptible buffet or other response to the initial stall entry. Except as provided below there must be at least three approaches to stalls as follows:	B	.....	.....	B	.....	B*

Maneuvers/Procedures	Required		Permitted			
	Simulated instrument conditions	Inflight	Visual simulator	Non-visual simulator	Training device	Waiver provisions of § 121.441(d)
(1) One must be in the takeoff configuration (except where the airplane uses only a zero-flap takeoff configuration)	.....	.....	.....	.....	.....	.....
(2) One in a clean configuration	.....	.....	.....	.....	.....	.....
(3) One in a landing configuration	.....	.....	.....	.....	.....	.....
At the discretion of the person conducting the check, one approach to a stall must be performed in one of the above configurations while in a turn with the bank angle between 15° and 30°. Two out of the three approaches required by this paragraph may be waived						
If the certificate holder is authorized to dispatch or flight release the airplane with a stall warning device inoperative the device may not be used during this maneuver						
(c) Specific flight characteristics. Recovery from specific flight characteristics that are peculiar to the airplane type	.....	.....	.....	B	.....	B
(d) Powerplant failures. In addition to specific requirements for maneuvers with simulated powerplant failures, the person conducting the check may require a simulated powerplant failure at any time during the check	.....	.....	.....	B	.....	.....
V. Landings and Approaches to Landings:						
Notwithstanding the authorizations for combining and waiving maneuvers and for the use of a simulator, at least two actual landings (one to a full stop) must be made for all pilot-in-command and initial second-in-command proficiency checks. Landings, and approaches to landings must include the following, but more than one type may be combined where appropriate:						
Landings and approaches to landings must include the types listed below, but more than one type may be combined where appropriate:						
(a) Normal landing	.....	B	.....	.....	.....	.....
(b) Landing in sequence from an ILS instrument approach except that if circumstances beyond the control of the pilot prevent an actual landing, the person conducting the check may accept an approach to a point where in his judgment a landing to a full stop could have been made	.....	B*	.....	.....	.....	.....
(c) Crosswind landing, if practical under existing meteorological, airport, and traffic conditions	.....	B*	.....	.....	.....	.....
(d) Maneuvering to a landing with simulated powerplant failure as follows:						
(1) In the case of 3–engine airplanes, maneuvering to a landing with an approved procedure that approximates the loss of two powerplants (center and one outboard engine); or	.....	.....	B*	.....	.....	.....
(2) In the case of other multiengine airplanes, maneuvering to a landing with a simulated failure of 50 percent of available powerplants, with the simulated loss of power on one side of the airplane	.....	.....	B*	.....	.....	.....

Maneuvers/Procedures	Required		Permitted			
	Simulated instrument conditions	Inflight	Visual simulator	Non-visual simulator	Training device	Waiver provisions of §121.441(d)
Notwithstanding the requirements of subparagraphs (d) (1) and (2) of this paragraph, in a proficiency check for other than a pilot-in-command, the simulated loss of power may be only the most critical powerplant. However, if a pilot satisfies the requirements of subparagraphs (d) (1) or (2) of this paragraph in a visual simulator, he also must maneuver in flight to a landing with a simulated failure of the most critical powerplant. In addition, a pilot-in-command may omit the maneuver required by subparagraph (d)(1) or (d)(2) of this paragraph during a required proficiency check or simulator course of training if he satisfactorily performed that maneuver during the preceding proficiency check, or during the preceding approved simulator course of training under the observation of a check airman, whichever was completed later						
(e) Except as provided in paragraph (f) of this section, if the certificate holder is approved for circling minimums below 1000–3, a landing under simulated circling approach conditions. However, when performed in an airplane, if circumstances beyond the control of the pilot prevent a landing, the person conducting the check may accept an approach to a point where, in his judgment, a landing to a full stop could have been made	.....	.....	B*	.....	.....	.....
#(f) A rejected landing, including a normal missed approach procedure, that is rejected approximately 50′ over the runway and approximately over the runway threshold. This maneuver may be combined with instrument, circling, or missed approach procedures, but instrument conditions need not be simulated below 100 feet above the runway	.....	.....	B	.....	.....	.....
VI. Normal and Abnormal Procedures:						
Each applicant must demonstrate the proper use of as many of the systems and devices listed below as the person conducting the check finds are necessary to determine that the person being checked has a practical knowledge of the use of the systems and devices appropriate to the airplane type:						
(a) Anti-icing and de-icing systems	.....	.....	.....	B	.....	.....
(b) Auto-pilot systems	.....	.....	.....	B	.....	.....
(c) Automatic or other approach aid systems	.....	.....	.....	B	.....	.....
(d) Stall warning devices, stall avoidance devices, and stability augmentation devices	.....	.....	.....	B	.....	.....
(e) Airborne radar devices	.....	.....	.....	B	.....	.....
(f) Any other systems, devices, or aids available	.....	.....	.....	B	.....	.....
(g) Hydraulic and electrical system failures and malfunctions	.....	.....	.....	.....	B	.....
(h) Landing gear and flap systems failure or malfunction	.....	.....	.....	.....	B	
(i) Failure of navigation or communications equipment	.....	.....	.....	B	.....	.....
VII. Emergency Procedures:						
Each applicant must demonstrate the proper emergency procedures for as many of the emergency situations listed below as the person conducting the check finds are necessary to determine that the person being checked has an adequate knowledge of, and ability to perform, such procedure:						
(a) Fire in flight	.....	.....	.....	B	.....	.....
(b) Smoke control	.....	.....	.....	B	.....	.....
(c) Rapid decompression	.....	.....	.....	B	.....	.....
(d) Emergency descent	.....	.....	.....	B	.....	.....
(e) Any other emergency procedures outlined in the appropriate approved Airplane Flight Manual	.....	.....	.....	B	.....	.....

[Doc. No. 9509, 35 FR 99, Jan. 3, 1970, as amended by Amdt. 121–80, 36 FR 19362, Oct. 5, 1971; Amdt. 121–91, 37 FR 10730, May 27, 1972; Amdt. 121–92, 37 FR 12717, June 28, 1972; Amdt. 121–108, 38 FR 35448, Dec. 28, 1973; Amdt. 121–136, 42 FR 43389, Aug. 29, 1977]

APPENDIX G TO PART 121—DOPPLER RADAR AND INERTIAL NAVIGATION SYSTEM (INS): REQUEST FOR EVALUATION; EQUIPMENT AND EQUIPMENT INSTALLATION; TRAINING PROGRAM; EQUIPMENT ACCURACY AND RELIABILITY; EVALUATION PROGRAM

1. *Application authority.* (a) An applicant for authority to use a Doppler Radar or Inertial Navigation System must submit a request for evaluation of the system to the Flight Standards District Office or International Field Office charged with the overall inspection of its operations 30 days prior to the start of evaluation flights.

(b) The application must contain:

(1) A summary of experience with the system showing to the satisfaction of the Administrator a history of the accuracy and reliability of the system proposed to be used.

(2) A training program curriculum for initial approval under §121.405.

(3) A maintenance program for compliance with subpart L of this part.

(4) A description of equipment installation.

(5) Proposed revisions to the Operations Manual outlining all normal and emergency procedures relative to use of the proposed system, including detailed methods for continuing the navigational function with partial or complete equipment failure, and methods for determining the most accurate system when an unusually large divergence between systems occurs. For the purpose of this appendix, a large divergence is a divergence that results in a track that falls beyond clearance limits.

(6) Any proposed revisions to the minimum equipment list with adequate justification therefor.

(7) A list of operations to be conducted using the system, containing an analysis of each with respect to length, magnetic compass reliability, availability of en route aids, and adequacy of gateway and terminal radio facilities to support the system. For the purpose of this appendix, a gateway is a specific navigational fix where use of long range navigation commences or terminates.

2. *Equipment and equipment installation—Inertial Navigation Systems (INS) or Doppler Radar System.* (a) Inertial Navigation and Doppler Radar Systems must be installed in accordance with applicable airworthiness requirements.

(b) Cockpit arrangement must be visible and useable by either pilot seated at his duty station.

(c) The equipment must provide, by visual, mechanical, or electrical output signals, indications of the invalidity of output data upon the occurrence of probable failures or malfunctions within the system.

(d) A probable failure or malfunction within the system must not result in loss of the aircraft's required navigation capability.

(e) The alignment, updating, and navigation computer functions of the system must not be invalidated by normal aircraft power interruptions and transients.

(f) The system must not be the source of cause of objectionable radio frequency interference, and must not be adversely affected by radio frequency interference from other aircraft systems.

(g) The FAA-approved airplane flight manual, or supplement thereto, must include pertinent material as required to define the normal and emergency operating procedures and applicable operating limitations associated with INS and Doppler performance (such as maximum latitude at which ground alignment capability is provided, or deviations between systems).

3. *Equipment and equipment installation—Inertial Navigation Systems (INS).* (a) If an applicant elects to use an Inertial Navigation System it must be at least a dual system (including navigational computers and reference units). At least two systems must be operational at takeoff. The dual system may consist of either two INS units, or one INS unit and one Doppler Radar unit.

(b) Each Inertial Navigation System must incorporate the following:

(1) Valid ground alignment capability at all latitudes appropriate for intended use of the installation.

(2) A display of alignment status or a ready to navigate light showing completed alignment to the flight crew.

(3) The present position of the airplane in suitable coordinates.

(4) Information relative to destinations or waypoint positions:

(i) The information needed to gain and maintain a desired track and to determine deviations from the desired track.

(ii) The information needed to determine distance and time to go to the next waypoint or destination.

(c) For INS installations that do not have memory or other inflight alignment means, a separate electrical power source (independent of the main propulsion system) must be provided which can supply, for at least 5 minutes, enough power (as shown by analysis or as demonstrated in the airplane) to maintain the INS in such condition that its full capability is restored upon the reactivation of the normal electrical supply.

(d) The equipment must provide such visual, mechanical, or electrical output signals as may be required to permit the flight crew to detect probable failures or malfunctions in the system.

4. *Equipment and equipment installation—Doppler Radar Systems.* (a) If an applicant elects to use a Doppler Radar System it must be at least a dual system (including

dual antennas or a combined antenna designed for multiple operation), except that:

(1) A single operating transmitter with a standby capable of operation may be used in lieu of two operating transmitters.

(2) Single heading source information to all installations may be utilized, provided a compass comparator system is installed and operational procedures call for frequent cross-checks of all compass heading indicators by crewmembers.

The dual system may consist of either two Doppler Radar units or one Doppler Radar unit and one INS unit.

(b) At least two systems must be operational at takeoff.

(c) As determined by the Administrator and specified in the certificate holder's operations specifications, other navigational aids may be required to update the Doppler Radar for a particular operation. These may include Loran, Consol, DME, VOR, ADF, ground-based radar, and airborne weather radar. When these aids are required, the cockpit arrangement must be such that all controls are accessible to each pilot seated at his duty station.

5. *Training programs.* The initial training program for Doppler Radar and Inertial Navigation Systems must include the following:

(a) Duties and responsibilities of flight crewmembers, dispatchers, and maintenance personnel.

(b) For pilots, instruction in the following:

(1) Theory and procedures, limitations, detection of malfunctions, preflight and inflight testing, and cross-checking methods.

(2) The use of computers, an explanation of all systems, compass limitations at high latitudes, a review of navigation, flight planning, and applicable meteorology.

(3) The methods for updating by means of reliable fixes.

(4) The actual plotting of fixes.

(c) Abnormal and emergency procedures.

6. *Equipment accuracy and reliability.* (a) Each Inertial Navigation System must meet the following accuracy requirements, as appropriate:

(1) For flights up to 10 hours' duration, no greater than 2 nautical miles per hour of circular error on 95 percent of system flights completed is permitted.

(2) For flights over 10 hours' duration, a tolerance of ±20 miles cross-track and ±25 miles along-track on 95 percent of system flights completed is permitted.

(b) Compass heading information to the Doppler Radar must be maintained to an accuracy of ±1° and total system deviations must not exceed 2°. When free gyro techniques are used, procedures shall be utilized to ensure that an equivalent level of heading accuracy and total system deviation is attained.

(c) Each Doppler Radar System must meet accuracy requirements of ±20 miles cross-track and ±25 miles along-track for 95 percent of the system flights completed. Updating is permitted.

A system that does not meet the requirements of this section will be considered a failed system.

7. *Evaluation program.* (a) Approval by evaluation must be requested as a part of the application for operational approval of a Doppler Radar or Inertial Navigation System.

(b) The applicant must provide sufficient flights which show to the satisfaction of the Administrator the applicant's ability to use cockpit navigation in his operation.

(c) The Administrator bases his evaluation on the following:

(1) Adequacy of operational procedures.

(2) Operational accuracy and reliability of equipment and feasibility of the system with regard to proposed operations.

(3) Availability of terminal, gateway, area, and en route ground-based aids, if required, to support the self-contained system.

(4) Acceptability of cockpit workload.

(5) Adequacy of flight crew qualifications.

(6) Adequacy of maintenance training and availability of spare parts.

After successful completion of evaluation demonstrations, FAA approval is indicated by issuance of amended operations specifications and en route flight procedures defining the new operation. Approval is limited to those operations for which the adequacy of the equipment and the feasibility of cockpit navigation has been satisfactorily demonstrated.

[Doc. No. 10204, 37 FR 6464, Mar. 30, 1972, as amended by Amdt. 121–207, 54 FR 39293, Sept. 25, 1989]

APPENDIX H TO PART 121—ADVANCED SIMULATION

This appendix provides guidelines and a means for achieving flightcrew training in advanced airplane simulators. This appendix describes the simulator and visual system requirements which must be achieved to obtain approval of certain types of training in the simulator. The requirements in this appendix are in addition to the simulator approval requirements in §121.407. Each simulator which is used under this appendix must be approved as a Level B, C, or D simulator, as appropriate.

To obtain FAA approval of the simulator for a specific level, the following must be demonstrated to the satisfaction of the Administrator:

1. Documented proof of compliance with the appropriate simulator, visual system, and additional training requirements of this appendix for the level for which approval is requested.

2. An evaluation of the simulator to ensure that its ground, flight, and landing performance matches the type of airplane simulated.

3. An evaluation of the appropriate simulator and visual system requirements of the level for which approval is requested.

CHANGES TO SIMULATOR PROGRAMING

While a need exists for some flexibility in making changes in the software program, strict scrutiny of these changes is essential to ensure that the simulator retains its ability to duplicate the airplane's flight and ground characteristics. Therefore, the following procedure must be followed to allow these changes without affecting the approval of an appendix H simulator:

1. Twenty-one calendar days before making changes to the software program which might impact flight or ground dynamics of an appendix H simulator, a complete list of these planned changes, including dynamics related to the motion and visual systems, must be provided in writing to the FAA office responsible for conducting the recurrent evaluation of that simulator.

2. If the FAA does not object to the planned change within 21 calendar days, the operator may make the change.

3. Changes which might affect the approved simulator Level B test guide must be tested by the operator in the simulator to determine the impact of the change before submission to the FAA.

4. Software changes actually installed must be summarized and provided to the FAA. When the operator's test shows a difference in simulator performance due to a change, an amended copy of the test guide page which includes the new simulator test results will also be provided to update the FAA's copy of the test guide.

5. The FAA may examine supporting data or flight check the simulator, or both, to ensure that the aerodynamic quality of the simulator has not been degraded by any change in software programming.

6. All requests for changes are evaluated on the basis of the same criteria used in the initial approval of the simulator for Level B, C, or D.

SIMULATOR MINIMUM EQUIPMENT LIST (MEL)

Because of the strict tolerances and other approval requirements of appendix H simulators, the simulator can provide realistic training with certain nonessential items inoperative. Therefore, an operator may operate its simulator under an MEL which has been approved by the Administrator for that simulator. The MEL includes simulator components and indicates the type of training or checking that is authorized if the component becomes inoperative. To accomplish this, the component is placed in one of the following categories along with any remarks applicable to the component's use in the training program:

1. No training or checking.
2. Training in specific maneuvers.
3. Certification and checking.
4. Line Oriented Flight Training (LOFT).

ADVANCED SIMULATION TRAINING PROGRAM

For an operator to conduct Level C or D training under this appendix all required simulator instruction and checks must be conducted under an advanced simulation training program which is approved by the Administrator for the operator. This program must also ensure that all instructors and check airmen used in appendix H training and checking are highly qualified to provide the training required in the training program. The advanced simulation training program shall include the following:

1. The operator's initial, transition, upgrade, and recurrent simulator training programs and its procedures for re-establishing recency of experience in the simulator.

2. How the training program will integrate Level B, C, and D simulators with other simulators and training devices to maximize the total training, checking, and certification functions.

3. Documentation that each instructor and check airman has served for at least 1 year in that capacity in a certificate holder's approved program or has served for at least 1 year as a pilot in command or second in command in an airplane of the group in which that pilot is instructing or checking.

4. A procedure to ensure that each instructor and check airman actively participates in either an approved regularly scheduled line flying program as a flight crewmember or an approved line observation program in the same airplane type for which that person is instructing or checking.

5. A procedure to ensure that each instructor and check airman is given a minimum of 4 hours of training each year to become familiar with the operator's advanced simulation training program, or changes to it, and to emphasize their respective roles in the program. Training for simulator instructors and check airmen shall include training policies and procedures, instruction methods and techniques, operation of simulator controls (including environmental and trouble panels), limitations of the simulator, and minimum equipment required for each course of training.

6. A special Line Oriented Flight Training (LOFT) program to facilitate the transition from the simulator to line flying. This LOFT program consists of at least a 4-hour course of training for each flightcrew. It also contains at least two representative flight segments of the operator's route. One of the flight segments contains strictly normal operating procedures from push back at one airport to arrival at another. Another flight

segment contains training in appropriate abnormal and emergency flight operations.

LEVEL B

Training and Checking Permitted

1. Recency of experience (§121.439).
2. Night takeoffs and landings (part 121, appendix E).
3. Landings in a proficiency check without the landing on the line requirements (§121.441).

Simulator Requirements

1. Aerodynamic programing to include:
a. Ground effect—for example, roundout, flare, and touchdown. This requires data on lift, drag, and pitching moment in ground effect.
b. Ground reaction—Reaction of the airplane upon contact with the runway during landing to include strut deflections, tire friction, and side forces.
c. Ground handling characteristics—steering inputs to include crosswind, braking, thrust reversing, deceleration, and turning radius.
2. Minimum of 3-axis freedom of motion systems.
3. Level B landing maneuver test guide to verify simulator data with actual airplane flight test data, and provide simulator performance tests for Level B initial approval.
4. Multichannel recorders capable of recording Level B performance tests.

Visual Requirements

1. Visual system compatibility with aerodynamic programming.
2. Visual system response time from pilot control input to visual system output shall not exceed 300 milliseconds more than the movement of the airplane to a similar input. Visual system response time is defined as the completion of the visual display scan of the first video field containing different information resulting from an abrupt control input.
3. A means of recording the visual response time for comparison with airplane data.
4. Visual cues to assess sink rate and depth perception during landings.
5. Visual scene to instrument correlation to preclude perceptible lags.

LEVEL C

Training and Checking Permitted

1. For all pilots, transition training between airplanes in the same group, and for a pilot in command the certification check required by §61.153(g) this chapter.
2. Upgrade to pilot-in-command training and the certification check when the pilot—
a. Has previously qualified as second in command in the equipment to which the pilot is upgrading;
b. Has at least 500 hours of actual flight time while serving as second in command in an airplane of the same group; and
c. Is currently serving as second in command in an airplane in this same group.
3. Initial pilot-in-command training and the certification check when the pilot—
a. Is currently serving as second in command in an airplane of the same group;
b. Has a minimum of 2,500 flight hours as second in command in an airplane of the same group; and
c. Has served as second in command on at least two airplanes of the same group.
4. For all second-in command pilot applicants who meet the aeronautical experience requirements of §61.159 of this chapter in the airplane, the initial and upgrade training and checking required by this part, and the certification check requirements of §61.153 of this chapter.

Simulator Requirements

1. Representative crosswind and three-dimensional windshear dynamics based on airplane related data.
2. Representative stopping and directional control forces for at least the following runway conditions based on airplane related data:
a. Dry.
b. Wet.
c. Icy.
d. Patchy wet.
e. Patchy icy.
f. Wet on rubber residue in touchdown zone.
3. Representative brake and tire failure dynamics (including antiskid) and decreased brake efficiency due to high brake temperatures based on airplane related data.
4. A motion system which provides motion cues equal to or better than those provided by a six-axis freedom of motion system.
5. Operational principal navigation systems, including electronic flight instrument systems, INS, and OMEGA, if applicable.
6. Means for quickly and effectively testing simulator programing and hardware.
7. Expanded simulator computer capacity, accuracy, resolution, and dynamic response to meet Level C demands. Resolution equivalent to that of at least a 32-bit word length computer is required for critical aerodynamic programs.
8. Timely permanent update of simulator hardware and programing subsequent to airplane modification.
9. Sound of precipitation and significant airplane noises perceptible to the pilot during normal operations and the sound of a crash when the simulator is landed in excess of landing gear limitations.
10. Aircraft control feel dynamics shall duplicate the airplane simulated. This shall be determined by comparing a recording of the control feel dynamics of the simulator to

airplane measurements in the takeoff, cruise, and landing configuration.

11. Relative responses of the motion system, visual system, and cockpit instruments shall be coupled closely to provide integrated sensory cues. These systems shall respond to abrupt pitch, roll, and yaw inputs at the pilot's position within 150 milliseconds of the time, but not before the time, when the airplane would respond under the same conditions. Visual scene changes from steady state disturbance shall not occur before the resultant motion onset but within the system dynamic response tolerance of 150 milliseconds. The test to determine compliance with these requirements shall include simultaneously recording the analog output from the pilot's control column and rudders, the output from an accelerometer attached to the motion system platform located at an acceptable location near the pilots' seats, the output signal to the visual system display (including visual system analog delays), and the output signal to the pilot's attitude indicator or an equivalent test approved by the Administrator. The test results in a comparison of a recording of the simulator's response to actual airplane response data in the takeoff, cruise, and landing configuration.

Visual Requirements

1. Dusk and night visual scenes with at least three specific airport representations, including a capability of at least 10 levels of occulting, general terrain characteristics, and significant landmarks.

2. Radio navigation aids properly oriented to the airport runway layout.

3. Test procedures to quickly confirm visual system color, RVR, focus, intensity, level horizon, and attitude as compared to the simulator attitude indicator.

4. For the approach and landing phase of flight, at and below an altitude of 2,000 feet height above the airport (HAA) and within a radius of 10 miles from the airport, weather representations including the following:

a. Variable cloud density.

b. Partial obscuration of ground scenes; that is, the effect of a scattered to broken cloud deck.

c. Gradual break out.

d. Patchy fog.

e. The effect of fog on airport lighting.

f. Category II and III weather conditions.

5. Continuous minimum visual field of view of 75° horizontal and 30° vertical per pilot seat. Visual gaps shall occur only as they would in the airplane simulated or as required by visual system hardware. Both pilot seat visual systems shall be able to be operated simultaneously.

6. Capability to present ground and air hazards such as another airplane crossing the active runway or converging airborne traffic.

LEVEL D

Training and Checking Permitted

Except for the requirements listed in the next sentence, all pilot flight training and checking required by this part and the certification check requirements of §61.153(g) of this chapter. The line check required by §121.440 of this part, the static airplane requirements of appendix E of this part, and the operating experience requirements of §121.434 of this part must still be performed in the airplane.

Simulator Requirements

1. Characteristic buffet motions that result from operation of the airplane (for example, high-speed buffet, extended landing gear, flaps, nose-wheel scuffing, stall) which can be sensed at the flight deck. The simulator must be programed and instrumented in such a manner that the characteristic buffet modes can be measured and compared to airplane data. Airplane data are also required to define flight deck motions when the airplane is subjected to atmospheric disturbances such as rough air and cobblestone turbulence. General purpose disturbance models that approximate demonstrable flight test data are acceptable.

2. Aerodynamic modeling for aircraft for which an original type certificate is issued after June 1, 1980, including low-altitude, level-flight ground effect, mach effect at high altitude, effects of airframe icing, normal and reverse dynamic thrust effect on control surfaces, aero-elastic representations, and representations of nonlinearities due to side slip based on airplane flight test data provided by the manufacturer.

3. Realistic amplitude and frequency of cockpit noises and sounds, including precipitation static and engine and airframe sounds. The sounds shall be coordinated with the weather representations required in visual requirement No. 3.

4. Self-testing for simulator hardware and programming to determine compliance with Level B, C, and D simulator requirements.

5. Diagnostic analysis printout of simulator malfunctions sufficient to determine MEL compliance. These printouts shall be retained by the operator between recurring FAA simulator evaluations as part of the daily discrepancy log required under §121.407(a)(5).

Visual Requirements

1. Daylight, dusk, and night visual scenes with sufficient scene content to recognize a specific airport, the terrain, and major landmarks around that airport and to successfully accomplish a visual landing. The daylight visual scene must be part of a total daylight cockpit environment which at least represents the amount of light in the cockpit

on an overcast day. For the purpose of this rule, daylight visual system is defined as a visual system capable of producing, as a minimum, full color presentations, scene content comparable in detail to that produced by 4,000 edges or 1,000 surfaces for daylight and 4,000 light points for night and dusk scenes, 6-foot lamberts of light at the pilot's eye (highlight brightness), 3-arc minutes resolution for the field of view at the pilot's eye, and a display which is free of apparent quantization and other distracting visual effects while the simulator is in motion. The simulation of cockpit ambient lighting shall be dynamically consistent with the visual scene displayed. For daylight scenes, such ambient lighting shall neither ''washout'' the displayed visual scene nor fall below 5-foot lamberts of light as reflected from an approach plate at knee height at the pilot's station and/or 2-foot lamberts of light as reflected from the pilot's face.

2. Visual scenes portraying representative physical relationships which are known to cause landing illusions in some pilots, including short runway, landing over water, runway gradient, visual topographic features, and rising terrain.

3. Special weather representations which include the sound, visual, and motion effects of entering light, medium, and heavy precipitation near a thunderstorm on takeoff, approach, and landings at and below an altitude of 2,000 feet HAA and within a radius of 10 miles from the airport.

4. Level C visual requirements in daylight as well as dusk and night representations.

5. Wet and, if appropriate for the operator, snow-covered runway representations, including runway lighting effects.

6. Realistic color and directionality of airport lighting.

7. Weather radar presentations in aircraft where radar information is presented on the pilot's navigation instruments.

(Secs. 313, 601, 603, 604, Federal Aviation Act of 1958, as amended (49 U.S.C. 1354, 1421, 1423, 1424); sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c)))

[Doc. No. 19758, 45 FR 44183, June 30, 1980; 45 FR 48599, July 31, 1980, as amended by Amdt. 121–258, 61 FR 30732, June 17, 1996; 61 FR 39859, July 31, 1996; Amdt. 121–267, 62 FR 68137, Dec. 30, 1997]

EFFECTIVE DATE NOTE: By Doc. No. FAA–2002–12461, 71 FR 63640, Oct. 30, 2006, Appendix H to part 121 was revised, effective Oct. 30, 2007. At 72 FR 59599, Oct. 22, 2007, the effective date was delayed to May 30, 2008. For the convenience of the user, the revised text is set forth below:

APPENDIX H TO PART 121—ADVANCED SIMULATION

This appendix provides guidelines and a means for achieving flightcrew training in advanced airplane simulators. The requirements in this appendix are in addition to the simulator approval requirements in §121.407. Each simulator used under this appendix must be approved as a Level B, C, or D simulator, as appropriate.

ADVANCED SIMULATION TRAINING PROGRAM

For an operator to conduct Level C or D training under this appendix all required simulator instruction and checks must be conducted under an advanced simulation training program approved by the Administrator for the operator. This program must also ensure that all instructors and check airmen used in appendix H training and checking are highly qualified to provide the training required in the training program. The advanced simulation training program must include the following:

1. The operator's initial, transition, upgrade, and recurrent simulator training programs and its procedures for re-establishing recency of experience in the simulator.

2. How the training program will integrate Level B, C, and D simulators with other simulators and training devices to maximize the total training, checking, and certification functions.

3. Documentation that each instructor and check airman has served for at least 1 year in that capacity in a certificate holder's approved program or has served for at least 1 year as a pilot in command or second in command in an airplane of the group in which that pilot is instructing or checking.

4. A procedure to ensure that each instructor and check airman actively participates in either an approved regularly scheduled line flying program as a flight crewmember or an approved line observation program in the same airplane type for which that person is instructing or checking.

5. A procedure to ensure that each instructor and check airman is given a minimum of 4 hours of training each year to become familiar with the operator's advanced simulation training program, or changes to it, and to emphasize their respective roles in the program. Training for simulator instructors and check airmen must include training policies and procedures, instruction methods and techniques, operation of simulator controls (including environmental and trouble panels), limitations of the simulator, and minimum equipment required for each course of training.

6. A special Line Oriented Flight Training (LOFT) program to facilitate the transition from the simulator to line flying. This LOFT program must consist of at least a 4-hour course of training for each flightcrew. It also

must contain at least two representative flight segments of the operator's route. One of the flight segments must contain strictly normal operating procedures from push back at one airport to arrival at another. Another flight segment must contain training in appropriate abnormal and emergency flight operations.

LEVEL B

Training and Checking Permitted

1. Recency of experience (§121.439).

2. Night takeoffs and landings (Part 121, Appendix E).

3. Landings in a proficiency check without the landing on the line requirements (§121.441).

LEVEL C

Training and Checking Permitted

1. For all pilots, transition training between airplanes in the same group, and for a pilot in command the certification check required by §61.153 of this chapter.

2. Upgrade to pilot-in-command training and the certification check when the pilot—

a. Has previously qualified as second in command in the equipment to which the pilot is upgrading;

b. Has at least 500 hours of actual flight time while serving as second in command in an airplane of the same group; and

c. Is currently serving as second in command in an airplane in this same group.

3. Initial pilot-in-command training and the certification check when the pilot—

a. Is currently serving as second in command in an airplane of the same group;

b. Has a minimum of 2,500 flight hours as second in command in an airplane of the same group; and

c. Has served as second in command on at least two airplanes of the same group.

4. For all second-in-command pilot applicants who meet the aeronautical experience requirements of §61.159 of this chapter in the airplane, the initial and upgrade training and checking required by this part, and the certification check requirements of §61.153 of this chapter.

LEVEL D

Training and Checking Permitted

Except for the requirements listed in the next sentence, all pilot flight training and checking required by this part and the certification check requirements of §61.153(g) of this chapter. The line check required by §121.440, the static airplane requirements of appendix E of this part, and the operating experience requirements of §121.434 must still be performed in the airplane.

APPENDIX I TO PART 121—DRUG TESTING PROGRAM

This appendix contains the standards and components that must be included in an antidrug program required by this chapter.

I. *General*

A. *Purpose.* The purpose of this appendix is to establish a program designed to help prevent accidents and injuries resulting from the use of prohibited drugs by employees who perform safety-sensitive functions.

B. *DOT Procedures.* Each employer shall ensure that drug testing programs conducted pursuant to 14 CFR parts 65, 121, and 135 comply with the requirements of this appendix and the ''Procedures for Transportation Workplace Drug Testing Programs'' published by the Department of Transportation (DOT) (49 CFR part 40). An employer may not use or contract with any drug testing laboratory that is not certified by the Department of Health and Human Services (HHS) under the National Laboratory Certification Program.

C. *Employer Responsibility.* As an employer, you are responsible for all actions of your officials, representatives, and service agents in carrying out the requirements of this appendix and 49 CFR part 40.

D. *Applicable Federal Regulations.* The following applicable regulations appear in 49 CFR or 14 CFR:

1. 49 CFR

Part 40—Procedures for Transportation Workplace Drug Testing Programs

2. 14 CFR

61.14—Refusal to submit to a drug or alcohol test.
63.12b—Refusal to submit to a drug or alcohol test.
65.23—Refusal to submit to a drug or alcohol test.
65.46—Use of prohibited drugs.
67.107—First-Class Airman Medical Certificate, Mental.
67.207—Second-Class Airman Medical Certificate, Mental.
67.307—Third-Class Airman Medical Certificate, Mental.
121.429—Prohibited drugs.
121.455—Use of prohibited drugs.
121.457—Testing for prohibited drugs.
135.1—Applicability.
135.249—Use of prohibited drugs.
135.251—Testing for prohibited drugs.
135.353—Prohibited drugs.

E. *Falsification.* No person may make, or cause to be made, any of the following:

1. Any fraudulent or intentionally false statement in any application of an antidrug program.

2. Any fraudulent or intentionally false entry in any record or report that is made,

kept, or used to show compliance with this appendix.

3. Any reproduction or alteration, for fraudulent purposes, of any report or record required to be kept by this appendix.

II. *Definitions.* For the purpose of this appendix, the following definitions apply:

Accident means an occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight and all such persons have disembarked, and in which any person suffers death or serious injury, or in which the aircraft receives substantial damage.

Contractor is an individual or company that performs a safety-sensitive function by contract for an employer or another contractor.

DOT agency means an agency (or ''operating administration'') of the United States Department of Transportation administering regulations requiring drug testing (14 CFR part 61 et al.; 46 CFR part 16; 49 CFR parts 199, 219, and 382) in accordance with 49 CFR part 40.

Employee is a person who is hired, either directly or by contract, to perform a safety-sensitive function for an employer, as defined below. An employee is also a person who transfers into a position to perform a safety-sensitive function for an employer.

Employer is a part 119 certificate holder with authority to operate under parts 121 and/or 135, an operator as defined in §91.147 of this chapter, or an air traffic control facility not operated by the FAA or by or under contract to the U.S. Military. An employer may use a contract employee who is not included under that employer's FAA-mandated antidrug program to perform a safety-sensitive function only if that contract employee is included under the contractor's FAA-mandated antidrug program and is performing a safety-sensitive function on behalf of that contractor (i.e., within the scope of employment with the contractor.)

Hire means retaining an individual for a safety-sensitive function as a paid employee, as a volunteer, or through barter or other form of compensation.

Performing (a safety-sensitive function): an employee is considered to be performing a safety-sensitive function during any period in which he or she is actually performing, ready to perform, or immediately available to perform such function.

Positive rate for random drug testing means the number of verified positive results for random drug tests conducted under this appendix plus the number of refusals of random drug tests required by this appendix, divided by the total number of random drug test results (*i.e.,* positives, negatives, and refusals) under this appendix.

Prohibited drug means marijuana, cocaine, opiates, phencyclidine (PCP), and amphetamines, as specified in 49 CFR 40.85.

Refusal to submit means that an employee engages in conduct including but not limited to that described in 49 CFR 40.191.

Safety-sensitive function means a function listed in section III of this appendix.

Verified negative drug test result means a drug test result from an HHS-certified laboratory that has undergone review by an MRO and has been determined by the MRO to be a negative result.

Verified positive drug test result means a drug test result from an HHS-certified laboratory that has undergone review by an MRO and has been determined by the MRO to be a positive result.

III. *Employees Who Must be Tested.* Each employee, including any assistant, helper, or individual in a training status, who performs a safety-sensitive function listed in this section directly or by contract (including by subcontract at any tier) for an employer as defined in this appendix must be subject to drug testing under an antidrug program implemented in accordance with this appendix. This includes full-time, part-time, temporary, and intermittent employees regardless of the degree of supervision. The safety-sensitive functions are:

A. Flight crewmember duties.

B. Flight attendant duties.

C. Flight instruction duties.

D. Aircraft dispatcher duties.

E. Aircraft maintenance and preventive maintenance duties.

F. Ground security coordinator duties.

G. Aviation screening duties.

H. Air traffic control duties.

IV. *Substances for Which Testing Must Be Conducted.* Each employer shall test each employee who performs a safety-sensitive function for evidence of marijuana, cocaine, opiates, phencyclidine (PCP), and amphetamines during each test required by section V. of this appendix.

V. *Types of Drug Testing Required.* Each employer shall conduct the following types of testing in accordance with the procedures set forth in this appendix and the DOT ''Procedures for Transportation Workplace Drug Testing Programs'' (49 CFR part 40):

A. *Pre-Employment Testing.*

1. No employer may hire any individual for a safety-sensitive function listed in section III of this appendix unless the employer first conducts a pre-employment test and receives a verified negative drug test result for that individual.

2. No employer may allow an individual to transfer from a nonsafety-sensitive to a safety-sensitive function unless the employer first conducts a pre-employment test and receives a verified negative drug test result for the individual.

3. Employers must conduct another pre-employment test and receive a verified negative drug test result before hiring or transferring an individual into a safety-sensitive

function if more than 180 days elapse between conducting the pre-employment test required by section V.A.1. or V.A.2. of this appendix and hiring or transferring the individual into a safety-sensitive function, resulting in that individual being brought under an FAA drug-testing program.

4. If the following criteria are met, an employer is permitted to conduct a pre-employment test, and if such a test is conducted, the employer must receive a negative test result before putting the individual into a safety-sensitive function:

(a) The individual previously performed a safety-sensitive function for the employer and the employer is not required to pre-employment test the individual under section V.A.1. or V.A.2 of this appendix before putting the individual to work in a safety-sensitive function;

(b) The employer removed the individual from the employer's random testing program conducted under this appendix for reasons other than a verified positive test result on an FAA-mandated drug test or a refusal to submit to such testing; and

(c) The individual will be returning to the performance of a safety-sensitive function.

5. Before hiring or transferring an individual to a safety-sensitive function, the employer must advise each individual that the individual will be required to undergo pre-employment testing in accordance with this appendix, to determine the presence of marijuana, cocaine, opiates, phencyclidine (PCP), and amphetamines, or a metabolite of those drugs in the individual's system. The employer shall provide this same notification to each individual required by the employer to undergo pre-employment testing under section V.A.4. of this appendix.

B. *Random Testing.*

1. Except as provided in paragraphs 2–4 of this section, the minimum annual percentage rate for random drug testing shall be 50 percent of covered employees.

2. The Administrator's decision to increase or decrease the minimum annual percentage rate for random drug testing is based on the reported positive rate for the entire industry. All information used for this determination is drawn from the statistical reports required by section X of this appendix. In order to ensure reliability of the data, the Administrator considers the quality and completeness of the reported data, may obtain additional information or reports from employers, and may make appropriate modifications in calculating the industry positive rate. Each year, the Administrator will publish in the FEDERAL REGISTER the minimum annual percentage rate for random drug testing of covered employees. The new minimum annual percentage rate for random drug testing will be applicable starting January 1 of the calendar year following publication.

3. When the minimum annual percentage rate for random drug testing is 50 percent, the Administrator may lower this rate to 25 percent of all covered employees if the Administrator determines that the data received under the reporting requirements of this appendix for two consecutive calendar years indicate that the reported positive rate is less than 1.0 percent.

4. When the minimum annual percentage rate for random drug testing is 25 percent, and the data received under the reporting requirements of this appendix for any calendar year indicate that the reported positive rate is equal to or greater than 1.0 percent, the Administrator will increase the minimum annual percentage rate for random drug testing to 50 percent of all covered employees.

5. The selection of employees for random drug testing shall be made by a scientifically valid method, such as a random-number table or a computer-based random number generator that is matched with employees' Social Security numbers, payroll identification numbers, or other comparable identifying numbers. Under the selection process used, each covered employee shall have an equal chance of being tested each time selections are made.

6. As an employer, you must select and test a percentage of employees at least equal to the minimum annual percentage rate each year.

(a) As an employer, to determine whether you have met the minimum annual percentage rate, you must divide the number of random testing results for safety-sensitive employees by the average number of safety-sensitive employees eligible for random testing.

(1) To calculate whether you have met the annual minimum percentage rate, count all random positives, random negatives, and random refusals as your ''random testing results.''

(2) To calculate the average number of safety-sensitive employees eligible for random testing throughout the year, add the total number of safety-sensitive employees eligible for testing during each random testing period for the year and divide that total by the number of random testing periods. Only safety-sensitive employees are to be in an employer's random testing pool, and all safety-sensitive employees must be in the random pool. If you are an employer conducting random testing more often than once per month (e.g., you select daily, weekly, bi-weekly) you do not need to compute this total number of safety-sensitive employees more than on a once per month basis.

(b) As an employer, you may use a service agent to perform random selections for you, and your safety-sensitive employees may be part of a larger random testing pool of safety-sensitive employees. However, you must

ensure that the service agent you use is testing at the appropriate percentage established for your industry and that only safety-sensitive employees are in the random testing pool. For example:

(1) If the service agent has your employees in a random testing pool for your company alone, you must ensure that the testing is conducted at least at the minimum annual percentage rate under this part.

(2) If the service agent has your employees in a random testing pool combined with other FAA-regulated companies, you must ensure that the testing is conducted at least at the minimum annual percentage rate under this part.

(3) If the service agent has your employees in a random testing pool combined with other DOT-regulated companies, you must ensure that the testing is conducted at least at the highest rate required for any DOT-regulated company in the pool.

7. Each employer shall ensure that random drug tests conducted under this appendix are unannounced and that the dates for administering random tests are spread reasonably throughout the calendar year.

8. Each employer shall require that each safety-sensitive employee who is notified of selection for random drug testing proceeds to the collection site immediately; provided, however, that if the employee is performing a safety-sensitive function at the time of the notification, the employer shall instead ensure that the employee ceases to perform the safety-sensitive function and proceeds to the collection site as soon as possible.

9. If a given covered employee is subject to random drug testing under the drug testing rules of more than one DOT agency, the employee shall be subject to random drug testing at the percentage rate established for the calendar year by the DOT agency regulating more than 50 percent of the employee's function.

10. If an employer is required to conduct random drug testing under the drug testing rules of more than one DOT agency, the employer may—

(a) Establish separate pools for random selection, with each pool containing the covered employees who are subject to testing at the same required rate; or

(b) Randomly select covered employees for testing at the highest percentage rate established for the calendar year by any DOT agency to which the employer is subject.

11. An employer required to conduct random drug testing under the anti drug rules of more than one DOT agency shall provide each such agency access to the employer's records of random drug testing, as determined to be necessary by the agency to ensure the employer's compliance with the rule.

C. *Post-accident Testing.* Each employer shall test each employee who performs a safety-sensitive function for the presence of marijuana, cocaine, opiates, phencyclidine (PCP), and amphetamines, or a metabolite of those drugs in the employee's system if that employee's performance either contributed to an accident or can not be completely discounted as a contributing factor to the accident. The employee shall be tested as soon as possible but not later than 32 hours after the accident. The decision not to administer a test under this section must be based on a determination, using the best information available at the time of the determination, that the employee's performance could not have contributed to the accident. The employee shall submit to post-accident testing under this section.

D. *Testing Based on Reasonable Cause.* Each employer must test each employee who performs a safety-sensitive function and who is reasonably suspected of having used a prohibited drug. The decision to test must be based on a reasonable and articulable belief that the employee is using a prohibited drug on the basis of specific contemporaneous physical, behavioral, or performance indicators of probable drug use. At least two of the employee's supervisors, one of whom is trained in detection of the symptoms of possible drug use, must substantiate and concur in the decision to test an employee who is reasonably suspected of drug use; except that in the case of an employer, other than a part 121 certificate holder, who employs 50 or fewer employees who perform safety-sensitive functions, one supervisor who is trained in detection of symptoms of possible drug use must substantiate the decision to test an employee who is reasonably suspected of drug use.

E. *Return to Duty Testing.* Each employer shall ensure that before an individual is returned to duty to perform a safety-sensitive function after refusing to submit to a drug test required by this appendix or receiving a verified positive drug test result on a test conducted under this appendix the individual shall undergo a return to duty drug test. No employer shall allow an individual required to undergo return to duty testing to perform a safety-sensitive function unless the employer has received a verified negative drug test result for the individual. The test cannot occur until after the SAP has determined that the employee has successfully complied with the prescribed education and/or treatment.

F. *Follow-up Testing.* 1. Each employer shall implement a reasonable program of unannounced testing of each individual who has been hired to perform or who has been returned to the performance of a safety-sensitive function after refusing to submit to a drug test required by this appendix or receiving a verified positive drug test result on a test conducted under this appendix.

2. The number and frequency of such testing shall be determined by the employer's Substance Abuse Professional conducted in accordance with the provisions of 49 CFR part 40, but shall consist of at least six tests in the first 12 months following the employee's return to duty.

3. The employer must direct the employee to undergo testing for alcohol in accordance with appendix J of this part, in addition to drugs, if the Substance Abuse Professional determines that alcohol testing is necessary for the particular employee. Any such alcohol testing shall be conducted in accordance with the provisions of 49 CFR part 40.

4. Follow-up testing shall not exceed 60 months after the date the individual begins to perform or returns to the performance of a safety-sensitive function. The Substance Abuse Professional may terminate the requirement for follow-up testing at any time after the first six tests have been conducted, if the Substance Abuse Professional determines that such testing is no longer necessary.

VI. *Administrative and Other Matters.* A. *MRO Record Retention Requirements.* 1. Records concerning drug tests confirmed positive by the laboratory shall be maintained by the MRO for 5 years. Such records include the MRO copies of the custody and control form, medical interviews, documentation of the basis for verifying as negative test results confirmed as positive by the laboratory, any other documentation concerning the MRO's verification process.

2. Should the employer change MROs for any reason, the employer shall ensure that the former MRO forwards all records maintained pursuant to this rule to the new MRO within ten working days of receiving notice from the employer of the new MRO's name and address.

3. Any employer obtaining MRO services by contract, including a contract through a C/TPA, shall ensure that the contract includes a recordkeeping provision that is consistent with this paragraph, including requirements for transferring records to a new MRO.

B. *Access to Records.* The employer and the MRO shall permit the Administrator or the Administrator's representative to examine records required to be kept under this appendix and 49 CFR part 40. The Administrator or the Administrator's representative may require that all records maintained by the service agent for the employer must be produced at the employer's place of business.

C. *Release of Drug Testing Information.* An employer shall release information regarding an employee's drug testing results, evaluation, or rehabilitation to a third party in accordance with 49 CFR part 40. Except as required by law, this appendix, or 49 CFR part 40, no employer shall release employee information.

D. *Refusal to Submit to Testing.* 1. Each employer must notify the FAA within 2 working days of any employee who holds a certificate issued under part 61, part 63, or part 65 of this chapter who has refused to submit to a drug test required under this appendix. Notification must be sent to: Federal Aviation Administration, Office of Aerospace Medicine, Drug Abatement Division (AAM–800), 800 Independence Avenue, SW., Washington, DC 20591, or by fax to (202) 267–5200.

2. [Reserved]

E. *Permanent Disqualification From Service.* An employee who has verified positive drug test results on two drug tests required by appendix I to part 121 of this chapter and conducted after September 19, 1994 is permanently precluded from performing for an employer the safety-sensitive duties the employee performed prior to the second drug test.

2. An employee who has engaged in prohibited drug use during the performance of a safety-sensitive function after September 19, 1994 is permanently precluded from performing that safety-sensitive function for an employer.

F. *DOT Management Information System Annual Reports.* Copies of any annual reports submitted to the FAA under this appendix must be maintained by the employer for a minimum of 5 years.

VII. *Medical Review Officer/Substance Abuse Professional, and Employer Responsibilities.* The employer shall designate or appoint a Medical Review Officer (MRO) who shall be qualified in accordance with 49 CFR part 40 and shall perform the functions set forth in 49 CFR part 40 and this appendix. If the employer does not have a qualified individual on staff to serve as MRO, the employer may contract for the provision of MRO services as part of its drug testing program.

A. *Medical Review Officer (MRO).* The MRO must perform the functions set forth in 49 CFR part 40, Subpart G, and this appendix. The MRO shall not delay verification of the primary test result following a request for a split specimen test unless such delay is based on reasons other than the fact that the split specimen test result is pending. If the primary test result is verified as positive, actions required under this rule (e.g., notification to the Federal Air Surgeon, removal from safety-sensitive position) are not stayed during the 72-hour request period or pending receipt of the split specimen test result.

B. *Substance Abuse Professional (SAP).* The SAP must perform the functions set forth in 49 CFR part 40, Subpart O.

C. *Additional Medical Review Officer, Substance Abuse Professional, and Employer Responsibilities Regarding 14 CFR part 67 Airman Medical Certificate Holders.*

1. As part of verifying a confirmed positive test result or refusal to submit to a test, the

MRO must ask and the individual must answer whether he or she holds an airman medical certificate issued under 14 CFR part 67 or would be required to hold an airman medical certificate to perform a safety-sensitive function for the employer. If the individual answers in the affirmative to either question, in addition to notifying the employer in accordance with 49 CFR part 40, the MRO must forward to the Federal Air Surgeon, at the address listed in paragraph 5, the name of the individual, along with identifying information and supporting documentation, within 2 working days after verifying a positive drug test result or refusal to submit to a test.

2. During the SAP interview required for a verified positive test result or a refusal to submit to a test, the SAP must ask and the individual must answer whether he or she holds or would be required to hold an airman medical certificate issued under 14 CFR part 67 of this chapter to perform a safety-sensitive function for the employer. If the individual answers in the affirmative, the individual must obtain an airman medical certificate issued by the Federal Air Surgeon dated after the verified positive drug test result date or refusal to test date. After the individual obtains this airman medical certificate, the SAP may recommend to the employer that the individual may be returned to a safety-sensitive position. The receipt of an airman medical certificate does not alter any obligations otherwise required by 49 CFR part 40 or this appendix.

3. An employer must forward to the Federal Air Surgeon within 2 working days of receipt, copies of all reports provided to the employer by a SAP regarding the following:

(a) An individual who the MRO has reported to the Federal Air Surgeon under section VII.C.1 of this appendix; or

(b) An individual who the employer has reported to the Federal Air Surgeon under section VI.D of this appendix.

4. The employer must not permit an employee who is required to hold an airman medical certificate under 14 CFR part 67 to perform a safety-sensitive duty to resume that duty until the employee has:

(a) Been issued an airman medical certificate from the Federal Air Surgeon after the date of the verified positive drug test result or refusal to test; and

(b) Met the return to duty requirements in accordance with 49 CFR part 40.

5. Reports required under this section shall be forwarded to the Federal Air Surgeon, Federal Aviation Administration, Office of Aerospace Medicine, Attn: Drug Abatement Division (AAM–800), 800 Independence Avenue, SW., Washington, DC 20591.

6. MROs, SAPs, and employers who send reports to the Federal Air Surgeon must keep a copy of each report for 5 years.

VIII. *Employee Assistance Program (EAP).* The employer shall provide an EAP for employees. The employer may establish the EAP as a part of its internal personnel services or the employer may contract with an entity that will provide EAP services to an employee. Each EAP must include education and training on drug use for employees and training for supervisors making determinations for testing of employees based on reasonable cause.

A. *EAP Education Program.* Each EAP education program must include at least the following elements: display and distribution of informational material; display and distribution of a community service hot-line telephone number for employee assistance; and display and distribution of the employer's policy regarding drug use in the workplace. The employer's policy shall include information regarding the consequences under the rule of using drugs while performing safety-sensitive functions, receiving a verified positive drug test result, or refusing to submit to a drug test required under the rule.

B. *EAP Training Program.* Each employer shall implement a reasonable program of initial training for employees. The employee training program must include at least the following elements: The effects and consequences of drug use on personal health, safety, and work environment; the manifestations and behavioral cues that may indicate drug use and abuse; and documentation of training given to employees and employer's supervisory personnel. The employer's supervisory personnel who will determine when an employee is subject to testing based on reasonable cause shall receive specific training on specific, contemporaneous physical, behavioral, and performance indicators of probable drug use in addition to the training specified above. The employer shall ensure that supervisors who will make reasonable cause determinations receive at least 60 minutes of initial training. The employer shall implement a reasonable recurrent training program for supervisory personnel making reasonable cause determinations during subsequent years. The employer shall identify the employee and supervisor EAP training in the employer's drug testing plan submitted to the FAA for approval.

IX. *Implementing an Antidrug Program.*

A. Each company must meet the requirements of this appendix. Use the following chart to determine whether your company must obtain an Antidrug and Alcohol Misuse Prevention Program Operations Specification or whether you must register with the FAA:

If you are . . .	You must . . .
1. A part 119 certificate holder with authority to operate under parts 121 and/or 135.	Obtain an Antidrug and Alcohol Misuse Prevention Program Operations Specification by contacting your FAA Principal Operations Inspector.
2. An operator as defined in §91.147 of this chapter.	Register with the FAA by contacting the Flight Standards District Office nearest to your principal place of business.
3. An air traffic control facility not operated by the FAA or by or under contract to the U.S. Military.	Register with the FAA, Office of Aerospace Medicine, Drug Abatement Division (AAM–800), 800 Independence Avenue, SW., Washington, DC 20591.
4. A part 145 certificate holder who has your own antidrug program.	Obtain an Antidrug and Alcohol Misuse Prevention Program Operations Specification by contacting your Principal Maintenance Inspector or register with the FAA, Office of Aerospace Medicine, Drug Abatement Division (AAM–800), 800 Independence Avenue, SW., Washington, DC 20591, if you opt to conduct your own antidrug program.
5. A contractor who has your own antidrug program.	Register with the FAA, Office of Aerospace Medicine, Drug Abatement Division (AAM–800), 800 Independence Avenue, SW., Washington, DC 20591, if you opt to conduct your own antidrug program.

B. Use the following chart for implementing an antidrug program if you are applying for a part 119 certificate with authority to operate under parts 121 or 135, if you intend to begin operations as defined in §91.147 of this chapter, or if you intend to begin air traffic control operations (not operated by the FAA or by or under contract to the U.S. Military). Use it to determine whether you need to have an Antidrug and Alcohol Misuse Prevention Program Operations Specification, or whether you need to register with the FAA. Your employees who perform safety-sensitive duties must be tested in accordance with this appendix. The chart follows:

If you . . .	You must . . .
1. Apply for a part 119 certificate with authority to operate under parts 121 or 135.	a. Have an Antidrug and Alcohol Misuse Prevention Program Operations Specification, b. Implement an FAA antidrug program no later than the date you start operations, and c. Meet the requirements of this appendix.
2. Intend to begin operations as defined in §91.147 of this chapter.	a. Register with the FAA by contacting the Flight Standards District Office nearest to your principal place of business prior to starting operations, b. Implement an FAA antidrug program no later than the date you start operations, and c. Meet the requirements of this appendix.
3. Intend to begin air traffic control operations (at an air traffic control facility not operated by the FAA or by or under contract to the U.S. Military).	a. Register with the FAA, Office of Aerospace Medicine, Drug Abatement Division (AAM–800), 800 Independence Avenue, SW., Washington, DC 20591, b. Implement an FAA antidrug program no later than the date you start operations, and c. Meet the requirements of this appendix.

C. If you are an individual or company that intends to provide safety-sensitive services by contract to a part 119 certificate holder with authority to operate under parts 121 and/or 135, an operation as defined in §91.147 of this chapter, or an air traffic control facility not operated by the FAA or by or under contract to the U.S. Military, use the chart below to determine what you must do if you opt to have your own antidrug program:

If you . . .	And you opt to conduct your own antidrug program, you must . . .
a. Are a part 145 certificate holder.	i. Have an Antidrug and Alcohol Misuse Prevention Program Operations Specification or register with the FAA, Office of Aerospace Medicine, Drug Abatement Division (AAM–800), 800 Independence Avenue, SW., Washington, DC 20591, ii. Implement an FAA Antidrug Program no later than the date you start performing safety-sensitive functions for a part 119 certificate holder with authority to operate under parts 121 or 135, or operator as defined in §91.147 of this chapter, and iii. Meet the requirements of this appendix as if you were an employer.
b. Are a contractor.	i. Register with the FAA, Office of Aerospace Medicine, Drug Abatement Division (AAM–800), 800 Independence Avenue, SW., Washington, DC 20591,

If you . . .	And you opt to conduct your own antidrug program, you must . . .
	ii. Implement an FAA Antidrug Program no later than the date you start performing safety-sensitive functions for a part 119 certificate holder with authority to operate under parts 121 or 135, an operator as defined in §91.147 of this chapter, or an air traffic control facility not operated by the FAA or by or under contract to the U.S. Military, and iii. Meet the requirements of this appendix as if you were an employer.

D. 1. To obtain an Antidrug and Alcohol Misuse Prevention Program Operations Specification, you must contact your FAA Principal Operations Inspector or Principal Maintenance Inspector. Provide him/her with the following information:

a. Company name.

b. Certificate number.

c. Telephone number.

d. Address where your Antidrug and Alcohol Misuse Prevention Program records are kept.

e. Whether you have 50 or more safety-sensitive employees, or 49 or fewer safety-sensitive employees. (Part 119 certificate holders with authority to operate only under part 121 are not required to provide this information.)

2. You must certify on your Antidrug and Alcohol Misuse Prevention Program Operations Specification issued by your FAA Principal Operations Inspector or Principal Maintenance Inspector that you will comply with this appendix, appendix J of this part, and 49 CFR part 40.

3. You are required to obtain only one Antidrug and Alcohol Misuse Prevention Program Operations Specification to satisfy this requirement under this appendix and appendix J of this part.

4. You must update the Antidrug and Alcohol Misuse Prevention Program Operations Specification when any changes to the information contained in the Operation Specification occur.

E. 1. To register with the FAA, submit the following information:

a. Company name.

b. Telephone number.

c. Address where your Antidrug and Alcohol Misuse Prevention Program records are kept.

d. Type of safety-sensitive functions you perform for an employer (such as flight instruction duties, aircraft dispatcher duties, maintenance or preventive maintenance duties, ground security coordinator duties, aviation screening duties, air traffic control duties).

e. Whether you have 50 or more safety-sensitive employees, or 49 or fewer covered employees.

f. A signed statement indicating that: Your company will comply with this appendix, appendix J of this part, and 49 CFR part 40; and, if you are a contractor, you intend to provide safety-sensitive functions by contract to a part 119 certificate holder with authority to operate under part 121 and/or part 135, an operator as defined in §91.147 of this chapter, or an air traffic control facility not operated by the FAA or by or under contract to the U.S. Military.

2. Send this information in the form and manner prescribed by the Administrator, in duplicate to the appropriate address below:

a. For §91.147 operators: the Flight Standards District Office nearest to your principal place of business.

b. For all others: The Federal Aviation Administration, Office of Aerospace Medicine, Drug Abatement Division (AAM–800), 800 Independence Avenue, SW., Washington, DC 20591.

3. Update the registration information as changes occur. Send the updates in duplicate to the address specified in paragraph 2.

4. This registration will satisfy the registration requirements for both your Antidrug Program under this appendix and your Alcohol Misuse Prevention Program under appendix J of this part.

X. *Annual Reports.*

A. Annual reports of testing results must be submitted to the FAA by March 15 of the succeeding calendar year for the prior calendar year (January 1 through December 31) in accordance with the provisions below.

1. Each part 121 certificate holder shall submit an annual report each year.

2. Each entity conducting an antidrug program under this part, other than a part 121 certificate holder, that has 50 or more employees performing a safety-sensitive function on January 1 of any calendar year shall submit an annual report to the FAA for that calendar year.

3. The Administrator reserves the right to require that aviation employers not otherwise required to submit annual reports prepare and submit such reports to the FAA. Employers that will be required to submit annual reports under this provision will be notified in writing by the FAA.

B. As an employer, you must use the Management Information System (MIS) form and instructions as required by 49 CFR part 40 (at 49 CFR 40.26 and appendix H to 49 CFR part 40). You may also use the electronic version of the MIS form provided by DOT. The Administrator may designate means (e.g., electronic program transmitted via the Internet) other than hard-copy, for MIS form submission. For information on where to submit

MIS forms and for the electronic version of the form, see: *http://www.faa.gov/avr/aam/adap*.

C. A service agent may prepare the MIS report on behalf of an employer. However, a company official (e.g., Designated Employer Representative as defined in 49 CFR part 40) must certify the accuracy and completeness of the MIS report, no matter who prepares it.

XI. *Preemption*. A. The issuance of 14 CFR parts 65, 121, and 135 by the FAA preempts any state or local law, rule, regulation, order, or standard covering the subject matter of 14 CFR parts 65, 121, and 135, including but not limited to, drug testing of aviation personnel performing safety-sensitive functions.

B. The issuance of 14 CFR parts 65, 121, and 135 does not preempt provisions of state criminal law that impose sanctions for reckless conduct of an individual that leads to actual loss of life, injury, or damage to property whether such provisions apply specifically to aviation employees or generally to the public.

XII. *Testing Outside the Territory of the United States*. A. No part of the testing process (including specimen collection, laboratory processing, and MRO actions) shall be conducted outside the territory of the United States.

1. Each employee who is assigned to perform safety-sensitive functions solely outside the territory of the United States shall be removed from the random testing pool upon the inception of such assignment.

2. Each covered employee who is removed from the random testing pool under this paragraph A shall be returned to the random testing pool when the employee resumes the performance of safety-sensitive functions wholly or partially within the territory of the United States.

B. The provisions of this appendix shall not apply to any person who performs a function listed in section III of this appendix by contract for an employer outside the territory of the United States.

XIII. *Waivers from 49 CFR 40.21*. An employer subject to this part may petition the Drug Abatement Division, Office of Aerospace Medicine, for a waiver allowing the employer to stand down an employee following a report of a laboratory confirmed positive drug test or refusal, pending the outcome of the verification process.

A. Each petition for a waiver must be in writing and include substantial facts and justification to support the waiver. Each petition must satisfy the substantive requirements for obtaining a waiver, as provided in 49 CFR 40.21.

B. Each petition for a waiver must be submitted to the Federal Aviation Administration, Office of Aerospace Medicine, Drug Abatement Division (AAM–800), 800 Independence Avenue, SW., Washington, DC 20591.

C. The Administrator may grant a waiver subject to 49 CFR 40.21(d).

[Amdt. 121–240, 59 FR 42928, Aug. 19, 1994; 59 FR 53869, Oct. 26, 1994, as amended at 59 FR 62226, Dec. 2, 1994; Amdt. 121–240, 59 FR 66672, Dec. 28, 1994; 61 FR 37224, July 17, 1996; 65 FR 18887, Apr. 10, 2000; 66 FR 41966, Aug. 9, 2001; Amdt. 121–287, 66 FR 57866, Nov. 19, 2001; 68 FR 75460, Dec. 31, 2003; Amdt. 121–302, 69 FR 1855, Jan. 12, 2004; Amdt. 121–315, 71 FR 1676, Jan. 10, 2006; Amdt. 121–325, 71 FR 35764, June 21, 2006; Amdt. 121–332, 72 FR 12082, Mar. 15, 2007]

APPENDIX J TO PART 121—ALCOHOL MISUSE PREVENTION PROGRAM

This appendix contains the standards and components that must be included in an alcohol misuse prevention program required by this chapter.

I. GENERAL

A. *Purpose*. The purpose of this appendix is to establish programs designed to help prevent accidents and injuries resulting from the misuse of alcohol by employees who perform safety-sensitive functions in aviation.

B. *Alcohol testing procedures*. Each employer shall ensure that all alcohol testing conducted pursuant to this appendix complies with the procedures set forth in 49 CFR part 40. The provisions of 49 CFR part 40 that address alcohol testing are made applicable to employers by this appendix.

C. *Employer Responsibility*. As an employer, you are responsible for all actions of your officials, representatives, and service agents in carrying out the requirements of the DOT agency regulations.

D. *Definitions*.

As used in this appendix—

Accident means an occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight and the time all such persons have disembarked, and in which any person suffers death or serious injury or in which the aircraft receives substantial damage.

Alcohol means the intoxicating agent in beverage alcohol, ethyl alcohol, or other low molecular weight alcohols, including methyl or isopropyl alcohol.

Alcohol concentration (or content) means the alcohol in a volume of breath expressed in terms of grams of alcohol per 210 liters of breath as indicated by an evidential breath test under this appendix.

Alcohol use means the consumption of any beverage, mixture, or preparation, including any medication, containing alcohol.

Contractor means an individual or company that performs a safety-sensitive function by

contract for an employer or another contractor.

Covered employee means a person who performs, either directly or by contract, a safety-sensitive function listed in section II of this appendix for an employer (as defined below). For purposes of pre-employment testing only, the term ''covered employee'' includes a person applying to perform a safety-sensitive function.

DOT agency means an agency (or ''operating administration'') of the United States Department of Transportation administering regulations requiring alcohol testing (14 CFR parts 65, 121, and 135; 49 CFR parts 199, 219, and 382) in accordance with 49 CFR part 40.

Employer means a part 119 certificate holder with authority to operate under parts 121 and/or 135; an operator as defined in §91.147 of this chapter; or an air traffic control facility not operated by the FAA or by or under contract to the U.S. Military.

Performing (a safety-sensitive function): an employee is considered to be performing a safety-sensitive function during any period in which he or she is actually performing, ready to perform, or immediately available to perform such functions.

Refusal to submit means that a covered employee has engaged in conduct including but not limited to that described in 49 CFR 40.261, or has failed to remain readily available for post-accident testing as required by this appendix.

Safety-sensitive function means a function listed in section II of this appendix.

Violation rate for random alcohol testing means the number of 0.04 and above random alcohol confirmation test results conducted under this appendix plus the number of refusals of random alcohol tests required by this appendix, divided by the total number of random alcohol screening tests (including refusals) conducted under this appendix.

E. *Preemption of State and local laws.*

1. Except as provided in subparagraph 2 of this paragraph, these regulations preempt any State or local law, rule, regulation, or order to the extent that:

(a) Compliance with both the State or local requirement and this appendix is not possible; or

(b) Compliance with the State or local requirement is an obstacle to the accomplishment and execution of any requirement in this appendix.

2. The alcohol misuse requirements of this title shall not be construed to preempt provisions of State criminal law that impose sanctions for reckless conduct leading to actual loss of life, injury, or damage to property, whether the provisions apply specifically to transportation employees or employers or to the general public.

F. *Other requirements imposed by employers.*

Except as expressly provided in these alcohol misuse requirements, nothing in these requirements shall be construed to affect the authority of employers, or the rights of employees, with respect to the use or possession of alcohol, including any authority and rights with respect to alcohol testing and rehabilitation.

G. *Requirement for notice.*

Before performing an alcohol test under this appendix, each employer shall notify a covered employee that the alcohol test is required by this appendix. No employer shall falsely represent that a test is administered under this appendix.

H. *Applicable Federal Regulations.* The following applicable regulations appear in 49 CFR and 14 CFR:

1. 49 CFR

Part 40—Procedures for Transportation Workplace Drug Testing Programs

2. 14 CFR

61.14—Refusal to submit to a drug or alcohol test.
63.12b—Refusal to submit to a drug or alcohol test.
65.23—Refusal to submit to a drug or alcohol test.
65.46a—Misuse of Alcohol.
65.46b—Testing for Alcohol.
67.107—First-Class Airman Medical Certificate, Mental.
67.207—Second-Class Airman Medical Certificate, Mental.
67.307—Third-Class Airman Medical Certificate, Mental.
121.458—Misuse of alcohol.
121.459—Testing for alcohol.
135.1—Applicability.
135.253—Misuse of alcohol.
135.255—Testing for alcohol.

I. *Falsification.* No person may make, or cause to be made, any of the following:

1. Any fraudulent or intentionally false statement in any application of an alcohol misuse prevention program.

2. Any fraudulent or intentionally false entry in any record or report that is made, kept, or used to show compliance with this appendix.

3. Any reproduction or alteration, for fraudulent purposes, of any report or record required to be kept by this appendix.

II. COVERED EMPLOYEES

A. Each employee, including any assistant, helper, or individual in a training status, who performs a safety-sensitive function listed in this section directly or by contract (including by subcontract at any tier) for an employer as defined in this appendix must be subject to alcohol testing under an alcohol misuse prevention program implemented in accordance with this appendix. This includes full-time, part-time, temporary, and intermittent employees regardless of the degree

of supervision. The safety-sensitive functions are:

1. Flight crewmember duties.
2. Flight attendant duties.
3. Flight instruction duties.
4. Aircraft dispatcher duties.
5. Aircraft maintenance or preventive maintenance duties.
6. Ground security coordinator duties.
7. Aviation screening duties.
8. Air traffic control duties.

B. Each employer must identify any employee who is subject to the alcohol testing regulations of more than one DOT agency. Prior to conducting any alcohol test on a covered employee subject to the alcohol testing regulations of more than one DOT agency, the employer must determine which DOT agency authorizes or requires the test.

III. TESTS REQUIRED

A. Pre-employment testing

As an employer, you may, but are not required to, conduct pre-employment alcohol testing under this part. If you choose to conduct pre-employment alcohol testing, you must comply with the following requirements:

1. You must conduct a pre-employment alcohol test before the first performance of safety-sensitive functions by every covered employee (whether a new employee or someone who has transferred to a position involving the performance of safety-sensitive functions).

2. You must treat all safety-sensitive employees performing safety-sensitive functions the same for the purpose of pre-employment alcohol testing (i.e., you must not test some covered employees and not others).

3. You must conduct the pre-employment tests after making a contingent offer of employment or transfer, subject to the employee passing the pre-employment alcohol test.

4. You must conduct all pre-employment alcohol tests using the alcohol testing procedures of 49 CFR Part 40.

5. You must not allow a covered employee to begin performing safety-sensitive functions unless the result of the employee's test indicates an alcohol concentration of less than 0.04. If a pre-employment test result under this paragraph indicates an alcohol concentration of 0.02 or greater but less than 0.04, the provisions of paragraph F. of section V. of this appendix apply.

B. Post-accident testing

1. As soon as practicable following an accident, each employer shall test each surviving covered employee for alcohol if that employee's performance of a safety-sensitive function either contributed to the accident or cannot be completely discounted as a contributing factor to the accident. The decision not to administer a test under this section shall be based on the employer's determination, using the best available information at the time of the determination, that the covered employee's performance could not have contributed to the accident.

2. If a test required by this section is not administered within 2 hours following the accident, the employer shall prepare and maintain on file a record stating the reasons the test was not promptly administered. If a test required by this section is not administered within 8 hours following the accident, the employer shall cease attempts to administer an alcohol test and shall prepare and maintain the same record. Records shall be submitted to the FAA upon request of the Administrator or his or her designee.

3. A covered employee who is subject to post-accident testing shall remain readily available for such testing or may be deemed by the employer to have refused to submit to testing. Nothing in this section shall be construed to require the delay of necessary medical attention for injured people following an accident or to prohibit a covered employee from leaving the scene of an accident for the period necessary to obtain assistance in responding to the accident or to obtain necessary emergency medical care.

C. Random testing

1. Except as provided in paragraphs 2–4 of this section, the minimum annual percentage rate for random alcohol testing will be 25 percent of the covered employees.

2. The Administrator's decision to increase or decrease the minimum annual percentage rate for random alcohol testing is based on the violation rate for the entire industry. All information used for this determination is drawn from MIS reports required by this appendix. In order to ensure reliability of the data, the Administrator considers the quality and completeness of the reported data, may obtain additional information or reports from employers, and may make appropriate modifications in calculating the industry violation rate. Each year, the Administrator will publish in the FEDERAL REGISTER the minimum annual percentage rate for random alcohol testing of covered employees. The new minimum annual percentage rate for random alcohol testing will be applicable starting January 1 of the calendar year following publication.

3. (a) When the minimum annual percentage rate for random alcohol testing is 25 percent or more, the Administrator may lower this rate to 10 percent of all covered employees if the Administrator determines that the data received under the reporting requirements of this appendix for two consecutive calendar years indicate that the violation rate is less than 0.5 percent.

(b) When the minimum annual percentage rate for random alcohol testing is 50 percent,

the Administrator may lower this rate to 25 percent of all covered employees if the Administrator determines that the data received under the reporting requirements of this appendix for two consecutive calendar years indicate that the violation rate is less than 1.0 percent but equal to or greater than 0.5 percent.

4. (a) When the minimum annual percentage rate for random alcohol testing is 10 percent, and the data received under the reporting requirements of this appendix for that calendar year indicate that the violation rate is equal to or greater than 0.5 percent but less than 1.0 percent, the Administrator will increase the minimum annual percentage rate for random alcohol testing to 25 percent of all covered employees.

(b) When the minimum annual percentage rate for random alcohol testing is 25 percent or less, and the data received under the reporting requirements of this appendix for that calendar year indicate that the violation rate is equal to or greater than 1.0 percent, the Administrator will increase the minimum annual percentage rate for random alcohol testing to 50 percent of all covered employees.

5. The selection of employees for random alcohol testing shall be made by a scientifically valid method, such as a random-number table or a computer-based random number generator that is matched with employees' Social Security numbers, payroll identification numbers, or other comparable identifying numbers. Under the selection process used, each covered employee shall have an equal chance of being tested each time selections are made.

6. As an employer, you must select and test a percentage of employees at least equal to the minimum annual percentage rate each year.

(a) As an employer, to determine whether you have met the minimum annual percentage rate, you must divide the number of random alcohol screening test results for safety-sensitive employees by the average number of safety-sensitive employees eligible for random testing.

(1) To calculate whether you have met the annual minimum percentage rate, count all random screening test results below 0.02 breath alcohol concentration, random screening test results of 0.02 or greater breath alcohol concentration, and random refusals as your ''random alcohol screening test results.''

(2) To calculate the average number of safety-sensitive employees eligible for random testing throughout the year, add the total number of safety-sensitive employees eligible for testing during each random testing period for the year and divide that total by the number of random testing periods. Only safety-sensitive employees are to be in an employer's random testing pool, and all safety-sensitive employees must be in the random pool. If you are an employer conducting random testing more often than once per month (e.g., you select daily, weekly, bi-weekly) you do not need to compute this total number of safety-sensitive employees more than on a once per month basis.

(b) As an employer, you may use a service agent to perform random selections for you, and your safety-sensitive employees may be part of a larger random testing pool of safety-sensitive employees. However, you must ensure that the service agent you use is testing at the appropriate percentage established for your industry and that only safety-sensitive employees are in the random testing pool. For example:

(1) If the service agent has your employees in a random testing pool for your company alone, you must ensure that the testing is conducted at least at the minimum annual percentage rate under this part.

(2) If the service agent has your employees in a random testing pool combined with other FAA-regulated companies, you must ensure that the testing is conducted at least at the minimum annual percentage rate under this part.

(3) If the service agent has your employees in a random testing pool combined with other DOT-regulated companies, you must ensure that the testing is conducted at least at the highest rate required for any DOT-regulated company in the pool.

7. Each employer shall ensure that random alcohol tests conducted under this appendix are unannounced and that the dates for administering random tests are spread reasonably throughout the calendar year.

8. Each employer shall require that each covered employee who is notified of selection for random testing proceeds to the testing site immediately; provided, however, that if the employee is performing a safety-sensitive function at the time of the notification, the employer shall instead ensure that the employee ceases to perform the safety-sensitive function and proceeds to the testing site as soon as possible.

9. A covered employee shall only be randomly tested while the employee is performing safety-sensitive functions; just before the employee is to perform safety-sensitive functions; or just after the employee has ceased performing such functions.

10. If a given covered employee is subject to random alcohol testing under the alcohol testing rules of more than one DOT agency, the employee shall be subject to random alcohol testing at the percentage rate established for the calendar year by the DOT agency regulating more than 50 percent of the employee's functions.

11. If an employer is required to conduct random alcohol testing under the alcohol testing rules of more than one DOT agency, the employer may—

(a) Establish separate pools for random selection, with each pool containing the covered employees who are subject to testing at the same required rate; or

(b) Randomly select such employees for testing at the highest percentage rate established for the calendar year by any DOT agency to which the employer is subject.

D. Reasonable Suspicion Testing

1. An employer shall require a covered employee to submit to an alcohol test when the employer has reasonable suspicion to believe that the employee has violated the alcohol misuse prohibitions in §65.46a, 121.458, or 135.253 of this chapter.

2. The employer's determination that reasonable suspicion exists to require the covered employee to undergo an alcohol test shall be based on specific, contemporaneous, articulable observations concerning the appearance, behavior, speech or body odors of the employee. The required observations shall be made by a supervisor who is trained in detecting the symptoms of alcohol misuse. The supervisor who makes the determination that reasonable suspicion exists shall not conduct the breath alcohol test on that employee.

3. Alcohol testing is authorized by this section only if the observations required by paragraph 2 are made during, just preceding, or just after the period of the work day that the covered employee is required to be in compliance with this rule. An employee may be directed by the employer to undergo reasonable suspicion testing for alcohol only while the employee is performing safety-sensitive functions; just before the employee is to perform safety-sensitive functions; or just after the employee has ceased performing such functions.

4. (a) If a test required by this section is not administered within 2 hours following the determination made under paragraph 2 of this section, the employer shall prepare and maintain on file a record stating the reasons the test was not promptly administered. If a test required by this section is not administered within 8 hours following the determination made under paragraph 2 of this section, the employer shall cease attempts to administer an alcohol test and shall state in the record the reasons for not administering the test.

(b) Notwithstanding the absence of a reasonable suspicion alcohol test under this section, no covered employee shall report for duty or remain on duty requiring the performance of safety-sensitive functions while the employee is under the influence of or impaired by alcohol, as shown by the behavioral, speech, or performance indicators of alcohol misuse, nor shall an employer permit the covered employee to perform or continue to perform safety-sensitive functions until:

(1) An alcohol test is administered and the employee's alcohol concentration measures less than 0.02; or

(2) The start of the employee's next regularly scheduled duty period, but not less than 8 hours following the determination made under paragraph 2 of this section that there is reasonable suspicion that the employee has violated the alcohol misuse provisions in §65.46a, 121.458, or 135.253 of this chapter.

(c) No employer shall take any action under this appendix against a covered employee based solely on the employee's behavior and appearance in the absence of an alcohol test. This does not prohibit an employer with authority independent of this appendix from taking any action otherwise consistent with law.

E. Return to Duty Testing

Each employer shall ensure that before a covered employee returns to duty requiring the performance of a safety-sensitive function after engaging in conduct prohibited in §65.46a, §121.458, or §135.253 of this chapter, the employee shall undergo a return to duty alcohol test with a result indicating an alcohol concentration of less than 0.02. The test cannot occur until after the SAP has determined that the employee has successfully complied with the prescribed education and/or treatment.

F. Follow-up Testing

1. Each employer shall ensure that the employee who engages in conduct prohibited by §65.46a, §121.458, or §135.253 of this chapter is subject to unannounced follow-up alcohol testing as directed by a SAP.

2. The number and frequency of such testing shall be determined by the employer's SAP, but must consist of at least six tests in the first 12 months following the employee's return to duty.

3. The employer must direct the employee to undergo testing for drugs in accordance with appendix I of this part, in addition to alcohol, if the SAP determines that drug testing is necessary for the particular employee. Any such drug testing shall be conducted in accordance with the provisions of 49 CFR part 40.

4. Follow-up testing shall not exceed 60 months after the date the individual begins to perform or returns to the performance of a safety-sensitive function. The SAP may terminate the requirement for follow-up testing at any time after the first six tests have been conducted, if the SAP determines that such testing is no longer necessary.

5. A covered employee shall be tested for alcohol under this paragraph only while the employee is performing safety-sensitive functions, just before the employee is to perform safety-sensitive functions, or just after

the employee has ceased performing such functions.

G. Retesting of Covered Employees With an Alcohol Concentration of 0.02 or Greater but Less Than 0.04

Each employer shall retest a covered employee to ensure compliance with the provisions of section V, paragraph F of this appendix, if the employer chooses to permit the employee to perform a safety-sensitive function within 8 hours following the administration of an alcohol test indicating an alcohol concentration of 0.02 or greater but less than 0.04.

IV. Handling of Test Results, Record Retention, and Confidentiality

A. Retention of Records

1. *General Requirement.* In addition to the records required to be maintained under 49 CFR part 40, employers must maintain records required by this appendix in a secure location with controlled access.

2. *Period of retention.*

(a) *Five years.*

(1) Copies of any annual reports submitted to the FAA under this appendix for a minimum of 5 years.

(2) Records of notifications to the Federal Air Surgeon of refusals to submit to testing and violations of the alcohol misuse prohibitions in this chapter by covered employees who hold medical certificates issued under part 67 of this chapter.

(3) Documents presented by a covered employee to dispute the result of an alcohol test administered under this appendix.

(4) Records related to other violations of §65.46a, §121.458, or §135.253 of this chapter.

(b) *Two years.* Records related to the testing process and training required under this appendix.

(1) Documents related to the random selection process.

(2) Documents generated in connection with decisions to administer reasonable suspicion alcohol tests.

(3) Documents generated in connection with decisions on post-accident tests.

(4) Documents verifying existence of a medical explanation of the inability of a covered employee to provide adequate breath for testing.

(5) Materials on alcohol misuse awareness, including a copy of the employer's policy on alcohol misuse.

(6) Documentation of compliance with the requirements of section VI, paragraph A of this appendix.

(7) Documentation of training provided to supervisors for the purpose of qualifying the supervisors to make a determination concerning the need for alcohol testing based on reasonable suspicion.

(8) Certification that any training conducted under this appendix complies with the requirements for such training.

B. Annual Reports

1. Annual reports of alcohol misuse prevention program results must be submitted to the FAA by March 15 of the succeeding calendar year for the prior calendar year (January 1 through December 31) in accordance with the provisions below.

(a) Each part 121 certificate holder shall submit an annual report each year.

(b) Each entity conducting an alcohol misuse prevention program under this part, other than a part 121 certificate holder, that has 50 or more employees performing a safety-sensitive function on January 1 of any calendar year shall submit an annual report to the FAA for that calendar year.

(c) The Administrator reserves the right to require that aviation employers not otherwise required to submit annual reports prepare and submit such reports to the FAA. Employers that will be required to submit annual reports under this provision will be notified in writing by the FAA.

2. As an employer, you must use the Management Information System (MIS) form and instructions as required by 49 CFR part 40 (at 49 CFR 40.26 and appendix H to 49 CFR part 40). You may also use the electronic version of the MIS form provided by the DOT. The Administrator may designate means (e.g., electronic program transmitted via the Internet) other than hard-copy, for MIS form submission. For information on where to submit MIS forms and for the electronic version of the form, see: *http://www.faa.gov/avr/aam/adap.*

3. A service agent may prepare the MIS report on behalf of an employer. However, a company official (e.g., Designated Employer Representative as defined in 49 CFR part 40) must certify the accuracy and completeness of the MIS report, no matter who prepares it.

C. Access to Records and Facilities

1. Except as required by law or expressly authorized or required in this appendix, no employer shall release covered employee information that is contained in records required to be maintained under this appendix.

2. A covered employee is entitled, upon written request, to obtain copies of any records pertaining to the employee's use of alcohol, including any records pertaining to his or her alcohol tests in accordance with 49 CFR part 40. The employer shall promptly provide the records requested by the employee. Access to an employee's records shall not be contingent upon payment for records other than those specifically requested.

3. Each employer shall permit access to all facilities utilized in complying with the requirements of this appendix to the Secretary

of Transportation or any DOT agency with regulatory authority over the employer or any of its covered employees.

V. CONSEQUENCES FOR EMPLOYEES ENGAGING IN ALCOHOL-RELATED CONDUCT

A. Removal From Safety-sensitive Function

1. Except as provided in 49 CFR part 40, no covered employee shall perform safety-sensitive functions if the employee has engaged in conduct prohibited by §65.46a, 121.458, or 135.253 of this chapter or an alcohol misuse rule of another DOT agency.

2. No employer shall permit any covered employee to perform safety-sensitive functions if the employer has determined that the employee has violated this paragraph.

B. Permanent Disqualification From Service

An employee who violates §65.46a(c), 121.458(c), or 135.253(c) of this chapter, or who engages in alcohol use that violates another alcohol misuse provision of §65.46a, 121.458, or 135.253 of this chapter and had previously engaged in alcohol use that violated the provisions of §65.46a, 121.458, or 135.253 of this chapter after becoming subject to such prohibitions is permanently precluded from performing for an employer the safety-sensitive duties the employee performed before such violation.

C. Notice to the Federal Air Surgeon

1. An employer who determines that a covered employee who holds an airman medical certificate issued under part 67 of this chapter has engaged in alcohol use that violated the alcohol misuse provisions of §65.46a, 121.458, or 135.253 of this chapter shall notify the Federal Air Surgeon within 2 working days.

2. Each such employer shall forward to the Federal Air Surgeon a copy of the report of any evaluation performed under the provisions of section VI.C. of this appendix within 2 working days of the employer's receipt of the report.

3. All documents must be sent to the Federal Air Surgeon, Federal Aviation Administration, Office of Aerospace Medicine, Attn: Drug Abatement Division (AAM–800), 800 Independence Avenue, SW, Washington, DC 20591.

4. No covered employee who is required to hold an airman medical certificate in order to perform a safety-sensitive duty may perform that duty following a violation of this appendix until the covered employee obtains an airman medical certificate issued by the Federal Air Surgeon dated after the alcohol test result or refusal to test date. After the covered employee obtains this airman medical certificate, the SAP may recommend to the employer that the covered employee may be returned to a safety-sensitive position. The receipt of an airman medical certificate does not alter any obligations otherwise required by 49 CFR part 40 or this appendix.

5. Once the Federal Air Surgeon has recommended under paragraph C.4. of this section that the employee be permitted to perform safety-sensitive duties, the employer cannot permit the employee to perform those safety-sensitive duties until the employer has ensured that the employee meets the return to duty requirements in accordance with 49 CFR part 40.

D. Notice of Refusals

1. Each covered employer must notify the FAA within 2 working days of any employee who holds a certificate issued under part 61, part 63, or part 65 of this chapter who has refused to submit to an alcohol test required under this appendix. Notification must be sent to: Federal Aviation Administration, Office of Aerospace Medicine, Drug Abatement Division (AAM–800), 800 Independence Avenue, SW., Washington, DC 20591 or by fax to (202) 267–5200.

2. [Reserved]

E. Required Evaluation and Testing

No covered employee who has engaged in conduct prohibited by §65.46a, 121.458, or 135.253 of this chapter shall perform safety-sensitive functions unless the employee has met the requirements of 49 CFR part 40. No employer shall permit a covered employee who has engaged in such conduct to perform safety-sensitive functions unless the employee has met the requirements of 49 CFR part 40.

F. Other Alcohol-Related Conduct

1. No covered employee tested under the provisions of section III of this appendix who is found to have an alcohol concentration of 0.02 or greater but less than 0.04 shall perform or continue to perform safety-sensitive functions for an employer, nor shall an employer permit the employee to perform or continue to perform safety-sensitive functions, until:

(a) The employee's alcohol concentration measures less than 0.02; or

(b) The start of the employee's next regularly scheduled duty period, but not less than 8 hours following administration of the test.

2. Except as provided in subparagraph 1 of this paragraph, no employer shall take any action under this rule against an employee based solely on test results showing an alcohol concentration less than 0.04. This does not prohibit an employer with authority independent of this rule from taking any action otherwise consistent with law.

VI. ALCOHOL MISUSE INFORMATION, TRAINING, AND SUBSTANCE ABUSE PROFESSIONAL

A. Employer Obligation To Promulgate a Policy on the Misuse of Alcohol

1. *General requirements.* Each employer shall provide educational materials that explain these alcohol misuse requirements and the employer's policies and procedures with respect to meeting those requirements.

(a) The employer shall ensure that a copy of these materials is distributed to each covered employee prior to the start of alcohol testing under the employer's FAA-mandated alcohol misuse prevention program and to each person subsequently hired for or transferred to a covered position.

(b) Each employer shall provide written notice to representatives of employee organizations of the availability of this information.

2. *Required content.* The materials to be made available to employees shall include detailed discussion of at least the following:

(a) The identity of the person designated by the employer to answer employee questions about the materials.

(b) The categories of employees who are subject to the provisions of these alcohol misuse requirements.

(c) Sufficient information about the safety-sensitive functions performed by those employees to make clear what period of the work day the covered employee is required to be in compliance with these alcohol misuse requirements.

(d) Specific information concerning employee conduct that is prohibited by this chapter.

(e) The circumstances under which a covered employee will be tested for alcohol under this appendix.

(f) The procedures that will be used to test for the presence of alcohol, protect the employee and the integrity of the breath testing process, safeguard the validity of the test results, and ensure that those results are attributed to the correct employee.

(g) The requirement that a covered employee submit to alcohol tests administered in accordance with this appendix.

(h) An explanation of what constitutes a refusal to submit to an alcohol test and the attendant consequences.

(i) The consequences for covered employees found to have violated the prohibitions in this chapter, including the requirement that the employee be removed immediately from performing safety-sensitive functions, and the process in 49 CFR part 40, subpart O.

(j) The consequences for covered employees found to have an alcohol concentration of 0.02 or greater but less than 0.04.

(k) Information concerning the effects of alcohol misuse on an individual's health, work, and personal life; signs and symptoms of an alcohol problem; and available methods of evaluating and resolving problems associated with the misuse of alcohol; and intervening when an alcohol problem is suspected, including confrontation, referral to any available employee assistance program, and/or referral to management.

(l) *Optional provisions.* The materials supplied to covered employees may also include information on additional employer policies with respect to the use or possession of alcohol, including any consequences for an employee found to have a specified alcohol level, that are based on the employer's authority independent of this appendix. Any such additional policies or consequences must be clearly and obviously described as being based on independent authority.

B. Training for Supervisors

Each employer shall ensure that persons designated to determine whether reasonable suspicion exists to require a covered employee to undergo alcohol testing under section II of this appendix receive at least 60 minutes of training on the physical, behavioral, speech, and performance indicators of probable alcohol misuse.

C. Substance Abuse Professional (SAP) Duties

The SAP must perform the functions set forth in 49 CFR part 40, Subpart O, and this appendix.

VII. HOW TO IMPLEMENT AN ALCOHOL MISUSE PREVENTION PROGRAM

A. Each company must meet the requirements of this appendix. Use the following chart to determine whether your company must obtain an Antidrug and Alcohol Misuse Prevention Program Operations Specification or whether you must register with the FAA:

If you are . . .	You must . . .
1. A part 119 certificate holder with authority to operate under parts 121 and/or 135.	Obtain an Antidrug and Alcohol Misuse Prevention Program Operations Specification by contacting your FAA Principal Operations Inspector.
2. An operator as defined in § 91.147	Register with the FAA by contacting the Flight Standards District Office nearest to your principal place of business.
3. An air traffic control facility not operated by the FAA or by or under contract to the U.S. Military.	Register with the FAA, Office of Aerospace Medicine, Drug Abatement Division (AAM–800), 800 Independence Avenue, SW., Washington, DC 20591.

If you are . . .	You must . . .
4. A part 145 certificate holder who has your own alcohol misuse prevention program.	Obtain an Antidrug and Alcohol Misuse Prevention Program Operations Specification by contacting your FAA Principal Maintenance Inspector or register with the FAA, Office of Aerospace Medicine, Drug Abatement Division (AAM–800), 800 Independence Avenue, SW., Washington, DC 20591, if you opt to conduct your own Alcohol Misuse Prevention Program.
5. A contractor who has your own alcohol misuse prevention program.	Register with the FAA, Office of Aerospace Medicine, Drug Abatement Division (AAM–800), 800 Independence Avenue, SW., Washington, DC 20591 if you opt to conduct your own Alcohol Misuse Prevention Program.

B. Use the following chart for implementing an Alcohol Misuse Prevention Program if you are applying for a part 119 certificate with authority to operate under parts 121 and/or 135, if you intend to begin operations as defined in §91.147 of this chapter, or if you intend to begin air traffic control operations (not operated by the FAA or by or under contract to the U.S. Military). Use it to determine whether you need to have an Antidrug and Alcohol Misuse Prevention Program Operations Specification, or whether you need to register with the FAA. Your employees who perform safety-sensitive duties must be tested in accordance with this appendix. The chart follows:

If you . . .	You must . . .
1. Apply for a part 119 certificate with authority to operate under parts 121 and/or 135.	a. Have an Antidrug and Alcohol Misuse Prevention Program Operations Specification, b. Implement an FAA Alcohol Misuse Prevention Program no later than the date you start operations, and c. Meet the requirements of this appendix.
2. Intend to begin operations as defined in §91.147 of this chapter.	a. Register with the FAA by contacting the Flight Standards District Office nearest to your principal place of business prior to starting operations, b. Implement an FAA Alcohol Misuse Prevention Program no later than the date you start operations, and c. Meet the requirements of this appendix.
3. Intend to begin air traffic control operations (at an air traffic control facility not operated by the FAA or by or under contract to the U.S. Military).	a. Register with the FAA, Office of Aerospace Medicine, Drug Abatement Division (AAM–800), 800 Independence Avenue, SW., Washington, DC 20591, b. Implement an FAA Alcohol Misuse Prevention Program no later than the date you start operations, and c. Meet the requirements of this appendix.

C. If you are an individual or a company that intends to provide safety-sensitive services by contract to a part 119 certificate holder with authority to operate under parts 121 and/or 135 or an operator as defined in §91.147 of this chapter, use the chart below to determine what you must do if you opt to have your own Alcohol Misuse Prevention Program:

If you . . .	And you opt to conduct your own Alcohol Misuse Prevention Program, you must . . .
a. Are a part 145 certificate holder	i. Have an Antidrug and Alcohol Misuse Prevention Program Operations Specification or register with the FAA, Office of Aerospace Medicine, Drug Abatement Division (AAM–800), 800 Independence Avenue, SW., Washington, DC 20591, ii. Implement an FAA Alcohol Misuse Prevention Program no later than the date you start performing safety-sensitive functions for a part 119 certificate holder with authority to operate under parts 121 and/or 135, or operator as defined in §91.147 of this chapter, and iii. Meet the requirements of this appendix as if you were an employer.
b. Are a contractor	i. Register with the FAA, Office of Aerospace Medicine, Drug Abatement Division (AAM–800), 800 Independence Avenue, SW., Washington, DC 20591, ii. Implement an FAA Alcohol Misuse Prevention Program no later than the date you start performing safety-sensitive functions for a part 119 certificate holder with authority to operate under parts 121 and/or 135, or operator as defined in §91.147 of this chapter, and iii. Meet the requirements of this appendix as if you were an employer.

D. 1. To obtain an Antidrug and Alcohol Misuse Prevention Program Operations Specification, you must contact your FAA Principal Operations Inspector or Principal Maintenance Inspector. Provide him/her with the following information:

a. Company name.

b. Certificate number.

c. Telephone number.

d. Address where your Antidrug and Alcohol Misuse Prevention Program records are kept.

e. Whether you have 50 or more covered employees, or 49 or fewer covered employees. (Part 119 certificate holders with authority to operate only under part 121 are not required to provide this information.)

2. You must certify on your Antidrug and Alcohol Misuse Prevention Program Operations Specification, issued by your FAA Principal Operations Inspector or Principal Maintenance Inspector, that you will comply with appendix I of this part, this appendix, and 49 CFR part 40.

3. You are required to obtain only one Antidrug and Alcohol Misuse Prevention Program Operations Specification to satisfy this requirement under appendix I of this part and this appendix.

4. You must update the Antidrug and Alcohol Misuse Prevention Program Operations Specification when any changes to the information contained in the Operation Specification occur.

E. 1. To register with the FAA, submit the following information:

a. Company name.

b. Telephone number.

c. Address where your Antidrug and Alcohol Misuse Prevention Program records are kept.

d. Type of safety-sensitive functions you perform for an employer (such as flight instruction duties, aircraft dispatcher duties, maintenance or preventive maintenance duties, ground security coordinator duties, aviation screening duties, air traffic control duties).

e. Whether you have 50 or more covered employees, or 49 or fewer covered employees.

f. A signed statement indicating that: Your company will comply with this appendix, appendix I of this part, and 49 CFR part 40; and, if you are a contractor, you intend to provide safety-sensitive functions by contract to a part 119 certificate holder with authority to operate under part 121 and/or 135, an operator as defined by §91.147 of this chapter, or an air traffic control facility not operated by the FAA or by or under contract to the U.S. Military.

2. Send this information in the form and manner prescribed by the Administrator, in duplicate to the appropriate address below:

a. For §91.147 operators: The Flight Standards District Office nearest to your principal place of business.

b. For all others: The Federal Aviation Administration, Office of Aerospace Medicine, Drug Abatement Division (AAM–800), 800 Independence Avenue, SW., Washington, DC 20591.

3. Update the registration information as changes occur. Send the updates in duplicate to the address specified in paragraph 2.

4. This registration will satisfy the registration requirements for both your Antidrug Program under appendix I of this part and your Alcohol Misuse Prevention Program under this appendix.

VIII. EMPLOYEES LOCATED OUTSIDE THE U.S.

A. No covered employee shall be tested for alcohol misuse while located outside the territory of the United States.

1. Each covered employee who is assigned to perform safety-sensitive functions solely outside the territory of the United States shall be removed from the random testing pool upon the inception of such assignment.

2. Each covered employee who is removed from the random testing pool under this paragraph shall be returned to the random testing pool when the employee resumes the performance of safety-sensitive functions wholly or partially within the territory of the United States.

B. The provisions of this appendix shall not apply to any person who performs a safety-sensitive function by contract for an employer outside the territory of the United States.

[Amdt. 121–237, 59 FR 7390, Feb. 15, 1994, as amended at 59 FR 53086, Oct. 21, 1994; 59 FR 62238, 62239, Dec. 2, 1994; 59 FR 66672, Dec. 28, 1994; 61 FR 37224, July 17, 1996; 65 FR 18887, Apr. 10, 2000; 66 FR 41967, Aug. 9, 2001; Amdt. 121–287, 66 FR 57866, Nov. 19, 2001; 68 FR 75461, Dec. 31, 2003; 69 FR 1858, Jan. 12, 2004; 69 FR 12938, Mar. 18, 2004; Amdt. 121–315, 71 FR 1677, Jan. 10, 2006; Amdt. 121–325, 71 FR 35765, June 21, 2006; 71 FR 38517, July 7, 2006; 71 FR 62209, Oct. 24, 2006; Amdt. 121–332, 72 FR 12084, Mar. 15, 2007; Amdt. 121–332, 72 FR 31449, June 7, 2007]

EFFECTIVE DATE NOTE: By Amdt. 121–237, 60 FR 24766, May 10, 1995, part 121, was amended by suspending appendix J, sec. III, subsection A (''Pre-employment''), effective May 10, 1995.

APPENDIX K TO PART 121—PERFORMANCE REQUIREMENTS FOR CERTAIN TURBOPROPELLER POWERED AIRPLANES

1. *Applicability.* This appendix specifies requirements for the following turbopropeller powered airplanes that must comply with the Airplane Performance Operating Limitations in §§121.189 through 121.197:

a. After December 20, 2010, each airplane manufactured before March 20, 1997 and type certificated in the:

i. Normal category before July 1, 1970, and meets special conditions issued by the Administrator for airplanes intended for use in operations under part 135 of this chapter.

ii. Normal category before July 19, 1970, and meets the additional airworthiness standards in SFAR No. 23 of 14 CFR part 23.

iii. Normal category, and complies with the additional airworthiness standards in appendix A of part 135 of this chapter.

iv. Normal category, and complies with section 1.(a) or 1.(b) of SFAR No. 41 of 14 CFR part 21.

b. After March 20, 1997, each airplane:

i. Type certificated prior to March 29, 1995, in the commuter category.

ii. Manufactured on or after March 20, 1997, and that was type certificated in the normal category, and complies with the requirements described in paragraphs 1.a.i through iii of this appendix.

2. *Background.* Sections 121.157 and 121.173(b) require that the airplanes operated under this part and described in paragraph 1 of this appendix, comply with the Airplane Performance Operating Limitations in §§121.189 through 121.197. Airplanes described in §121.157(f) and paragraph 1.a of this appendix must comply on and after December 20, 2010. Airplanes described in §121.157(e) and paragraph 1.b of this appendix must comply on and after March 20, 1997. (Airplanes type certificated in the normal category, and in accordance with SFAR No. 41 of 14 CFR part 21, as described in paragraph 1.a.iv of this appendix, may not be produced after October 17, 1991.)

3. *References.* Unless otherwise specified, references in this appendix to sections of part 23 of this chapter are to those sections of 14 CFR part 23, as amended by Amendment No. 23–45 (August 6, 1993, 58 FR 42156).

Performance

4. *Interim Airplane Performance Operating Limitations.*

a. Until December 20, 2010, airplanes described in paragraph 1.a of this appendix may continue to comply with the requirements in subpart I of part 135 and §135.181(a)(2) of this chapter that apply to small, nontransport category airplanes.

b. Until March 20, 1997, airplanes described in paragraph 1.b.i of this appendix may continue to comply with the requirements in subpart I of part 135 of this chapter that apply to commuter category airplanes.

5. *Final Airplane Performance Operating Limitations.*

a. Through an amended type certification program or a supplemental type certification program, each airplane described in paragraph 1.a and 1.b.ii of this appendix must be shown to comply with the commuter category performance requirements specified in this appendix, which are included in part 23 of this chapter. Each new revision to a current airplane performance operating limitation for an airplane that is or has been demonstrated to comply, must also be approved by the Administrator. An airplane approved to the requirements of section 1.(b) of SFAR No. 41 of 14 CFR part 21, as described in paragraph 1.a.iv of this appendix, and that has been demonstrated to comply with the additional requirements of section 4.(c) of SFAR No. 41 of 14 CFR part 21 and International Civil Aviation Organization Annex 8 (available from the FAA, 800 Independence Avenue SW., Washington, DC 20591), will be considered to be in compliance with the commuter category performance requirements.

b. Each turbopropeller powered airplane subject to this appendix must be demonstrated to comply with the airplane performance operating limitation requirements of this chapter specified as follows:

i. Section 23.45 Performance General.

ii. Section 23.51 Takeoff.

iii. Section 23.53 Takeoff speeds.

iv. Section 23.55 Accelerate stop distance.

v. Section 23.57 Takeoff path.

vi. Section 23.59 Takeoff distance and takeoff run.

vii. Section 23.61 Takeoff flight path.

viii. Section 23.65 Climb: All engines operating.

ix. Section 23.67 Climb: one engine inoperative.

x. Section 23.75 Landing.

xi. Section 23.77 Balked landing.

xii. Sections 23.1581 through 23.1589 Airplane flight manual and approved manual material.

6. *Operation.* After compliance with the final airplane performance operating limitations requirements has been demonstrated and added to the Airplane Flight Manual performance data of the affected airplane, that airplane must be operated in accordance with the performance limitations of §§121.189 through 121.197.

[Doc. No. 28154, 60 FR 65936, Dec. 20, 1995, as amended by Doc. No. OST–2002–13435]

APPENDIX L TO PART 121—TYPE CERTIFICATION REGULATIONS MADE PREVIOUSLY EFFECTIVE

Appendix L lists regulations in this part that require compliance with standards contained in superseded type certification regulations that continue to apply to certain transport category airplanes. The tables set out citations to current CFR section, applicable aircraft, superseded type certification regulation and applicable time periods, and the CFR edition and FEDERAL REGISTER documents where the regulation having prior effect is found. Copies of all superseded regulations may be obtained at the Federal Aviation Administration Law Library, Room 924, 800 Independence Avenue SW., Washington, DC.

Part 121 section	Applicable aircraft	Provisions: CFR/FR references
§ 121.312(a)(1)(i)	Transport category; or nontransport category type certificated before January 1, 1965; passenger capacity of 20 or more; manufactured prior to August 20, 1990.	Heat release rate testing. 14 CFR 25.853(d) in effect March 6, 1995: 14 CFR parts 1 to 59, Revised as of January 1, 1995, and amended by Amdt 25–83, 60 FR 6623, February 2, 1995. Formerly 14 CFR 25.853(a–1) in effect August 20, 1986: 14 CFR parts 1 to 59, Revised as of January 1, 1986.
§ 121.312(a)(1)(ii)	Transport category; or nontransport category type certificated before January 1, 1965; passenger capacity of 20 or more; manufactured after August 19, 1990.	Heat release rate and smoke testing. 14 CFR 25.853(d) in effect March 6, 1995: 14 CFR parts 1 to 59, Revised as of January 1, 1995, and amended by Amdt 25–83, 60 FR 6623, February 2, 1995. Formerly 14 CFR 25.853(a–1) in effect September 26, 1988: 14 CFR parts 1 to 59, Revised as of January 1, 1988, and amended by Amdt 25–66, 53 FR 32584, August 25, 1988
§ 121.312(a)(2)(i)	Transport category; or nontransport category type certificate before January 1, 1965; application for type certificate filed prior to May 1, 1972; substantially complete replacement of cabin interior on or after May 1, 1972.	Provisions of 14 CFR 25.853 in effect on April 30, 1972: 14 CFR parts 1 to 59, Revised as of January 1, 1972.
§ 121.312(a)(3)(i)	Transport category type certificated after January 1, 1958; nontransport category type certificated after January 1, 1958, but before January 1, 1965; passenger capacity of 20 or more; substantially complete replacement of the cabin interior on or after March 6, 1995.	Heat release rate testing. 14 CFR 25.853(d) in effect March 6, 1995: 14 CFR parts 1 to 59, Revised as of January 1, 1995; and amended by Amdt 25–83, 60 FR 6623, February 2, 1995. Formerly 14 CFR 25.853(a–1) in effect August 20, 1986: 14 CFR parts 1 to 59, Revised as of January 1, 1986.
§ 121.312(a)(3)(ii)	Transport category type certificated after January 1, 1958; nontransport category type certificated after January 1, 1958, but before January 1, 1965; passenger capacity of 20 or more; substantially complete replacement of the cabin interior on or after August 20, 1990.	Heat release rate and smoke testing. 14 CFR 25.853(d) in effect March 6, 1995; 14 CFR parts 1 to 59, Revised as of January 1, 1995; and amended by Amdt 25–83, 60 FR 6623, February 2, 1995. Formerly 14 CFR § 25.853(a–1) in effect September 26, 1988: CFR, Title 14, Parts 1 to 59, Revised as of January 1, 1988, and amended by Amdt 25–66, 53 FR 32584, August 25, 1988.
§ 121.312(b) (1) and (2)	Transport category airplane type certificated after January 1, 1958; Nontransport category airplane type certificated after December 31, 1964.	Seat cushions. 14 CFR 25.853(c) effective on November 26, 1984: 14 CFR parts 1 to 59, Revised as of January 1, 1984, and amended by Amdt 25–59, 49 FR 43188, October 26, 1984.
§ 121.312(c)	Airplane type certificated in accordance with SFAR No. 41; maximum certificated takeoff weight in excess of 12,500 pounds.	Compartment interior requirements. 14 CFR 25.853(a) in effect March 6, 1995: 14 CFR parts 1 to 59, Revised as of January 1, 1995, and amended by Amdt 25–83, 60 FR 6623, February 2, 1995. Formerly 14 CFR 25.853(a), (b–1), (b–2), and (b–3) in effect on September 26, 1978: 14 CFR parts 1 to 59, Revised as of January 1, 1978.
§ 121.314(a)	Transport category airplanes type certificated after January 1, 1958.	Class C or D cargo or baggage compartment definition, 14 CFR 25.857 in effect on June 16, 1986, 14 CFR parts 1 to 59, Revised 1/1/97, and amended by Amendment 25–60, 51 FR 18243, May 16, 1986.

[Doc. No. 28154, 60 FR 65936, Dec. 20, 1995, as amended by Amdt. 121–269, 63 FR 8049, Feb. 17, 1998]

APPENDIX M TO PART 121—AIRPLANE FLIGHT RECORDER SPECIFICATIONS

The recorded values must meet the designated range, resolution, and accuracy requirements during dynamic and static conditions. All data recorded must be correlated in time to within one second.

Parameters	Range	Accuracy (sensor input)	Seconds per sampling interval	Resolution	Remarks
1. Time or Relative Times Counts.[1].	24 Hrs, 0 to 4095.	±0.125% Per Hour.	4	1 sec	UTC time preferred when available. Count increments each 4 second of system operation.
2. Pressure Altitude.	−1000 ft to max certificated altitude of aircraft. +5000 ft.	±100 to ±700 ft (see table, TSO C124a or TSO C51a).	1	5′ to 35′	Data should be obtained from the air data computer when practicable.
3. Indicated airspeed or Calibrated airspeed.	50 KIAS or minimum value to Max V_{so} to 1.2 V. D.	±5% and ±3%	1	1 kt	Data should be obtained from the air data computer when practicable.
4. Heading (Primary flight crew reference).	0–360° and Discrete “true” or “mag”.	±2°	1	0.5°	When true or magnetic heading can be selected as the primary heading reference, a discrete indicating selection must be recorded.
5. Normal acceleration (vertical) [9].	−3g to +6g	±1% of max range excluding datum error of ±5%.	0.125	0.004g.	
6. Pitch Attitude	±75°	±2°	1 or 0.25 for airplanes operated under §121.344(f).	0.5°	A sampling rate of 0.25 is recommended.
7. Roll attitude [2]	±180°	±2°	1 or 0.5 for airplanes operated under §121.344(f).	0.5	A sampling rate of 0.5 is recommended.
8. Manual Radio Transmitter Keying or CVR/DFDR synchronization reference.	On-Off (Discrete) None		1		Preferably each crew member but one discrete acceptable for all transmission provided the CVR/FDR system complies with TSO C124a CVR synchronization requirements (paragraph 4.2.1 ED–55).
9. Thrust/power on each engine—primary flight crew reference.	Full range forward.	±2%	1 (per engine)	0.3% of full range.	Sufficient parameters (e.g. EPR, N1 or Torque, NP) as appropriate to the particular engine being recorded to determine power in forward and reverse thrust, including potential overspeed condition.
10. Autopilot Engagement.	Discrete “on” or “off”.		1		
11. Longitudinal Acceleration.	±1g	±1.5% max. range excluding datum error of ±5%.	0.25	0.004g	
12a. Pitch Control(s) position (non-fly-by-wire systems).	Full Range	±2° Unless Higher Accuracy Uniquely Required.	0.5 or 0.25 for airplanes operated under §121.344(f).	0.5% of full range.	For airplanes that have a flight control break away capability that allows either pilot to operate the controls independently, record both control inputs. The control inputs may be sampled alternately once per second to produce the sampling interval of 0.5 or 0.25, as applicable.
12b. Pitch Control(s) position (fly-by-wire systems).[3].	Full Range	±2° Unless Higher Accuracy Uniquely Required..	0.5 or 0.25 for airplanes operated under §121.344(f)..	0.2% of full range.	

The recorded values must meet the designated range, resolution, and accuracy requirements during dynamic and static conditions. All data recorded must be correlated in time to within one second.

Parameters	Range	Accuracy (sensor input)	Seconds per sampling interval	Resolution	Remarks
13a. Lateral Control position(s) (non-fly-by-wire).	Full Range	±2° Unless Higher Accuracy Uniquely Required.	0.5 or 0.25 for airplanes operated under § 121.344(f).	0.2% of full range.	For airplanes that have a flight control break away capability that allows either pilot to operate the controls independently, record both control inputs. The control inputs may be sampled alternately once per second to produce the sampling interval of 0.5 or 0.25, as applicable.
13b. Lateral Control position(s) (fly-by-wire).[4].	Full Range	±2° Unless Higher Accuracy Uniquely Required.	0.5 or 0.25 for airplanes operated under § 121.344(f).	0.2% of full range.	
14a. Yaw control position(s) (non-fly-by-wire)[5].	Full range	±2° Unless higher accuracy uniquely required.	0.5	0.3% of full range.	For airplanes that have a flight control break away capability that allows either pilot to operate the controls independently, record both control inputs. The control inputs may be sampled alternately once per second to produce the sampling interval of 0.5.
14b. Yaw Control position(s) (fly-by-wire).	Full Range	±2° Unless Higher Accuracy Uniquely Required.	0.5	0.2% of full range.	
15. Pitch Control Surface(s) Position.[6].	Full Range	±2° Unless Higher Accuracy Uniquely Required..	0.5 or 0.25 for airplanes operated under § 121.344(f)..	0.3% of full range..	For airplanes fitted with multiple or split surfaces, a suitable combination of inputs is acceptable in lieu of recording each surface separately. The control surfaces may be sampled alternately to produce the sampling interval of 0.5 or 0.25.
16. Lateral control surface(s) position[7].	Full range	±2° Unless higher accuracy uniquely required.	0.5 or 0.25 for airplanes operated under § 121.344(f).	0.3% of full range.	A suitable combination of surface position sensors is acceptable in lieu of recording each surface separately. The control surfaces may be sampled alternately to produce the sampling interval of 0.5 or 0.25.
17. Yaw Control Surface(s) Position.[8].	Full Range	±2° Unless Higher Accuracy Uniquely Required.	0.5	0.2% of full range.	For airplanes with multiple or split surfaces, a suitable combination of surface position sensors is acceptable in lieu of recording each surface separately. The control surfaces may be sampled alternately to produce the sapling interval of 0.5.
18. Lateral Acceleration.	±1g	±1.5% max. range excluding datum error of ±5%.	0.25	0.004g	
19. Pitch Trim Surface Position.	Full Range	±3° Unless Higher Accuracy Uniquely Required.	1	0.6% of full range.	

The recorded values must meet the designated range, resolution, and accuracy requirements during dynamic and static conditions. All data recorded must be correlated in time to within one second.

Parameters	Range	Accuracy (sensor input)	Seconds per sampling interval	Resolution	Remarks
20. Trailing Edge Flap or Cockpit Control Selection.[10].	Full Range or Each Position (discrete).	±3° or as Pilot's indicator.	2	0.5% of full range.	Flap position and cockpit control may each be sampled at 4 second intervals, to give a data point every 2 seconds.
21. Leading Edge Flap or Cockpit Control Selection.[11].	Full Range or Each Discrete Position.	±3° or as Pilot's indicator and sufficient to determine each discrete position.	2	0.5% of full range.	Left and right sides, or flap position and cockpit control may each be sampled at 4 second intervals, so as to give a data point every 2 seconds.
22. Each Thrust Reverser Position (or equivalent for propeller airplane).	Stowed, In Transit, and Reverse (Discrete).		1 (per engine)		Turbo-jet—2 discretes enable the 3 states to be determined. Turbo-prop—discrete.
23. Ground spoiler position or brake selection[12].	Full range or each position (discrete).	±2° Unless higher accuracy uniquely required.	1 or 0.5 for airplanes operated under §121.344(f).	0.5% of full range.	
24. Outside Air Temperature or Total Air Temperature.[13].	−50 °C to +90 °C.	±2 °C	2	0.3 °C	
25. Autopilot/ Autothrottle/ AFCS Mode and Engagement Status.	A suitable combination of discretes.		1		Discretes should show which systems are engaged and which primary modes are controlling the flight path and speed of the aircraft.
26. Radio Altitude[14].	−20 ft to 2,500 ft.	±2 ft or ±3% whichever is greater below 500 ft and ±5% above 500 ft.	1	1 ft +5% above 500 ft.	For autoland/category 3 operations. Each radio altimeter should be recorded, but arranged so that at least one is recorded each second.
27. Localizer Deviation, MLS Azimuth, or GPS Latitude Deviation.	±400 Microamps or available sensor range as installed. ±62°	As installed ±3% recommended.	1	0.3% of full range.	For autoland/category 3 operations. Each system should be recorded but arranged so that at least one is recorded each second. It is not necessary to record ILS and MLS at the same time, only the approach aid in use need be recorded.
28. Glideslope Deviation, MLS Elevation, or GPS Vertical Deviation.	±400 Microamps or available sensor range as installed 0.9 to +30°	As installed +/ 3−3% recommended.	1	0.3% of full range.	For autoland/category 3 operations. Each system should be recorded but arranged so that at least one is recorded each second. It is not necessary to record ILS and MLS at the same time, only the approach aid in use need be recorded.
29. Marker Beacon Passage.	Discrete "on" or "off".		1		A single discrete is acceptable for all markers.
30. Master Warning.	Discrete		1		Record the master warning and record each "red" warning that cannot be determined from other parameters or from the cockpit voice recorder.
31. Air/ground sensor (primary airplane system reference nose or main gear).	Discrete "air" or "ground".		1 (0.25 recommended).		

The recorded values must meet the designated range, resolution, and accuracy requirements during dynamic and static conditions. All data recorded must be correlated in time to within one second.

Parameters	Range	Accuracy (sensor input)	Seconds per sampling interval	Resolution	Remarks
32. Angle of Attack (If measured directly).	As installed	As installed	2 or 0.5 for airplanes operated under §121.344(f).	0.3% of full range.	If left and right sensors are available, each may be recorded at 4 or 1 second intervals, as appropriate, so as to give a data point at 2 seconds or 0.5 second, as required.
33. Hydraulic Pressure Low, Each System.	Discrete or available sensor range, ''low'' or ''normal''.	±5%	2	0.5% of full range.	
34. Groundspeed	As Installed	Most Accurate Systems Installed.	1	0.2% of full range.	
35. GPWS (ground proximity warning system).	Discrete ''warning'' or ''off''.	.....	1	.....	A suitable combination of discretes unless recorder capacity is limited in which case a single discrete for all modes is acceptable.
36. Landing Gear Position or Landing gear cockpit control selection.	Discrete	.....	4	.....	A suitable combination of discretes should be recorded.
37. Drift Angle.[15]	As installed	As installed	4	0.1°	
38. Wind Speed and Direction.	As installed	As installed	4	1 knot, and 1.0°.	
39. Latitude and Longitude.	As installed	As installed	4	0.002°, or as installed.	Provided by the Primary Navigation System Reference. Where capacity permits Latitude/longitude resolution should be 0.0002°.
40. Stick shaker and pusher activation.	Discrete(s) ''on'' or ''off''.	.....	1	.....	A suitable combination of discretes to determine activation.
41. Windshear Detection.	Discrete ''warning'' or ''off''.	.....	1.		
42. Throttle/power Leverl position.[16].	Full Range	±2%	1 for each lever	2% of full range	For airplanes with non-mechanically linked cockpit engine controls.
43. Additional Engine Parameters.	As installed	As installed	Each engine each second.	2% of full range	Where capacity permits, the preferred priority is indicated vibration level, N2, EGT, Fuel Flow, Fuel Cutoff lever position and N3, unless engine manufacturer recommends otherwise.
44. Traffic Alert and Collision Avoidance System (TCAS).	Discretes	As installed	1	.....	A suitable combination of discretes should be recorded to determine the status of—Combined Control, Vertical Control, Up Advisory, and Down Advisory. (ref. ARINC Characteristic 735 Attachment 6E, TCAS VERTICAL RA DATA OUTPUT WORD.)
45. DME 1 and 2 Distance.	0–200 NM	As installed	4	1 NM	1 mile
46. Nav 1 and 2 Selected Frequency.	Full Range	As installed	4	.....	Sufficient to determine selected frequency
47. Selected barometric setting.	Full Range	±5%	(1 per 64 sec.) ..	0.2% of full range	
48. Selected Altitude.	Full Range	±5%	1	100 ft	
49. Selected speed.	Full Range	±5%	1	1 knot	

The recorded values must meet the designated range, resolution, and accuracy requirements during dynamic and static conditions. All data recorded must be correlated in time to within one second.

Parameters	Range	Accuracy (sensor input)	Seconds per sampling interval	Resolution	Remarks
50. Selected Mach.	Full Range	±5%	1	.01	
51. Selected vertical speed.	Full Range	±5%	1	100 ft/min	
52. Selected heading.	Full Range	±5%	1	1°	
53. Selected flight path.	Full Range	±5%	1	1°	
54. Selected decision height.	Full Range	±5%	64	1 ft	
55. EFIS display format.	Discrete(s)		4		Discretes should show the display system status (e.g., off, normal, fail, composite, sector, plan, nav aids, weather radar, range, copy.
56. Multi-function/ Engine Alerts Display format.	Discrete(s)		4		Discretes should show the display system status (e.g., off, normal, fail, and the identity of display pages for emergency procedures, need not be recorded.
57. Thrust command.[17].	Full Range	±2%	2	2% of full range.	
58. Thrust target	Full Range	±2%	4	2% of full range	
59. Fuel quantity in CG trim tank.	Full Range	±5%	(1 per 64 sec.)	1% of full range	
60. Primary Navigation System Reference.	Discrete GPS, INS, VOR/ DME, MLS, Loran C, Omega, Localizer Glideslope.		4		A suitable combination of discretes to determine the Primary Navigation System reference.
61. Ice Detection	Discrete ''ice'' or ''no ice''.		4		
62. Engine warning each engine vibration.	Discrete		1		
63. Engine warning each engine over temp.	Discrete		1		
64. Engine warning each engine oil pressure low.	Discrete		1		
65. Engine warning each engine over speed.	Discrete		1		
66. Yaw Trim Surface Position.	Full Range	±3% Unless Higher Accuracy Uniquely Required.	2	0.3% of full range.	
67. Roll Trim Surface Position.	Full Range	±3% Unless Higher Accuracy Uniquely Required.	2	0.3% of full range.	
68. Brake Pressure (left and right).	As installed	±5%	1		To determine braking effort applied by pilots or by autobrakes.
69. Brake Pedal Application (left and right).	Discrete or Analog ''applied'' or ''off''.	±5% (Analog)	1		To determine braking applied by pilots.
70. Yaw or sideslip angle.	Full Range	±5%	1	0.5°	
71. Engine bleed valve position.	Discrete ''open'' or ''closed''.		4		
72. De-icing or anti-icing system selection.	Discrete ''on'' or ''off''.		4		
73. Computed center of gravity.	Full Range	±5%	(1 per 64 sec.)	1% of full range	

The recorded values must meet the designated range, resolution, and accuracy requirements during dynamic and static conditions. All data recorded must be correlated in time to within one second.

Parameters	Range	Accuracy (sensor input)	Seconds per sampling interval	Resolution	Remarks
74. AC electrical bus status.	Discrete ''power'' or ''off''.	.....	4	.....	Each bus.
75. DC electrical bus status.	Discrete ''power'' or ''off''.	.....	4	.....	Each bus.
76 APU bleed valve position.	Discrete ''open'' or ''closed''.	.....	4		
77. Hydraulic Pressure (each system).	Full range	±5%	2	100 psi	
78. Loss of cabin pressure.	Discrete ''loss'' or ''normal''.	.....	1.		
79. Computer failure (critical flight and engine control systems).	Discrete ''fail'' or ''normal''.	.....	4.		
80. Heads-up display (when an information source is installed).	Discrete(s) ''on'' or ''off''.	.....	4		
81. Para-visual display (when an information source is installed).	Discrete(s) ''on'' or ''off''.				
82. Cockpit trim control input position—pitch.	Full Range	±5%	1	0.2% of full range.	Where mechanical means for control inputs are not available, cockpit display trim positions should be recorded.
83. Cockpit trim control input position—roll.	Full Range	±5%	1	0.7% of full range.	Where mechanical means for control inputs are not available, cockpit display trim position should be recorded.
84. Cockpit trim control input position—yaw.	Full range	±5%	1	0.3% of full range.	Where mechanical means for control input are not available, cockpit display trim positions should be recorded.
85. Trailing edge flap and cockpit flap control position.	Full Range	±5%	2	0.5% of full range.	Trailing edge flaps and cockpit flap control position may each be sampled alternately at 4 second intervals to provide a sample each 0.5 second.
86. Leading edge flap and cockpit flap control position.	Full Range or Discrete.	±5%	1	0.5% of full range	
87. Ground spoiler position and speed brake selection.	Full range or discrete.	±5%	0.5	0.3% of full range.	

The recorded values must meet the designated range, resolution, and accuracy requirements during dynamic and static conditions. All data recorded must be correlated in time to within one second.

Parameters	Range	Accuracy (sensor input)	Seconds per sampling interval	Resolution	Remarks
88. All cockpit flight control input forces (control wheel, control column, rudder pedal).	Full range control wheel ±70 lb control column ±85 rudder pedal ±165.	±5%	1	0.3% full range ..	For fly-by-wire flight control systems, where flight control surface position is a function of the displacement of the control input device only, it is not necessary to record this parameter. For airplanes that have a flight control break away). capability that allows either pilot to operate the control independently, record both control force inputs. The control force inputs may be sampled alternately once per 2 seconds to produce the sampling interval of 1.

[1] For A300 B2/B4 airplanes, resolution=6 seconds.
[2] For A330/A340 series airplanes, resolution=0.703°.
[3] For A318/A319/A320/A321 series airplanes, resolution=0.275% (0.088°>0.064°).
For A330/A340 series airplanes, resolution=2.20%(0.703°>0.064°).
[4] For A318/A319/A320/A321 series airplanes, resolution=0.22% (0.088°>0.080°).
For A330/A340 series airplanes, resolution=1.76% (0.703°>0.080°).
[5] For A330/A340 series airplanes, resolution = 1.18% (0.703°>0.120°).
[6] For A330/A340 series airplanes, resolution=0.783% (0.352°>0.090°).
[7] For A330/A340 series airplanes, aileron resolution = 0.704% (0.352°>0.100°). For A330/A340 series airplanes, spoiler resolution = 1.406% (0.703°>0.100°).
[8] For A330/A340 series airplanes, resolution=0.30% (0.176°>0.12°).
For A330/A340 series airplanes, seconds per sampling interval=1.
[9] For B–717 series airplanes, resolution = .005g. For Dassault F900C/F900EX airplanes, resolution = .007g.
[10] For A330/A340 series airplanes, resolution=1.05% (0.250°>0.120°).
[11] For A330/A340 series airplanes, resolution = 1.05% (0.250°>0.120°). For A300 B2/B4 series airplanes, resolution = 0.92% (0.230°>0.125°).
[12] For A330/A340 series airplanes, spoiler resolution = 1.406% (0.703°>0.100°).
[13] For A330/A340 series airplanes, resolution=0.5°C.
[14] For Dassault F900C/F900EX airplanes, Radio altitude resolution = 1.25 ft.
[15] For A330/A340 series airplanes, resolution = 0.352 degrees.
[16] For A318/A319/A320/A321 series airplanes, resolution = 4.32%. For A330/A340 series airplanes, resolution is 3.27% of full range for throttle lever angle (TLA); for reverse thrust, reverse throttle lever angle (RLA) resolution is nonlinear over the active reverse thrust range, which is 51.54 degrees to 96.14 degrees. The resolved element is 2.8 degrees uniformly over the entire active reverse thrust range, or 2.9% of the full range value of 96.14 degrees.
[17] For A318/A319/A320/A321 series airplanes, with IAE engines, resolution = 2.58%.

[Doc. No. 28109, 62 FR 38382, July 17, 1997; 62 FR 48135, Sept. 12, 1997, as amended by Amdt. 121–271, 64 FR 46120, Aug. 24, 1999; Amdt. 121–278, 65 FR 51745, Aug. 24, 2000; 65 FR 81733, Dec. 27, 2000; Amdt. 121–292, 67 FR 54323, Aug. 21, 2002; Amdt. 121–300, 68 FR 42936, July 18, 2003; 68 FR 50069, Aug. 20, 2003; 68 FR 53877, Sept. 15, 2003; 70 FR 41134, July 18, 2005]

APPENDIX N TO PART 121 [RESERVED]

APPENDIX O—HAZARDOUS MATERIALS TRAINING REQUIREMENTS FOR CERTIFICATE HOLDERS

This appendix prescribes the requirements for hazardous materials training under part 121, subpart Z, and part 135, subpart K of this chapter. The training requirements for various categories of persons are defined by job function or responsibility. An ''X'' in a box under a category of persons indicates that the specified category must receive the noted training. All training requirements apply to direct supervisors as well as to persons actually performing the job function. Training requirements for certificate holders authorized in their operations specifications to transport hazardous materials (will-carry) are prescribed in Table 1. Those certificate holders with a prohibition in their operations specifications against carrying or handling hazardous materials (will-not-carry) must follow the curriculum prescribed in Table 2. The method of delivering the training will be determined by the certificate holder. The certificate holder is responsible for providing a method (may include email, telecommunication, etc.) to answer all questions prior to testing regardless of the method of instruction. The certificate holder must certify that a test has been completed satisfactorily to verify understanding of the regulations and requirements.

TABLE 1—OPERATORS THAT TRANSPORT HAZARDOUS MATERIAL—WILL-CARRY CERTIFICATE HOLDERS

Aspects of transport of hazardous materials by air with which they must be familiar, as a minimum (See note 1)	Shippers (See Note 2) Will-carry	Operators and ground-handling agent's staff accepting hazardous materials (See Note 3) Will-carry	Operators and ground-handling agents staff responsible for the handling, storage, and loading of cargo and baggage Will-carry	Passenger-handling staff Will-carry	Flight crew members and load planners Will-carry	Crew members (other than flight crew members) Will-carry
General philosophy	X	X	X	X	X	X
Limitations	X	X	X	X	X	X
General requirements for shippers	X	X				
Classification	X	X				
List of hazardous materials	X	X			X	
General packing requirements	X	X				
Labeling and marking	X	X	X	X	X	X
Hazardous materials transport document and other relevant documentation	X	X				
Acceptance procedures		X				
Recognition of undeclared hazardous materials	X	X	X	X	X	X
Storage and loading procedures		X	X		X	
Pilots' notification		X	X		X	
Provisions for passengers and crew		X	X	X	X	X
Emergency procedures	X	X	X	X	X	X

Note 1. Depending on the responsibilities of the person, the aspects of training to be covered may vary from those shown in the table.

Note 2. When a person offers a consignment of hazmat, including COMAT, for or on behalf of the certificate holder, then the person must be trained in the certificate holder's training program and comply with shipper responsibilities and training. If offering goods on another certificate holder's equipment, the person must be trained in compliance with the training requirements in 49 CFR. All shippers of hazmat must be trained under 49 CFR. The shipper functions in 49 CFR mirror the training aspects that must be covered for any shipper offering hazmat for transport.

Note 3. When an operator, its subsidiary, or an agent of the operator is undertaking the responsibilities of acceptance staff, such as the passenger handling staff accepting small parcel cargo, the certificate holder, its subsidy, or the agent must be trained in the certificate holder's training program and comply with the acceptance staff training requirements.

TABLE 2—OPERATORS THAT DO NOT TRANSPORT HAZARDOUS MATERIALS—WILL-NOT-CARRY CERTIFICATE HOLDERS

Aspects of transport of hazardous materials by air with which they must be familiar, as a minimum (See Note 1)	Shippers (See Note 2) Will-not-carry	Operators and ground-handling agent's staff accepting cargo other than hazardous materials (See Note 3) Will-not-carry	Operators and ground-handling agents staff responsible for the handling, storage, and loading of cargo and baggage Will-not-carry	Passenger-handling staff Will-not-carry	Flight crew members and load planners Will-not-carry	Crew members (other than flight crew members) Will-not-carry
General philosophy	X	X	X	X	X	X
Limitations	X	X	X	X	X	X
General requirements for shippers	X					
Classification	X					
List of hazardous materials	X					
General packing requirements	X					
Labeling and marking	X	X	X	X	X	X
Hazardous materials transport document and other relevant documentation	X	X				
Acceptance procedures						

TABLE 2—OPERATORS THAT DO NOT TRANSPORT HAZARDOUS MATERIALS—WILL-NOT-CARRY CERTIFICATE HOLDERS—Continued

Aspects of transport of hazardous materials by air with which they must be familiar, as a minimum (See Note 1)	Shippers (See Note 2) Will-not-carry	Operators and ground-handling agent's staff accepting cargo other than hazardous materials (See Note 3) Will-not-carry	Operators and ground-handling agents staff responsible for the handling, storage, and loading of cargo and baggage Will-not-carry	Passenger-handling staff Will-not-carry	Flight crew members and load planners Will-not-carry	Crew members (other than flight crew members) Will-not-carry
Recognition of undeclared hazardous materials	X	X	X	X	X	X
Storage and loading procedures						
Pilots' notification						
Provisions for passengers and Crew		X	X	X	X	X
Emergency procedures	X	X	X	X	X	X

Note 1—Depending on the responsibilities of the person, the aspects of training to be covered may vary from those shown in the table.

Note 2—When a person offers a consignment of hazmat, including COMAT, for air transport for or on behalf of the certificate holder, then that person must be properly trained. All shippers of hazmat must be trained under 49 CFR. The shipper functions in 49 CFR mirror the training aspects that must be covered for any shipper, including a will-not-carry certificate holder offering dangerous goods for transport, with the exception of recognition training. Recognition training is a separate FAA requirement in the certificate holder's training program.

Note 3—When an operator, its subsidiary, or an agent of the operator is undertaking the responsibilities of acceptance staff, such as the passenger handling staff accepting small parcel cargo, the certificate holder, its subsidiary, or the agent must be trained in the certificate holder's training program and comply with the acceptance staff training requirements.

[Doc. No. FAA–2003–15085, 70 FR 58825, Oct. 7, 2005, as amended by Amdt. 121–318, 70 FR 75396, Dec. 20, 2005]

APPENDIX P TO PART 121—REQUIREMENTS FOR ETOPS AND POLAR OPERATIONS

The FAA approves ETOPS in accordance with the requirements and limitations in this appendix.

Section I. *ETOPS Approvals: Airplanes with Two engines.*

(a) *Propulsion system reliability for ETOPS.* (1) Before the FAA grants ETOPS operational approval, the operator must be able to demonstrate the ability to achieve and maintain the level of propulsion system reliability, if any, that is required by §21.4(b)(2) of this chapter for the ETOPS-approved airplane-engine combination to be used.

(2) Following ETOPS operational approval, the operator must monitor the propulsion system reliability for the airplane-engine combination used in ETOPS, and take action as required by §121.374(i) for the specified IFSD rates.

(b) *75 Minutes ETOPS*—(1) *Caribbean/Western Atlantic Area.* The FAA grants approvals to conduct

ETOPS with maximum diversion times up to 75 minutes on Western Atlantic/Caribbean area routes as follows:

(i) The FAA reviews the airplane-engine combination to ensure the absence of factors that could prevent safe operations. The airplane-engine combination need not be type-design-approved for ETOPS; however, it must have sufficient favorable experience to demonstrate to the Administrator a level of reliability appropriate for 75-minute ETOPS.

(ii) The certificate holder must comply with the requirements of §121.633 for time-limited system planning.

(iii) The certificate holder must operate in accordance with the ETOPS authority as contained in its operations specifications.

(iv) The certificate holder must comply with the maintenance program requirements of §121.374, except that a pre-departure service check before departure of the return flight is not required.

(2) *Other Areas.* The FAA grants approvals to conduct ETOPS with maximum diversion times up to 75 minutes on other than Western Atlantic/Caribbean area routes as follows:

(i) The FAA reviews the airplane-engine combination to ensure the absence of factors that could prevent safe operations. The airplane-engine combination need not be type-design-approved for ETOPS; however, it must have sufficient favorable experience to demonstrate to the Administrator a level of reliability appropriate for 75-minute ETOPS.

(ii) The certificate holder must comply with the requirements of §121.633 for time-limited system planning.

(iii) The certificate holder must operate in accordance with the ETOPS authority as contained in its operations specifications.

(iv) The certificate holder must comply with the maintenance program requirements of §121.374.

(v) The certificate holder must comply with the MEL in its operations specifications for 120-minute ETOPS.

(c) *90-minutes ETOPS (Micronesia).* The FAA grants approvals to conduct ETOPS with maximum diversion times up to 90 minutes on Micronesian area routes as follows:

(1) The airplane-engine combination must be type-design approved for ETOPS of at least 120-minutes.

(2) The certificate holder must operate in accordance with the ETOPS authority as contained in its operations specifications.

(3) The certificate holder must comply with the maintenance program requirements of §121.374, except that a pre-departure service check before departure of the return flight is not required.

(4) The certificate holder must comply with the MEL requirements in its operations specifications for 120-minute ETOPS.

(d) *120-minute ETOPS.* The FAA grants approvals to conduct ETOPS with maximum diversion times up to 120 minutes as follows:

(1) The airplane-engine combination must be type-design-approved for ETOPS of at least 120 minutes.

(2) The certificate holder must operate in accordance with the ETOPS authority as contained in its operations specifications.

(3) The certificate holder must comply with the maintenance program requirements of §121.374.

(4) The certificate holder must comply with the MEL requirements for 120-minute ETOPS.

(e) *138-Minute ETOPS.* The FAA grants approval to conduct ETOPS with maximum diversion times up to 138 minutes as follows:

(1) *Operators with 120-minute ETOPS approval.* The FAA grants 138-minute ETOPS approval as an extension of an existing 120-minute ETOPS approval as follows:

(i) The authority may be exercised only for specific flights for which the 120-minute diversion time must be exceeded.

(ii) For these flight-by-flight exceptions, the airplane-engine combination must be type-design-approved for ETOPS up to at least 120 minutes. The capability of the airplane's time-limited systems may not be less than 138 minutes calculated in accordance with §121.633.

(iii) The certificate holder must operate in accordance with the ETOPS authority as contained in its operations specifications.

(iv) The certificate holder must comply with the maintenance program requirements of §121.374.

(v) The certificate holder must comply with minimum equipment list (MEL) requirements in its operations specifications for ''beyond 120 minutes ETOPS''. Operators without a ''beyond 120-minute ETOPS'' MEL may apply to AFS–200 through their certificate holding district office for a modified MEL which satisfies the master MEL policy for system/component relief in ETOPS beyond 120 minutes.

(vi) The certificate holder must conduct training for maintenance, dispatch, and flight crew personnel regarding differences between 138-minute ETOPS authority and its previously-approved 120-minute ETOPS authority.

(2) *Operators with existing 180-minute ETOPS approval.* The FAA grants approvals to conduct 138-minute ETOPS (without the limitation in paragraph (e)(1)(i) of section I of this appendix) to certificate holders with existing 180-minute ETOPS approval as follows:

(i) The airplane-engine combination must be type-design-approved for ETOPS of at least 180 minutes.

(ii) The certificate holder must operate in accordance with the ETOPS authority as contained in its operations specifications.

(iii) The certificate holder must comply with the maintenance program requirements of §121.374.

(iv) The certificate holder must comply with the MEL requirements for ''beyond 120 minutes ETOPS.''

(v) The certificate holder must conduct training for maintenance, dispatch and flight crew personnel for differences between 138-minute ETOPS diversion approval and its previously approved 180-minute ETOPS diversion authority.

(f) *180-minute ETOPS.* The FAA grants approval to conduct ETOPS with diversion times up to 180 minutes as follows:

(1) For these operations the airplane-engine combination must be type-design-approved for ETOPS of at least 180 minutes.

(2) The certificate holder must operate in accordance with the ETOPS authority as contained in its operations specifications.

(3) The certificate holder must comply with the maintenance program requirements of §121.374.

(4) The certificate holder must comply with the MEL requirements for ''beyond 120 minutes ETOPS.''

(g) *Greater than 180-minute ETOPS.* The FAA grants approval to conduct ETOPS greater than 180 minutes. The following are requirements for all operations greater than 180 minutes.

(1) The FAA grants approval only to certificate holders with existing 180-minute ETOPS operating authority for the airplane-engine combination to be operated.

(2) The certificate holder must have previous ETOPS experience satisfactory to the Administrator.

(3) In selecting ETOPS Alternate Airports, the operator must make every effort to plan ETOPS with maximum diversion distances of 180 minutes or less, if possible. If conditions necessitate using an ETOPS Alternate

Airport beyond 180 minutes, the route may be flown only if the requirements for the specific operating area in paragraph (h) or (i) of section I of this appendix are met.

(4) The certificate holder must inform the flight crew each time an airplane is proposed for dispatch for greater than 180 minutes and tell them why the route was selected.

(5) In addition to the equipment specified in the certificate holder's MEL for 180-minute ETOPS, the following systems must be operational for dispatch:

(i) The fuel quantity indicating system.

(ii) The APU (including electrical and pneumatic supply and operating to the APU's designed capability).

(iii) The auto throttle system.

(iv) The communication system required by §121.99(d) or §121.122(c), as applicable.

(v) One-engine-inoperative auto-land capability, if flight planning is predicated on its use.

(6) The certificate holder must operate in accordance with the ETOPS authority as contained in its operations specifications.

(7) The certificate holder must comply with the maintenance program requirements of §121.374.

(h) *207-minute ETOPS in the North Pacific Area of Operations.* (1) The FAA grants approval to conduct ETOPS with maximum diversion times up to 207 minutes in the North Pacific Area of Operations as an extension to 180-minute ETOPS authority to be used on an exception basis. This exception may be used only on a flight-by-flight basis when an ETOPS Alternate Airport is not available within 180 minutes for reasons such as political or military concerns; volcanic activity; temporary airport conditions; and airport weather below dispatch requirements or other weather related events.

(2) The nearest available ETOPS Alternate Airport within 207 minutes diversion time must be specified in the dispatch or flight release.

(3) In conducting such a flight the certificate holder must consider Air Traffic Service's preferred track.

(4) The airplane-engine combination must be type-design-approved for ETOPS of at least 180 minutes. The approved time for the airplane's most limiting ETOPS significant system and most limiting cargo-fire suppression time for those cargo and baggage compartments required by regulation to have fire-suppression systems must be at least 222 minutes.

(5) The certificate holder must track how many times 207-minute authority is used.

(i) *240-minute ETOPS in the North Polar Area, in the area north of the NOPAC, and in the Pacific Ocean north of the equator.* (1) The FAA grants approval to conduct 240-minute ETOPS authority with maximum diversion times in the North Polar Area, in the area north of the NOPAC area, and the Pacific Ocean area north of the equator as an extension to 180-minute ETOPS authority to be used on an exception basis. This exception may be used only on a flight-by-flight basis when an ETOPS Alternate Airport is not available within 180 minutes. In that case, the nearest available ETOPS Alternate Airport within 240 minutes diversion time must be specified in the dispatch or flight release.

(2) This exception may be used in the North Polar Area and in the area north of NOPAC only in extreme conditions particular to these areas such as volcanic activity, extreme cold weather at en-route airports, airport weather below dispatch requirements, temporary airport conditions, and other weather related events. The criteria used by the certificate holder to decide that extreme weather precludes using an airport must be established by the certificate holder, accepted by the FAA, and published in the certificate holder's manual for the use of dispatchers and pilots.

(3) This exception may be used in the Pacific Ocean area north of the equator only for reasons such as political or military concern, volcanic activity, airport weather below dispatch requirements, temporary airport conditions and other weather related events.

(4) The airplane-engine combination must be type design approved for ETOPS greater than 180 minutes.

(j) *240-minute ETOPS in areas South of the equator.* (1) The FAA grants approval to conduct ETOPS with maximum diversion times of up to 240 minutes in the following areas:

(i) Pacific oceanic areas between the U.S. West coast and Australia, New Zealand and Polynesia.

(ii) South Atlantic oceanic areas.

(iii) Indian Ocean areas.

(iv) Oceanic areas between Australia and South America.

(2) The operator must designate the nearest available ETOPS Alternate Airports along the planned route of flight.

(3) The airplane-engine combination must be type-design-approved for ETOPS greater than 180 minutes.

(k) *ETOPS beyond 240 minutes.* (1) The FAA grants approval to conduct ETOPS with diversion times beyond 240 minutes for operations between specified city pairs on routes in the following areas:

(i) The Pacific oceanic areas between the U.S. west coast and Australia, New Zealand, and Polynesia;

(ii) The South Atlantic oceanic areas;

(iii) The Indian Oceanic areas; and

(iv) The oceanic areas between Australia and South America, and the South Polar Area.

(2) This approval is granted to certificate holders who have been operating under 180-minute or greater ETOPS authority for at least 24 consecutive months, of which at

least 12 consecutive months must be under 240-minute ETOPS authority with the airplane-engine combination to be used.

(3) The operator must designate the nearest available ETOPS alternate or alternates along the planned route of flight.

(4) For these operations, the airplane-engine combination must be type-design-approved for ETOPS greater than 180 minutes.

Section II. *ETOPS Approval: Passenger-carrying Airplanes With More Than Two Engines.*

(a) The FAA grants approval to conduct ETOPS, as follows:

(1) Except as provided in §121.162, the airplane-engine combination must be type-design-approved for ETOPS.

(2) The operator must designate the nearest available ETOPS Alternate Airports within 240 minutes diversion time (at one-engine-inoperative cruise speed under standard conditions in still air). If an ETOPS alternate is not available within 240 minutes, the operator must designate the nearest available ETOPS Alternate Airports along the planned route of flight.

(3) The MEL limitations for the authorized ETOPS diversion time apply.

(i) The Fuel Quantity Indicating System must be operational.

(ii) The communications systems required by §121.99(d) or §121.122(c) must be operational.

(4) The certificate holder must operate in accordance with the ETOPS authority as contained in its operations specifications.

Section III. *Approvals for operations whose airplane routes are planned to traverse either the North Polar or South Polar Areas.*

(a) Except for intrastate operations within the State of Alaska, no certificate holder may operate an aircraft in the North Polar Area or South Polar Area, unless authorized by the FAA.

(b) In addition to any of the applicable requirements of sections I and II of this appendix, the certificate holder's operations specifications must contain the following:

(1) The designation of airports that may be used for en-route diversions and the requirements the airports must meet at the time of diversion.

(2) Except for supplemental all-cargo operations, a recovery plan for passengers at designated diversion airports.

(3) A fuel-freeze strategy and procedures for monitoring fuel freezing.

(4) A plan to ensure communication capability for these operations.

(5) An MEL for these operations.

(6) A training plan for operations in these areas.

(7) A plan for mitigating crew exposure to radiation during solar flare activity.

(8) A plan for providing at least two cold weather anti-exposure suits in the aircraft, to protect crewmembers during outside activity at a diversion airport with extreme climatic conditions. The FAA may relieve the certificate holder from this requirement if the season of the year makes the equipment unnecessary.

[Doc. No. FAA–2002–6717, 72 FR 1883, Jan. 16, 2007]

PART 125—CERTIFICATION AND OPERATIONS: AIRPLANES HAVING A SEATING CAPACITY OF 20 OR MORE PASSENGERS OR A MAXIMUM PAYLOAD CAPACITY OF 6,000 POUNDS OR MORE; AND RULES GOVERNING PERSONS ON BOARD SUCH AIRCRAFT

SPECIAL FEDERAL AVIATION REGULATION NO. 89 [NOTE]

SPECIAL FEDERAL AVIATION REGULATION NO. 97 [NOTE]

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AUTHORITY: 49 U.S.C. 106(g), 40113, 44701–44702, 44705, 44710–44711, 44713, 44716–44717, 44722.

SOURCE: Docket No. 19779, 45 FR 67235, Oct. 9, 1980, unless otherwise noted.

SPECIAL FEDERAL AVIATION REGULATION NO. 89

EDITORIAL NOTE: For the text of SFAR No. 89, see part 121 of this chapter.

SPECIAL FEDERAL AVIATION REGULATION NO. 97

EDITORIAL NOTE: For the text of SFAR No. 97, see part 91 of this chapter.

SPECIAL FEDERAL AVIATION REGULATION NO. 106

EDITORIAL NOTE: For the text of SFAR No. 106, see part 121 of this chapter.

Subpart A—General

§ 125.1 Applicability.

(a) Except as provided in paragraphs (b), (c) and (d) of this section, this part prescribes rules governing the operations of U.S.-registered civil airplanes which have a seating configuration of 20 or more passengers or a maximum

payload capacity of 6,000 pounds or more when common carriage is not involved.

(b) The rules of this part do not apply to the operations of airplanes specified in paragraph (a) of this section, when—

(1) They are required to be operated under part 121, 129, 135, or 137 of this chapter;

(2) They have been issued restricted, limited, or provisional airworthiness certificates, special flight permits, or experimental certificates;

(3) They are being operated by a part 125 certificate holder without carrying passengers or cargo under part 91 for training, ferrying, positioning, or maintenance purposes;

(4) They are being operated under part 91 by an operator certificated to operate those airplanes under the rules of parts 121, 135, or 137 of this chapter, they are being operated under the applicable rules of part 121 or part 135 of this chapter by an applicant for a certificate under part 119 of this chapter or they are being operated by a foreign air carrier or a foreign person engaged in common carriage solely outside the United States under part 91 of this chapter;

(5) They are being operated under a deviation authority issued under §125.3;

(6) They are being operated under part 91, subpart K by a fractional owner as defined in §91.1001 of this chapter; or

(7) They are being operated by a fractional ownership program manager as defined in §91.1001 of this chapter, for training, ferrying, positioning, maintenance, or demonstration purposes under part 91 of this chapter and without carrying passengers or cargo for compensation or hire except as permitted for demonstration flights under §91.501(b)(3) of this chapter.

(c) The rules of this part, except §125.247, do not apply to the operation of airplanes specified in paragraph (a) when they are operated outside the United States by a person who is not a citizen of the United States.

(d) The provisions of this part apply to each person on board an aircraft being operated under this part, unless otherwise specified.

(e) This part also establishes requirements for operators to take actions to support the continued airworthiness of each airplane.

[Doc. No. 19779, 45 FR 67235, Oct. 9, 1980, as amended by Amdt. 125–4, 47 FR 44719, Oct. 12, 1982; Amdt. 125–5, 49 FR 34816, Sept. 4, 1984; Amdt. 125–6, 51 FR 873, Jan. 8, 1986; Amdt. 125–9, 52 FR 20028, May 28, 1987; Amdt. 121–251, 60 FR 65937, Dec. 20, 1995; Amdt. 125–31, 64 FR 1080, Jan. 7, 1999; Amdt. 125–44, 68 FR 54585, Sept. 17, 2003; Amdt. 125–53, 72 FR 63412, Nov. 8, 2007]

§125.3 Deviation authority.

(a) The Administrator may, upon consideration of the circumstances of a particular operation, issue deviation authority providing relief from specified sections of part 125. This deviation authority will be issued as a Letter of Deviation Authority.

(b) A Letter of Deviation Authority may be terminated or amended at any time by the Administrator.

(c) A request for deviation authority must be submitted to the nearest Flight Standards District Office, not less than 60 days prior to the date of intended operations. A request for deviation authority must contain a complete statement of the circumstances and justification for the deviation requested.

[Doc. No. 19779, 45 FR 67235, Oct. 9, 1980, as amended by Amdt. 125–13, 54 FR 39294, Sept. 25, 1989]

§125.5 Operating certificate and operations specifications required.

(a) After February 3, 1981, no person may engage in operations governed by this part unless that person holds a certificate and operations specification or appropriate deviation authority.

(b) Applicants who file an application before June 1, 1981 shall continue to operate under the rules applicable to their operations on February 2, 1981 until the application for an operating certificate required by this part has been denied or the operating certificate and operations specifications required by this part have been issued.

(c) The rules of this part which apply to a certificate holder also apply to any person who engages in any operation governed by this part without an appropriate certificate and operations specifications required by this part or a

Letter of Deviation Authority issued under § 125.3.

[Doc. No. 19779, 45 FR 67235, Oct. 9, 1980, as amended by Amdt. 125–1A, 46 FR 10903, Feb. 5, 1981]

§ 125.7 Display of certificate.

(a) The certificate holder must display a true copy of the certificate in each of its aircraft.

(b) Each operator holding a Letter of Deviation Authority issued under this part must carry a true copy in each of its airplanes.

§ 125.9 Definitions.

(a) For the purposes of this part, *maximum payload capacity* means:

(1) For an airplane for which a maximum zero fuel weight is prescribed in FAA technical specifications, the maximum zero fuel weight, less empty weight, less all justifiable airplane equipment, and less the operating load (consisting of minimum flightcrew, foods and beverages and supplies and equipment related to foods and beverages, but not including disposable fuel or oil):

(2) For all other airplanes, the maximum certificated takeoff weight of an airplane, less the empty weight, less all justifiable airplane equipment, and less the operating load (consisting of minimum fuel load, oil, and flightcrew). The allowance for the weight of the crew, oil, and fuel is as follows:

(i) Crew—200 pounds for each crewmember required under this chapter

(ii) Oil—350 pounds.

(iii) Fuel—the minimum weight of fuel required under this chapter for a flight between domestic points 174 nautical miles apart under VFR weather conditions that does not involve extended overwater operations.

(b) For the purposes of this part, *empty weight* means the weight of the airframe, engines, propellers, and fixed equipment. Empty weight excludes the weight of the crew and payload, but includes the weight of all fixed ballast, unusable fuel supply, undrainable oil, total quantity of engine coolant, and total quantity of hydraulic fluid.

(c) For the purposes of this part, *maximum zero fuel weight* means the maximum permissible weight of an airplane with no disposable fuel or oil. The zero fuel weight figure may be found in either the airplane type certificate data sheet or the approved Airplane Flight Manual, or both.

(d) For the purposes of this section, *justifiable airplane equipment* means any equipment necessary for the operation of the airplane. It does not include equipment or ballast specifically installed, permanently or otherwise, for the purpose of altering the empty weight of an airplane to meet the maximum payload capacity.

§ 125.11 Certificate eligibility and prohibited operations.

(a) No person is eligible for a certificate or operations specifications under this part if the person holds the appropriate operating certificate and/or operations specifications necessary to conduct operations under part 121, 129 or 135 of this chapter.

(b) No certificate holder may conduct any operation which results directly or indirectly from any person's holding out to the public to furnish transportation.

(c) No person holding operations specifications under this part may operate or list on its operations specifications any aircraft listed on any operations specifications or other required aircraft listing under part 121, 129, or 135 of this chapter.

[Doc. No. 19779, 45 FR 67235, Oct. 9, 1980 as amended by Amdt. 125–9, 52 FR 20028, May 28, 1987]

Subpart B—Certification Rules and Miscellaneous Requirements

§ 125.21 Application for operating certificate.

(a) Each applicant for the issuance of an operating certificate must submit an application in a form and manner prescribed by the Administrator to the FAA Flight Standards district office in whose area the applicant proposes to establish or has established its principal operations base. The application must be submitted at least 60 days before the date of intended operations.

(b) Each application submitted under paragraph (a) of this section must contain a signed statement showing the following:

(1) The name and address of each director and each officer or person employed or who will be employed in a management position described in § 125.25.

(2) A list of flight crewmembers with the type of airman certificate held, including ratings and certificate numbers.

§ 125.23 Rules applicable to operations subject to this part.

Each person operating an airplane in operations under this part shall—

(a) While operating inside the United States, comply with the applicable rules in part 91 of this chapter; and

(b) While operating outside the United States, comply with Annex 2, Rules of the Air, to the Convention on International Civil Aviation or the regulations of any foreign country, whichever applies, and with any rules of parts 61 and 91 of this chapter and this part that are more restrictive than that Annex or those regulations and that can be complied with without violating that Annex or those regulations. Annex 2 is incorporated by reference in § 91.703(b) of this chapter.

[Doc. No. 19779, 45 FR 67235, Oct. 9, 1980, as amended by Amdt. 125–12, 54 FR 34331, Aug. 18, 1989]

§ 125.25 Management personnel required.

(a) Each applicant for a certificate under this part must show that it has enough management personnel, including at least a director of operations, to assure that its operations are conducted in accordance with the requirements of this part.

(b) Each applicant shall—

(1) Set forth the duties, responsibilities, and authority of each of its management personnel in the general policy section of its manual;

(2) List in the manual the names and addresses of each of its management personnel;

(3) Designate a person as responsible for the scheduling of inspections required by the manual and for the updating of the approved weight and balance system on all airplanes.

(c) Each certificate holder shall notify the FAA Flight Standards district office charged with the overall inspection of the certificate holder of any change made in the assignment of persons to the listed positions within 10 days, excluding Saturdays, Sundays, and Federal holidays, of such change.

§ 125.27 Issue of certificate.

(a) An applicant for a certificate under this subpart is entitled to a certificate if the Administrator finds that the applicant is properly and adequately equipped and able to conduct a safe operation in accordance with the requirements of this part and the operations specifications provided for in this part.

(b) The Administrator may deny an application for a certificate under this subpart if the Administrator finds—

(1) That an operating certificate required under this part or part 121, 123, or 135 of this chapter previously issued to the applicant was revoked; or

(2) That a person who was employed in a management position under § 125.25 of this part with (or has exercised control with respect to) any certificate holder under part 121, 123, 125, or 135 of this chapter whose operating certificate has been revoked, will be employed in any of those positions or a similar position with the applicant and that the person's employment or control contributed materially to the reasons for revoking that certificate.

§ 125.29 Duration of certificate.

(a) A certificate issued under this part is effective until surrendered, suspended, or revoked.

(b) The Administrator may suspend or revoke a certificate under section 609 of the Federal Aviation Act of 1958 and the applicable procedures of part 13 of this chapter for any cause that, at the time of suspension or revocation, would have been grounds for denying an application for a certificate.

(c) If the Administrator suspends or revokes a certificate or it is otherwise terminated, the holder of that certificate shall return it to the Administrator.

§ 125.31 Contents of certificate and operations specifications.

(a) Each certificate issued under this part contains the following:

(1) The holder's name.

(2) A description of the operations authorized.

(3) The date it is issued.

(b) The operations specifications issued under this part contain the following:

(1) The kinds of operations authorized.

(2) The types and registration numbers of airplanes authorized for use.

(3) Approval of the provisions of the operator's manual relating to airplane inspections, together with necessary conditions and limitations.

(4) Registration numbers of airplanes that are to be inspected under an approved airplane inspection program under § 125.247.

(5) Procedures for control of weight and balance of airplanes.

(6) Any other item that the Administrator determines is necessary to cover a particular situation.

§ 125.33 Operations specifications not a part of certificate.

Operations specifications are not a part of an operating certificate.

§ 125.35 Amendment of operations specifications.

(a) The FAA Flight Standards district office charged with the overall inspection of the certificate holder may amend any operations specifications issued under this part if—

(1) It determines that safety in air commerce requires that amendment; or

(2) Upon application by the holder, that district office determines that safety in air commerce allows that amendment.

(b) The certificate holder must file an application to amend operations specifications at least 15 days before the date proposed by the applicant for the amendment to become effective, unless a shorter filing period is approved. The application must be on a form and in a manner prescribed by the Administrator and be submitted to the FAA Flight Standards district office charged with the overall inspection of the certificate holder.

(c) Within 30 days after a notice of refusal to approve a holder's application for amendment is received, the holder may petition the Director, Flight Standards Service, to reconsider the refusal to amend.

(d) When the FAA Flight Standards district office charged with the overall inspection of the certificate holder amends operations specifications, that district office gives notice in writing to the holder of a proposed amendment to the operations specifications, fixing a period of not less than 7 days within which the holder may submit written information, views, and arguments concerning the proposed amendment. After consideration of all relevant matter presented, that district office notifies the holder of any amendment adopted, or a rescission of the notice. That amendment becomes effective not less than 30 days after the holder receives notice of the adoption of the amendment, unless the holder petitions the Director, Flight Standards Service, for reconsideration of the amendment. In that case, the effective date of the amendment is stayed pending a decision by the Director. If the Director finds there is an emergency requiring immediate action as to safety in air commerce that makes the provisions of this paragraph impracticable or contrary to the public interest, the Director notifies the certificate holder that the amendment is effective on the date of receipt, without previous notice.

[Doc. No. 19779, 45 FR 67235, Oct. 9, 1980, as amended by Amdt. 125–13, 54 FR 39294, Sept. 25, 1989]

§ 125.37 Duty period limitations.

(a) Each flight crewmember and flight attendant must be relieved from all duty for at least 8 consecutive hours during any 24-hour period.

(b) The Administrator may specify rest, flight time, and duty time limitations in the operations specifications that are other than those specified in paragraph (a) of this section.

[Doc. No. 19779, 45 FR 67235, Oct. 9, 1980, as amended by Amdt. 125–21, 59 FR 42993, Aug. 19, 1994]

§ 125.39 Carriage of narcotic drugs, marihuana, and depressant or stimulant drugs or substances.

If the holder of a certificate issued under this part permits any airplane owned or leased by that holder to be

engaged in any operation that the certificate holder knows to be in violation of §91.19(a) of this chapter, that operation is a basis for suspending or revoking the certificate.

[Doc. No. 19779, 45 FR 67235, Oct. 9, 1980, as amended by Amdt. 125–12, 54 FR 34331, Aug. 18, 1989]

§ 125.41 Availability of certificate and operations specifications.

Each certificate holder shall make its operating certificate and operations specifications available for inspection by the Administrator at its principal operations base.

§ 125.43 Use of operations specifications.

(a) Each certificate holder shall keep each of its employees informed of the provisions of its operations specifications that apply to the employee's duties and responsibilities.

(b) Each certificate holder shall maintain a complete and separate set of its operations specifications. In addition, each certificate holder shall insert pertinent excerpts of its operations specifications, or reference thereto, in its manual in such a manner that they retain their identity as operations specifications.

§ 125.45 Inspection authority.

Each certificate holder shall allow the Administrator, at any time or place, to make any inspections or tests to determine its compliance with the Federal Aviation Act of 1958, the Federal Aviation Regulations, its operating certificate and operations specifications, its letter of deviation authority, or its eligibililty to continue to hold its certificate or its letter of deviation authority.

§ 125.47 Change of address.

Each certificate holder shall notify the FAA Flight Standards district office charged with the overall inspection of its operations, in writing, at least 30 days in advance, of any change in the address of its principal business office, its principal operations base, or its principal maintenance base.

§ 125.49 Airport requirements.

(a) No certificate holder may use any airport unless it is adequate for the proposed operation, considering such items as size, surface, obstructions, and lighting.

(b) No pilot of an airplane carrying passengers at night may take off from, or land on, an airport unless—

(1) That pilot has determined the wind direction from an illuminated wind direction indicator or local ground communications, or, in the case of takeoff, that pilot's personal observations; and

(2) The limits of the area to be used for landing or takeoff are clearly shown by boundary or runway marker lights.

(c) For the purposes of paragraph (b) of this section, if the area to be used for takeoff or landing is marked by flare pots or lanterns, their use must be approved by the Administrator.

§ 125.51 En route navigation facilities.

(a) Except as provided in paragraph (b) of this section, no certificate holder may conduct any operation over a route (including to any destination, refueling or alternate airports) unless suitable navigation aids are available over the route to navigate the airplane along the route within the degree of accuracy required for ATC. Navigation aids required for routes outside of controlled airspace are listed in the certificate holder's operations specifications except for those aids required for routes to alternate airports.

(b) Navigation aids are not required for any of the following operations—

(1) Day VFR operations that the certificate holder shows can be conducted safely by pilotage because of the characteristics of the terrain;

(2) Night VFR operations on routes that the certificate holder shows have reliably lighted landmarks adequate for safe operations; and

(3) Other operations approved by the certificate holding district office.

[Doc. No. FAA–2002–14002, 72 FR 31682, June 7, 2007]

§ 125.53 Flight locating requirements.

(a) Each certificate holder must have procedures established for locating

each flight for which an FAA flight plan is not filed that—

(1) Provide the certificate holder with at least the information required to be included in a VFR flight plan;

(2) Provide for timely notification of an FAA facility or search and rescue facility, if an airplane is overdue or missing; and

(3) Provide the certificate holder with the location, date, and estimated time for reestablishing radio or telephone communications, if the flight will operate in an area where communications cannot be maintained.

(b) Flight locating information shall be retained at the certificate holder's principal operations base, or at other places designated by the certificate holder in the flight locating procedures, until the completion of the flight.

(c) Each certificate holder shall furnish the representative of the Administrator assigned to it with a copy of its flight locating procedures and any changes or additions, unless those procedures are included in a manual required under this part.

Subpart C—Manual Requirements

§ 125.71 Preparation.

(a) Each certificate holder shall prepare and keep current a manual setting forth the certificate holder's procedures and policies acceptable to the Administrator. This manual must be used by the certificate holder's flight, ground, and maintenance personnel in conducting its operations. However, the Administrator may authorize a deviation from this paragraph if the Administrator finds that, because of the limited size of the operation, all or part of the manual is not necessary for guidance of flight, ground, or maintenance personnel.

(b) Each certificate holder shall maintain at least one copy of the manual at its principal operations base.

(c) The manual must not be contrary to any applicable Federal regulations, foreign regulation applicable to the certificate holder's operations in foreign countries, or the certificate holder's operating certificate or operations specifications.

(d) A copy of the manual, or appropriate portions of the manual (and changes and additions) shall be made available to maintenance and ground operations personnel by the certificate holder and furnished to—

(1) Its flight crewmembers; and

(2) The FAA Flight Standards district office charged with the overall inspection of its operations.

(e) Each employee of the certificate holder to whom a manual or appropriate portions of it are furnished under paragraph (d)(1) of this section shall keep it up to date with the changes and additions furnished to them.

(f) For the purpose of complying with paragraph (d) of this section, a certificate holder may furnish the persons listed therein with the maintenance part of its manual in printed form or other form, acceptable to the Administrator, that is retrievable in the English language. If the certificate holder furnishes the maintenance part of the manual in other than printed form, it must ensure there is a compatible reading device available to those persons that provides a legible image of the maintenance information and instructions or a system that is able to retrieve the maintenance information and instructions in the English language.

(g) If a certificate holder conducts airplane inspections or maintenance at specified stations where it keeps the approved inspection program manual, it is not required to carry the manual aboard the airplane en route to those stations.

[Doc. No. 19779, 45 FR 67235, Oct. 9, 1980, as amended by Amdt. 125–28, 62 FR 13257, Mar. 19, 1997]

§ 125.73 Contents.

Each manual shall have the date of the last revision and revision number on each revised page. The manual must include—

(a) The name of each management person who is authorized to act for the certificate holder, the person's assigned area of responsibility, and the person's duties, responsibilities, and authority;

(b) Procedures for ensuring compliance with airplane weight and balance limitations;

(c) Copies of the certificate holder's operations specifications or appropriate extracted information, including area of operations authorized, category and class of airplane authorized, crew complements, and types of operations authorized;

(d) Procedures for complying with accident notification requirements;

(e) Procedures for ensuring that the pilot in command knows that required airworthiness inspections have been made and that the airplane has been approved for return to service in compliance with applicable maintenance requirements;

(f) Procedures for reporting and recording mechanical irregularities that come to the attention of the pilot in command before, during, and after completion of a flight;

(g) Procedures to be followed by the pilot in command for determining that mechanical irregularities or defects reported for previous flights have been corrected or that correction has been deferred;

(h) Procedures to be followed by the pilot in command to obtain maintenance, preventive maintenance, and servicing of the airplane at a place where previous arrangements have not been made by the operator, when the pilot is authorized to so act for the operator;

(i) Procedures for the release for, or continuation of, flight if any item of equipment required for the particular type of operation becomes inoperative or unserviceable en route;

(j) Procedures for refueling airplanes, eliminating fuel contamination, protecting from fire (including electrostatic protection), and supervising and protecting passengers during refueling;

(k) Procedures to be followed by the pilot in command in the briefing under §125.327;

(l) Flight locating procedures, when applicable;

(m) Procedures for ensuring compliance with emergency procedures, including a list of the functions assigned each category of required crewmembers in connection with an emergency and emergency evacuation;

(n) The approved airplane inspection program;

(o) Procedures and instructions to enable personnel to recognize hazardous materials, as defined in title 49 CFR, and if these materials are to be carried, stored, or handled, procedures and instructions for—

(1) Accepting shipment of hazardous material required by title 49 CFR, to assure proper packaging, marking, labeling, shipping documents, compatibility of articles, and instructions on their loading, storage, and handling;

(2) Notification and reporting hazardous material incidents as required by title 49 CFR; and

(3) Notification of the pilot in command when there are hazardous materials aboard, as required by title 49 CFR;

(p) Procedures for the evacuation of persons who may need the assistance of another person to move expeditiously to an exit if an emergency occurs;

(q) The identity of each person who will administer tests required by this part, including the designation of the tests authorized to be given by the person; and

(r) Other procedures and policy instructions regarding the certificate holder's operations that are issued by the certificate holder.

§125.75 Airplane flight manual.

(a) Each certificate holder shall keep a current approved Airplane Flight Manual or approved equivalent for each type airplane that it operates.

(b) Each certificate holder shall carry the approved Airplane Flight Manual or the approved equivalent aboard each airplane it operates. A certificate holder may elect to carry a combination of the manuals required by this section and §125.71. If it so elects, the certificate holder may revise the operating procedures sections and modify the presentation of performance from the applicable Airplane Flight Manual if the revised operating procedures and modified performance data presentation are approved by the Administrator.

Subpart D—Airplane Requirements

§ 125.91 Airplane requirements: General.

(a) No certificate holder may operate an airplane governed by this part unless it—

(1) Carries an appropriate current airworthiness certificate issued under this chapter; and

(2) Is in an airworthy condition and meets the applicable airworthiness requirements of this chapter, including those relating to identification and equipment.

(b) No person may operate an airplane unless the current empty weight and center of gravity are calculated from the values established by actual weighing of the airplane within the preceding 36 calendar months.

(c) Paragraph (b) of this section does not apply to airplanes issued an original airworthiness certificate within the preceding 36 calendar months.

§ 125.93 Airplane limitations.

No certificate holder may operate a land airplane (other than a DC–3, C–46, CV–240, CV–340, CV–440, CV–580, CV–600, CV–640, or Martin 404) in an extended overwater operation unless it is certificated or approved as adequate for ditching under the ditching provisions of part 25 of this chapter.

Subpart E—Special Airworthiness Requirements

§ 125.111 General.

(a) Except as provided in paragraph (b) of this section, no certificate holder may use an airplane powered by airplane engines rated at more than 600 horsepower each for maximum continuous operation unless that airplane meets the requirements of §§ 125.113 through 125.181.

(b) If the Administrator determines that, for a particular model of airplane used in cargo service, literal compliance with any requirement under paragraph (a) of this section would be extremely difficult and that compliance would not contribute materially to the objective sought, the Administrator may require compliance with only those requirements that are necessary to accomplish the basic objectives of this part.

(c) This section does not apply to any airplane certificated under—

(1) Part 4b of the Civil Air Regulations in effect after October 31, 1946;

(2) Part 25 of this chapter; or

(3) Special Civil Air Regulation 422, 422A, or 422B.

§ 125.113 Cabin interiors.

(a) Upon the first major overhaul of an airplane cabin or refurbishing of the cabin interior, all materials in each compartment used by the crew or passengers that do not meet the following requirements must be replaced with materials that meet these requirements:

(1) For an airplane for which the application for the type certificate was filed prior to May 1, 1972, § 25.853 in effect on April 30, 1972.

(2) For an airplane for which the application for the type certificate was filed on or after May 1, 1972, the materials requirement under which the airplane was type certificated.

(b) Except as provided in paragraph (a) of this section, each compartment used by the crew or passengers must meet the following requirements:

(1) Materials must be at least flash resistant.

(2) The wall and ceiling linings and the covering of upholstering, floors, and furnishings must be flame resistant.

(3) Each compartment where smoking is to be allowed must be equipped with self-contained ash trays that are completely removable and other compartments must be placarded against smoking.

(4) Each receptacle for used towels, papers, and wastes must be of fire-resistant material and must have a cover or other means of containing possible fires started in the receptacles.

(c) Thermal/acoustic insulation materials. For transport category airplanes type certificated after January 1, 1958:

(1) For airplanes manufactured before September 2, 2005, when thermal/acoustic insulation is installed in the fuselage as replacements after September 2, 2005, the insulation must meet the flame propagation requirements of

§25.856 of this chapter, effective September 2, 2003, if it is:

(i) of a blanket construction or

(ii) Installed around air ducting.

(2) For airplanes manufactured after September 2, 2005, thermal/acoustic insulation materials installed in the fuselage must meet the flame propagation requirements of §25.856 of this chapter, effective September 2, 2003.

[Doc. No. 19799, 45 FR 67235, Oct. 9, 1980, as amended by Amdt. 125–43, 68 FR 45084, July 31, 2003; Amdt. 125–50, 70 FR 77752, Dec. 30, 2005]

§ 125.115 Internal doors.

In any case where internal doors are equipped with louvres or other ventilating means, there must be a means convenient to the crew for closing the flow of air through the door when necessary.

§ 125.117 Ventilation.

Each passenger or crew compartment must be suitably ventilated. Carbon monoxide concentration may not be more than one part in 20,000 parts of air, and fuel fumes may not be present. In any case where partitions between compartments have louvres or other means allowing air to flow between compartments, there must be a means convenient to the crew for closing the flow of air through the partitions when necessary.

§ 125.119 Fire precautions.

(a) Each compartment must be designed so that, when used for storing cargo or baggage, it meets the following requirements:

(1) No compartment may include controls, wiring, lines, equipment, or accessories that would upon damage or failure, affect the safe operation of the airplane unless the item is adequately shielded, isolated, or otherwise protected so that it cannot be damaged by movement of cargo in the compartment and so that damage to or failure of the item would not create a fire hazard in the compartment.

(2) Cargo or baggage may not interfere with the functioning of the fire-protective features of the compartment.

(3) Materials used in the construction of the compartments, including tie-down equipment, must be at least flame resistant.

(4) Each compartment must include provisions for safeguarding against fires according to the classifications set forth in paragraphs (b) through (f) of this section.

(b) *Class A.* Cargo and baggage compartments are classified in the ''A'' category if a fire therein would be readily discernible to a member of the crew while at that crewmember's station, and all parts of the compartment are easily accessible in flight. There must be a hand fire extinguisher available for each Class A compartment.

(c) *Class B.* Cargo and baggage compartments are classified in the ''B'' category if enough access is provided while in flight to enable a member of the crew to effectively reach all of the compartment and its contents with a hand fire extinguisher and the compartment is so designed that, when the access provisions are being used, no hazardous amount of smoke, flames, or extinguishing agent enters any compartment occupied by the crew or passengers. Each Class B compartment must comply with the following:

(1) It must have a separate approved smoke or fire detector system to give warning at the pilot or flight engineer station.

(2) There must be a hand-held fire extinguisher available for the compartment.

(3) It must be lined with fire-resistant material, except that additional service lining of flame-resistant material may be used.

(d) *Class C.* Cargo and baggage compartments are classified in the ''C'' category if they do not conform with the requirements for the ''A'', ''B'', ''D'', or ''E'' categories. Each Class C compartment must comply with the following:

(1) It must have a separate approved smoke or fire detector system to give warning at the pilot or flight engineer station.

(2) It must have an approved built-in fire-extinguishing system controlled from the pilot or flight engineer station.

(3) It must be designed to exclude hazardous quantities of smoke, flames, or extinguishing agents from entering

into any compartment occupied by the crew or passengers.

(4) It must have ventilation and draft control so that the extinguishing agent provided can control any fire that may start in the compartment.

(5) It must be lined with fire-resistant material, except that additional service lining of flame-resistant material may be used.

(e) *Class D.* Cargo and baggage compartments are classified in the ''D'' category if they are so designed and constructed that a fire occurring therein will be completely confined without endangering the safety of the airplane or the occupants. Each Class D compartment must comply with the following:

(1) It must have a means to exclude hazardous quantities of smoke, flames, or noxious gases from entering any compartment occupied by the crew or passengers.

(2) Ventilation and drafts must be controlled within each compartment so that any fire likely to occur in the compartment will not progress beyond safe limits.

(3) It must be completely lined with fire-resistant material.

(4) Consideration must be given to the effect of heat within the compartment on adjacent critical parts of the airplane.

(f) *Class E.* On airplanes used for the carriage of cargo only, the cabin area may be classified as a Class ''E'' compartment. Each Class E compartment must comply with the following:

(1) It must be completely lined with fire-resistant material.

(2) It must have a separate system of an approved type smoke or fire detector to give warning at the pilot or flight engineer station.

(3) It must have a means to shut off the ventilating air flow to or within the compartment and the controls for that means must be accessible to the flightcrew in the crew compartment.

(4) It must have a means to exclude hazardous quantities of smoke, flames, or noxious gases from entering the flightcrew compartment.

(5) Required crew emergency exits must be accessible under all cargo loading conditions.

§ 125.121 Proof of compliance with § 125.119.

Compliance with those provisions of § 125.119 that refer to compartment accessibility, the entry of hazardous quantities of smoke or extinguishing agent into compartment occupied by the crew or passengers, and the dissipation of the extinguishing agent in Class ''C'' compartments must be shown by tests in flight. During these tests it must be shown that no inadvertent operation of smoke or fire detectors in other compartments within the airplane would occur as a result of fire contained in any one compartment, either during the time it is being extinguished, or thereafter, unless the extinguishing system floods those compartments simultaneously.

§ 125.123 Propeller deicing fluid.

If combustible fluid is used for propeller deicing, the certificate holder must comply with § 125.153.

§ 125.125 Pressure cross-feed arrangements.

(a) Pressure cross-feed lines may not pass through parts of the airplane used for carrying persons or cargo unless there is a means to allow crewmembers to shut off the supply of fuel to these lines or the lines are enclosed in a fuel and fume-proof enclosure that is ventilated and drained to the exterior of the airplane. However, such an enclosure need not be used if those lines incorporate no fittings on or within the personnel or cargo areas and are suitably routed or protected to prevent accidental damage.

(b) Lines that can be isolated from the rest of the fuel system by valves at each end must incorporate provisions for relieving excessive pressures that may result from exposure of the isolated line to high temperatures.

§ 125.127 Location of fuel tanks.

(a) Fuel tanks must be located in accordance with § 125.153.

(b) No part of the engine nacelle skin that lies immediately behind a major air outlet from the engine compartment may be used as the wall of an integral tank.

(c) Fuel tanks must be isolated from personnel compartments by means of fume- and fuel-proof enclosures.

§ 125.129 Fuel system lines and fittings.

(a) Fuel lines must be installed and supported so as to prevent excessive vibration and so as to be adequate to withstand loads due to fuel pressure and accelerated flight conditions.

(b) Lines connected to components of the airplane between which there may be relative motion must incorporate provisions for flexibility.

(c) Flexible connections in lines that may be under pressure and subject to axial loading must use flexible hose assemblies rather than hose clamp connections.

(d) Flexible hoses must be of an acceptable type or proven suitable for the particular application.

§ 125.131 Fuel lines and fittings in designated fire zones.

Fuel lines and fittings in each designated fire zone must comply with § 125.157.

§ 125.133 Fuel valves.

Each fuel valve must—

(a) Comply with § 125.155;

(b) Have positive stops or suitable index provisions in the ''on'' and ''off'' positions; and

(c) Be supported so that loads resulting from its operation or from accelerated flight conditions are not transmitted to the lines connected to the valve.

§ 125.135 Oil lines and fittings in designated fire zones.

Oil lines and fittings in each designated fire zone must comply with § 125.157.

§ 125.137 Oil valves.

(a) Each oil valve must—

(1) Comply with § 125.155;

(2) Have positive stops or suitable index provisions in the ''on'' and ''off'' positions; and

(3) Be supported so that loads resulting from its operation or from accelerated flight conditions are not transmitted to the lines attached to the valve.

(b) The closing of an oil shutoff means must not prevent feathering the propeller, unless equivalent safety provisions are incorporated.

§ 125.139 Oil system drains.

Accessible drains incorporating either a manual or automatic means for positive locking in the closed position must be provided to allow safe drainage of the entire oil system.

§ 125.141 Engine breather lines.

(a) Engine breather lines must be so arranged that condensed water vapor that may freeze and obstruct the line cannot accumulate at any point.

(b) Engine breathers must discharge in a location that does not constitute a fire hazard in case foaming occurs and so that oil emitted from the line does not impinge upon the pilots' windshield.

(c) Engine breathers may not discharge into the engine air induction system.

§ 125.143 Firewalls.

Each engine, auxiliary power unit, fuel-burning heater, or other item of combusting equipment that is intended for operation in flight must be isolated from the rest of the airplane by means of firewalls or shrouds, or by other equivalent means.

§ 125.145 Firewall construction.

Each firewall and shroud must—

(a) Be so made that no hazardous quantity of air, fluids, or flame can pass from the engine compartment to other parts of the airplane;

(b) Have all openings in the firewall or shroud sealed with close-fitting fireproof grommets, bushings, or firewall fittings;

(c) Be made of fireproof material; and

(d) Be protected against corrosion.

§ 125.147 Cowling.

(a) Cowling must be made and supported so as to resist the vibration, inertia, and air loads to which it may be normally subjected.

(b) Provisions must be made to allow rapid and complete drainage of the cowling in normal ground and flight attitudes. Drains must not discharge in locations constituting a fire hazard.

Parts of the cowling that are subjected to high temperatures because they are near exhaust system parts or because of exhaust gas impingement must be made of fireproof material. Unless otherwise specified in these regulations, all other parts of the cowling must be made of material that is at least fire resistant.

§ 125.149 Engine accessory section diaphragm.

Unless equivalent protection can be shown by other means, a diaphragm that complies with § 125.145 must be provided on air-cooled engines to isolate the engine power section and all parts of the exhaust system from the engine accessory compartment.

§ 125.151 Powerplant fire protection.

(a) Designated fire zones must be protected from fire by compliance with §§ 125.153 through 125.159.

(b) Designated fire zones are—

(1) Engine accessory sections;

(2) Installations where no isolation is provided between the engine and accessory compartment; and

(3) Areas that contain auxiliary power units, fuel-burning heaters, and other combustion equipment.

§ 125.153 Flammable fluids.

(a) No tanks or reservoirs that are a part of a system containing flammable fluids or gases may be located in designated fire zones, except where the fluid contained, the design of the system, the materials used in the tank, the shutoff means, and the connections, lines, and controls provide equivalent safety.

(b) At least one-half inch of clear airspace must be provided between any tank or reservior and a firewall or shroud isolating a designated fire zone.

§ 125.155 Shutoff means.

(a) Each engine must have a means for shutting off or otherwise preventing hazardous amounts of fuel, oil, deicer, and other flammable fluids from flowing into, within, or through any designated fire zone. However, means need not be provided to shut off flow in lines that are an integral part of an engine.

(b) The shutoff means must allow an emergency operating sequence that is compatible with the emergency operation of other equipment, such as feathering the propeller, to facilitate rapid and effective control of fires.

(c) Shutoff means must be located outside of designated fire zones, unless equivalent safety is provided, and it must be shown that no hazardous amount of flammable fluid will drain into any designated fire zone after a shutoff.

(d) Adequate provisions must be made to guard against inadvertent operation of the shutoff means and to make it possible for the crew to reopen the shutoff means after it has been closed.

§ 125.157 Lines and fittings.

(a) Each line, and its fittings, that is located in a designated fire zone, if it carries flammable fluids or gases under pressure, or is attached directly to the engine, or is subject to relative motion between components (except lines and fittings forming an integral part of the engine), must be flexible and fire-resistant with fire-resistant, factory-fixed, detachable, or other approved fire-resistant ends.

(b) Lines and fittings that are not subject to pressure or to relative motion between components must be of fire-resistant materials.

§ 125.159 Vent and drain lines.

All vent and drain lines, and their fittings, that are located in a designated fire zone must, if they carry flammable fluids or gases, comply with § 125.157, if the Administrator finds that the rupture or breakage of any vent or drain line may result in a fire hazard.

§ 125.161 Fire-extinguishing systems.

(a) Unless the certificate holder shows that equivalent protection against destruction of the airplane in case of fire is provided by the use of fireproof materials in the nacelle and other components that would be subjected to flame, fire-extinguishing systems must be provided to serve all designated fire zones.

(b) Materials in the fire-extinguishing system must not react chemically with the extinguishing agent so as to be a hazard.

§ 125.163 Fire-extinguishing agents.

Only methyl bromide, carbon dioxide, or another agent that has been shown to provide equivalent extinguishing action may be used as a fire-extinguishing agent. If methyl bromide or any other toxic extinguishing agent is used, provisions must be made to prevent harmful concentrations of fluid or fluid vapors from entering any personnel compartment either because of leakage during normal operation of the airplane or because of discharging the fire extinguisher on the ground or in flight when there is a defect in the extinguishing system. If a methyl bromide system is used, the containers must be charged with dry agent and sealed by the fire-extinguisher manufacturer or some other person using satisfactory recharging equipment. If carbon dioxide is used, it must not be possible to discharge enough gas into the personnel compartments to create a danger of suffocating the occupants.

§ 125.165 Extinguishing agent container pressure relief.

Extinguishing agent containers must be provided with a pressure relief to prevent bursting of the container because of excessive internal pressures. The discharge line from the relief connection must terminate outside the airplane in a place convenient for inspection on the ground. An indicator must be provided at the discharge end of the line to provide a visual indication when the container has discharged.

§ 125.167 Extinguishing agent container compartment temperature.

Precautions must be taken to ensure that the extinguishing agent containers are installed in places where reasonable temperatures can be maintained for effective use of the extinguishing system.

§ 125.169 Fire-extinguishing system materials.

(a) Except as provided in paragraph (b) of this section, each component of a fire-extinguishing system that is in a designated fire zone must be made of fireproof materials.

(b) Connections that are subject to relative motion between components of the airplane must be made of flexible materials that are at least fire-resistant and be located so as to minimize the probability of failure.

§ 125.171 Fire-detector systems.

Enough quick-acting fire detectors must be provided in each designated fire zone to assure the detection of any fire that may occur in that zone.

§ 125.173 Fire detectors.

Fire detectors must be made and installed in a manner that assures their ability to resist, without failure, all vibration, inertia, and other loads to which they may be normally subjected. Fire detectors must be unaffected by exposure to fumes, oil, water, or other fluids that may be present.

§ 125.175 Protection of other airplane components against fire.

(a) Except as provided in paragraph (b) of this section, all airplane surfaces aft of the nacelles in the area of one nacelle diameter on both sides of the nacelle centerline must be made of material that is at least fire resistant.

(b) Paragraph (a) of this section does not apply to tail surfaces lying behind nacelles unless the dimensional configuration of the airplane is such that the tail surfaces could be affected readily by heat, flames, or sparks emanating from a designated fire zone or from the engine from a designated fire zone or from the engine compartment of any nacelle.

§ 125.177 Control of engine rotation.

(a) Except as provided in paragraph (b) of this section, each airplane must have a means of individually stopping and restarting the rotation of any engine in flight.

(b) In the case of turbine engine installations, a means of stopping rotation need be provided only if the Administrator finds that rotation could jeopardize the safety of the airplane.

§ 125.179 Fuel system independence.

(a) Each airplane fuel system must be arranged so that the failure of any one component does not result in the irrecoverable loss of power of more than one engine.

(b) A separate fuel tank need not be provided for each engine if the certificate holder shows that the fuel system incorporates features that provide equivalent safety.

§ 125.181 Induction system ice prevention.

A means for preventing the malfunctioning of each engine due to ice accumulation in the engine air induction system must be provided for each airplane.

§ 125.183 Carriage of cargo in passenger compartments.

(a) Except as provided in paragraph (b) or (c) of this section, no certificate holder may carry cargo in the passenger compartment of an airplane.

(b) Cargo may be carried aft of the foremost seated passengers if it is carried in an approved cargo bin that meets the following requirements:

(1) The bin must withstand the load factors and emergency landing conditions applicable to the passenger seats of the airplane in which the bin is installed, multiplied by a factor of 1.15, using the combined weight of the bin and the maximum weight of cargo that may be carried in the bin.

(2) The maximum weight of cargo that the bin is approved to carry and any instructions necessary to ensure proper weight distribution within the bin must be conspicuously marked on the bin.

(3) The bin may not impose any load on the floor or other structure of the airplane that exceeds the load limitations of that structure.

(4) The bin must be attached to the seat tracks or to the floor structure of the airplane, and its attachment must withstand the load factors and emergency landing conditions applicable to the passenger seats of the airplane in which the bin is installed, multiplied by either the factor 1.15 or the seat attachment factor specified for the airplane, whichever is greater, using the combined weight of the bin and the maximum weight of cargo that may be carried in the bin.

(5) The bin may not be installed in a position that restricts access to or use of any required emergency exit, or of the aisle in the passenger compartment.

(6) The bin must be fully enclosed and made of material that is at least flame-resistant.

(7) Suitable safeguards must be provided within the bin to prevent the cargo from shifting under emergency landing conditions.

(8) The bin may not be installed in a position that obscures any passenger's view of the ''seat belt'' sign, ''no smoking'' sign, or any required exit sign, unless an auxiliary sign or other approved means for proper notification of the passenger is provided.

(c) All cargo may be carried forward of the foremost seated passengers and carry-on baggage may be carried alongside the foremost seated passengers if the cargo (including carry-on baggage) is carried either in approved bins as specified in paragraph (b) of this section or in accordance with the following:

(1) It is properly secured by a safety belt or other tie down having enough strength to eliminate the possibility of shifting under all normally anticipated flight and ground conditions.

(2) It is packaged or covered in a manner to avoid possible injury to passengers.

(3) It does not impose any load on seats or the floor structure that exceeds the load limitation for those components.

(4) Its location does not restrict access to or use of any required emergency or regular exit, or of the aisle in the passenger compartment.

(5) Its location does not obscure any passenger's view of the ''seat belt'' sign, ''no smoking'' sign, or required exit sign, unless an auxiliary sign or other approved means for proper notification of the passenger is provided.

§ 125.185 Carriage of cargo in cargo compartments.

When cargo is carried in cargo compartments that are designed to require the physical entry of a crewmember to extinguish any fire that may occur

during flight, the cargo must be loaded so as to allow a crewmember to effectively reach all parts of the compartment with the contents of a hand-held fire extinguisher.

§ 125.187 Landing gear: Aural warning device.

(a) Except for airplanes that comply with the requirements of § 25.729 of this chapter on or after January 6, 1992, each airplane must have a landing gear aural warning device that functions continuously under the following conditions:

(1) For airplanes with an established approach wing-flap position, whenever the wing flaps are extended beyond the maximum certificated approach climb configuration position in the Airplane Flight Manual and the landing gear is not fully extended and locked.

(2) For airplanes without an established approach climb wing-flap position, whenever the wing flaps are extended beyond the position at which landing gear extension is normally performed and the landing gear is not fully extended and locked.

(b) The warning system required by paragraph (a) of this section—

(1) May not have a manual shutoff;

(2) Must be in addition to the throttle-actuated device installed under the type certification airworthiness requirements; and

(3) May utilize any part of the throttle-actuated system including the aural warning device.

(c) The flap position sensing unit may be installed at any suitable place in the airplane.

[Doc. No. 19779, 45 FR 67235, Oct. 9, 1980, as amended by Amdt. 125–16, 56 FR 63762, Dec. 5, 1991]

§ 125.189 Demonstration of emergency evacuation procedures.

(a) Each certificate holder must show, by actual demonstration conducted in accordance with paragraph (a) of appendix B of this part, that the emergency evacuation procedures for each type and model of airplane with a seating of more than 44 passengers, that is used in its passenger-carrying operations, allow the evacuation of the full seating capacity, including crewmembers, in 90 seconds or less, in each of the following circumstances:

(1) A demonstration must be conducted by the certificate holder upon the initial introduction of a type and model of airplane into passenger-carrying operations. However, the demonstration need not be repeated for any airplane type or model that has the same number and type of exits, the same cabin configuration, and the same emergency equipment as any other airplane used by the certificate holder in successfully demonstrating emergency evacuation in compliance with this paragraph.

(2) A demonstration must be conducted—

(i) Upon increasing by more than 5 percent the passenger seating capacity for which successful demonstration has been conducted; or

(ii) Upon a major change in the passenger cabin interior configuration that will affect the emergency evacuation of passengers.

(b) If a certificate holder has conducted a successful demonstration required by § 121.291(a) in the same type airplane as a part 121 or part 123 certificate holder, it need not conduct a demonstration under this paragraph in that type airplane to achieve certification under part 125.

(c) Each certificate holder operating or proposing to operate one or more landplanes in extended overwater operations, or otherwise required to have certain equipment under § 125.209, must show, by a simulated ditching conducted in accordance with paragraph (b) of appendix B of this part, that it has the ability to efficiently carry out its ditching procedures.

(d) If a certificate holder has conducted a successful demonstration required by § 121.291(b) in the same type airplane as a part 121 or part 123 certificate holder, it need not conduct a demonstration under this paragraph in that type airplane to achieve certification under part 125.

Subpart F—Instrument and Equipment Requirements

§ 125.201 Inoperable instruments and equipment.

(a) No person may take off an airplane with inoperable instruments or equipment installed unless the following conditions are met:

(1) An approved Minimum Equipment List exists for that airplane.

(2) The Flight Standards District Office having certification responsibility has issued the certificate holder operations specifications authorizing operations in accordance with an approved Minimum Equipment List. The flight crew shall have direct access at all times prior to flight to all of the information contained in the approved Minimum Equipment List through printed or other means approved by the Administrator in the certificate holders operations specifications. An approved Minimum Equipment List, as authorized by the operations specifications, constitutes an approved change to the type design without requiring recertification.

(3) The approved Minimum Equipment List must:

(i) Be prepared in accordance with the limitations specified in paragraph (b) of this section.

(ii) Provide for the operation of the airplane with certain instruments and equipment in an inoperable condition.

(4) Records identifying the inoperable instruments and equipment and the information required by paragraph (a)(3)(ii) of this section must be available to the pilot.

(5) The airplane is operated under all applicable conditions and limitations contained in the Minimum Equipment List and the operations specifications authorizing use of the Minimum Equipment List.

(b) The following instruments and equipment may not be included in the Minimum Equipment List:

(1) Instruments and equipment that are either specifically or otherwise required by the airworthiness requirements under which the airplane is type certificated and which are essential for safe operations under all operating conditions.

(2) Instruments and equipment required by an airworthiness directive to be in operable condition unless the airworthiness directive provides otherwise.

(3) Instruments and equipment required for specific operations by this part.

(c) Notwithstanding paragraphs (b)(1) and (b)(3) of this section, an airplane with inoperable instruments or equipment may be operated under a special flight permit under §§ 21.197 and 21.199 of this chapter.

[Doc. No. 25780, 56 FR 12310, Mar. 22, 1991]

§ 125.203 Communication and navigation equipment.

(a) *Communication equipment—general.* No person may operate an airplane unless it has two-way radio communication equipment able, at least in flight, to transmit to, and receive from, appropriate facilities 22 nautical miles away.

(b) *Navigation equipment for operations over the top.* No person may operate an airplane over the top unless it has navigation equipment suitable for the route to be flown.

(c) *Communication and navigation equipment for IFR or extended over-water operations—General.* Except as provided in paragraph (f) of this section, no person may operate an airplane carrying passengers under IFR or in extended over-water operations unless—

(1) The en route navigation aids necessary for navigating the airplane along the route (e.g., ATS routes, arrival and departure routes, and instrument approach procedures, including missed approach procedures if a missed approach routing is specified in the procedure) are available and suitable for use by the aircraft navigation systems required by this section;

(2) The airplane used in those operations is equipped with at least the following equipment—

(i) Except as provided in paragraph (d) of this section, two approved independent navigation systems suitable for navigating the airplane along the route within the degree of accuracy required for ATC;

(ii) One marker beacon receiver providing visual and aural signals;

(iii) One ILS receiver;

(iv) Two transmitters;

(v) Two microphones;

(vi) Two headsets or one headset and one speaker; and

(vii) Two independent communication systems, one of which must have two-way voice communication capability, capable of transmitting to, and receiving from, at least one appropriate facility from any place on the route to be flown; and

(3) Any RNAV system used to meet the navigation equipment requirements of this section is authorized in the certificate holder's operations specifications.

(d) *Use of a single independent navigation system for operations under IFR—not for extended overwater operations.* Notwithstanding the requirements of paragraph (c)(2)(i) of this section, the airplane may be equipped with a single independent navigation system suitable for navigating the airplane along the route to be flown within the degree of accuracy required for ATC if—

(1) It can be shown that the airplane is equipped with at least one other independent navigation system suitable, in the event of loss of the navigation capability of the single independent navigation system permitted by this paragraph at any point along the route, for proceeding safely to a suitable airport and completing an instrument approach; and

(2) The airplane has sufficient fuel so that the flight may proceed safely to a suitable airport by use of the remaining navigation system, and complete an instrument approach and land.

(e) *Use of VOR navigation equipment.* If VOR navigation equipment is required by paragraph (c) or (d) of this section, no person may operate an airplane unless it is equipped with at least one approved DME or a suitable RNAV system.

(f) *Extended over-water operations.* Notwithstanding the requirements of paragraph (c) of this section, installation and use of a single long-range navigation system and a single long-range communication system for extended over-water operations in certain geographic areas may be authorized by the Administrator and approved in the certificate holder's operations specifications. The following are among the operational factors the Administrator may consider in granting an authorization:

(1) The ability of the flight crew to navigate the airplane along the route to be flown within the degree of accuracy required for ATC;

(2) The length of the route being flown; and

(3) The duration of the very high frequency communications gap.

[Doc. No. FAA–2002–14002, 72 FR 31682, June 7, 2007]

§ 125.204 Portable electronic devices.

(a) Except as provided in paragraph (b) of this section, no person may operate, nor may any operator or pilot in command of an aircraft allow the operation of, any portable electronic device on any U.S.-registered civil aircraft operating under this part.

(b) Paragraph (a) of this section does not apply to—

(1) Portable voice recorders;

(2) Hearing aids;

(3) Heart pacemakers;

(4) Electric shavers; or

(5) Any other portable electronic device that the Part 125 certificate holder has determined will not cause interference with the navigation or communication system of the aircraft on which it is to be used.

(c) The determination required by paragraph (b)(5) of this section shall be made by that Part 125 certificate holder operating the particular device to be used.

[Doc. No. FAA–1998–4954, 64 FR 1080, Jan. 7, 1999]

§ 125.205 Equipment requirements: Airplanes under IFR.

No person may operate an airplane under IFR unless it has—

(a) A vertical speed indicator;

(b) A free-air temperature indicator;

(c) A heated pitot tube for each airspeed indicator;

(d) A power failure warning device or vacuum indicator to show the power available for gyroscopic instruments from each power source;

(e) An alternate source of static pressure for the altimeter and the airspeed and vertical speed indicators;

(f) At least two generators each of which is on a separate engine, or which

any combination of one-half of the total number are rated sufficiently to supply the electrical loads of all required instruments and equipment necessary for safe emergency operation of the airplane; and

(g) Two independent sources of energy (with means of selecting either), of which at least one is an engine-driven pump or generator, each of which is able to drive all gyroscopic instruments and installed so that failure of one instrument or source does not interfere with the energy supply to the remaining instruments or the other energy source. For the purposes of this paragraph, each engine-driven source of energy must be on a different engine.

(h) For the purposes of paragraph (f) of this section, a continuous inflight electrical load includes one that draws current continuously during flight, such as radio equipment, electrically driven instruments, and lights, but does not include occasional intermittent loads.

(i) An airspeed indicating system with heated pitot tube or equivalent means for preventing malfunctioning due to icing.

(j) A sensitive altimeter.

(k) Instrument lights providing enough light to make each required instrument, switch, or similar instrument easily readable and installed so that the direct rays are shielded from the flight crewmembers' eyes and that no objectionable reflections are visible to them. There must be a means of controlling the intensity of illumination unless it is shown that nondimming instrument lights are satisfactory.

§ 125.206 Pitot heat indication systems.

(a) Except as provided in paragraph (b) of this section, after April 12, 1981, no person may operate a transport category airplane equipped with a flight instrument pitot heating system unless the airplane is equipped with an operable pitot heat indication system that complies with §25.1326 of this chapter in effect on April 12, 1978.

(b) A certificate holder may obtain an extension of the April 12, 1981, compliance date specified in paragraph (a) of this section, but not beyond April 12, 1983, from the Director, Flight Standards Service if the certificate holder—

(1) Shows that due to circumstances beyond its control it cannot comply by the specified compliance date; and

(2) Submits by the specified compliance date a schedule for compliance acceptable to the Director, indicating that compliance will be achieved at the earliest practicable date.

[Doc. No. 18904, 46 FR 43806, Aug. 31, 1981, as amended by Amdt. 125–13, 54 FR 39294, Sept. 25, 1989]

§ 125.207 Emergency equipment requirements.

(a) No person may operate an airplane having a seating capacity of 20 or more passengers unless it is equipped with the following emergency equipment:

(1) One approved first aid kit for treatment of injuries likely to occur in flight or in a minor accident, which meets the following specifications and requirements:

(i) Each first aid kit must be dust and moisture proof and contain only materials that either meet Federal Specifications GGK–391a, as revised, or as approved by the Administrator.

(ii) Required first aid kits must be readily accessible to the cabin flight attendants.

(iii) Except as provided in paragraph (a)(1)(iv) of this section, at time of takeoff, each first aid kit must contain at least the following or other contents approved by the Administrator:

Contents	Quantity
Adhesive bandage compressors, 1 in	16
Antiseptic swabs	20
Ammonia inhalants	10
Bandage compressors, 4 in	8
Triangular bandage compressors, 40 in	5
Arm splint, noninflatable	1
Leg splint, noninflatable	1
Roller bandage, 4 in	4
Adhesive tape, 1-in standard roll	2
Bandage scissors	1
Protective latex gloves or equivalent nonpermeable gloves	[1] 1

[1] Pair.

(iv) Protective latex gloves or equivalent nonpermeable gloves may be placed in the first aid kit or in a location that is readily accessible to crewmembers.

(2) A crash axe carried so as to be accessible to the crew but inaccessible to passengers during normal operations.

(3) Signs that are visible to all occupants to notify them when smoking is prohibited and when safety belts should be fastened. The signs must be so constructed that they can be turned on and off by a crewmember. They must be turned on for each takeoff and each landing and when otherwise considered to be necessary by the pilot in command.

(4) The additional emergency equipment specified in appendix A of this part.

(b) *Megaphones.* Each passenger-carrying airplane must have a portable battery-powered megaphone or megaphones readily accessible to the crewmembers assigned to direct emergency evacuation, installed as follows:

(1) One megaphone on each airplane with a seating capacity of more than 60 and less than 100 passengers, at the most rearward location in the passenger cabin where it would be readily accessible to a normal flight attendant seat. However, the Administrator may grant a deviation from the requirements of this paragraph if the Administrator finds that a different location would be more useful for evacuation of persons during an emergency.

(2) Two megaphones in the passenger cabin on each airplane with a seating capacity of more than 99 and less than 200 passengers, one installed at the forward end and the other at the most rearward location where it would be readily accessible to a normal flight attendant seat.

(3) Three megaphones in the passenger cabin on each airplane with a seating capacity of more than 199 passengers, one installed at the forward end, one installed at the most rearward location where it would be readily accessible to a normal flight attendant seat, and one installed in a readily accessible location in the mid-section of the airplane.

[Doc. No. 19779, 45 FR 67235, Oct. 9, 1980, as amended by Amdt. 125–19, 59 FR 1781, Jan. 12, 1994; Amdt. 125–22, 59 FR 52643, Oct. 18, 1994; 59 FR 55208, Nov. 4, 1994]

§ 125.209 Emergency equipment: Extended overwater operations.

(a) No person may operate an airplane in extended overwater operations unless it carries, installed in conspicuously marked locations easily accessible to the occupants if a ditching occurs, the following equipment:

(1) An approved life preserver equipped with an approved survivor locator light, or an approved flotation means, for each occupant of the aircraft. The life preserver or other flotation means must be easily accessible to each seated occupant. If a flotation means other than a life preserver is used, it must be readily removable from the airplane.

(2) Enough approved life rafts (with proper buoyancy) to carry all occupants of the airplane, and at least the following equipment for each raft clearly marked for easy identification—

(i) One canopy (for sail, sunshade, or rain catcher);

(ii) One radar reflector (or similar device);

(iii) One life raft repair kit;

(iv) One bailing bucket;

(v) One signaling mirror;

(vi) One police whistle;

(vii) One raft knife;

(viii) One CO_2 bottle for emergency inflation;

(ix) One inflation pump;

(x) Two oars;

(xi) One 75-foot retaining line;

(xii) One magnetic compass;

(xiii) One dye marker;

(xiv) One flashlight having at least two size ''D'' cells or equivalent;

(xv) At least one approved pyrotechnic signaling device;

(xvi) A 2-day supply of emergency food rations supplying at least 1,000 calories a day for each person;

(xvii) One sea water desalting kit for each two persons that raft is rated to carry, or two pints of water for each person the raft is rated to carry;

(xviii) One fishing kit; and

(xix) One book on survival appropriate for the area in which the airplane is operated.

(b) No person may operate an airplane in extended overwater operations unless there is attached to one of the life rafts required by paragraph (a) of

this section, an approved survival type emergency locator transmitter. Batteries used in this transmitter must be replaced (or recharged, if the batteries are rechargeable) when the transmitter has been in use for more than one cumulative hour, or, when 50 percent of their useful life (or for rechargeable batteries, 50 percent of their useful life of charge) has expired, as established by the transmitter manufacturer under its approval. The new expiration date for replacing (or recharging) the battery must be legibly marked on the outside of the transmitter. The battery useful life (or useful life of charge) requirements of this paragraph do not apply to batteries (such as water-activated batteries) that are essentially unaffected during probable storage intervals.

[Doc. No. 19779, 45 FR 67235, Oct. 9, 1980, as amended by Amdt. 125–20, 59 FR 32058, June 21, 1994]

§ 125.211 Seat and safety belts.

(a) No person may operate an airplane unless there are available during the takeoff, en route flight, and landing—

(1) An approved seat or berth for each person on board the airplane who is at least 2 years old; and

(2) An approved safety belt for separate use by each person on board the airplane who is at least 2 years old, except that two persons occupying a berth may share one approved safety belt and two persons occupying a multiple lounge or divan seat may share one approved safety belt during en route flight only.

(b) Except as provided in paragraphs (b)(1) and (b)(2) of this section, each person on board an airplane operated under this part shall occupy an approved seat or berth with a separate safety belt properly secured about him or her during movement on the surface, takeoff, and landing. A safety belt provided for the occupant of a seat may not be used for more than one person who has reached his or her second birthday. Notwithstanding the preceding requirements, a child may:

(1) Be held by an adult who is occupying an approved seat or berth, provided the child has not reached his or her second birthday and the child does not occupy or use any restraining device; or

(2) Notwithstanding any other requirement of this chapter, occupy an approved child restraint system furnished by the certificate holder or one of the persons described in paragraph (b)(2)(i) of this section, provided:

(i) The child is accompanied by a parent, guardian, or attendant designated by the child's parent or guardian to attend to the safety of the child during the flight;

(ii) Except as provided in paragraph (b)(2)(ii)(D) of this section, the approved child restraint system bears one or more labels as follows:

(A) Seats manufactured to U.S. standards between January 1, 1981, and February 25, 1985, must bear the label: ''This child restraint system conforms to all applicable Federal motor vehicle safety standards'';

(B) Seats manufactured to U.S. standards on or after February 26, 1985, must bear two labels:

(*1*) ''This child restraint system conforms to all applicable Federal motor vehicle safety standards''; and

(*2*) ''THIS RESTRAINT IS CERTIFIED FOR USE IN MOTOR VEHICLES AND AIRCRAFT'' in red lettering;

(C) Seats that do not qualify under paragraphs (b)(2)(ii)(A) and (b)(2)(ii)(B) of this section must bear a label or markings showing:

(*1*) That the seat was approved by a foreign government;

(*2*) That the seat was manufactured under the standards of the United Nations; or

(*3*) That the seat or child restraint device furnished by the certificate holder was approved by the FAA through Type Certificate or Supplemental Type Certificate.

(*4*) That the seat or child restraint device furnished by the certificate holder, or one of the persons described in paragraph (b)(2)(i) of this section, was approved by the FAA in accordance with § 21.305(d) or Technical Standard Order C–100b, or a later version.

(D) Except as provided in § 125.211(b)(2)(ii)(C)(*3*) and § 125.211(b)(2)(ii)(C)(*4*), booster-type child restraint systems (as defined in

Federal Motor Vehicle Safety Standard No. 213 (49 CFR 571.213)), vest- and harness-type child restraint systems, and lap held child restraints are not approved for use in aircraft; and

(iii) The certificate holder complies with the following requirements:

(A) The restraint system must be properly secured to an approved forward-facing seat or berth;

(B) The child must be properly secured in the restraint system and must not exceed the specified weight limit for the restraint system; and

(C) The restraint system must bear the appropriate label(s).

(c) Except as provided in paragraph (c)(3) of this section, the following prohibitions apply to certificate holders:

(1) Except as provided in §125.211(b)(2)(ii)(C)(*3*) and §125.211(b)(2)(ii)(C)(*4*), no certificate holder may permit a child, in an aircraft, to occupy a booster-type child restraint system, a vest-type child restraint system, a harness-type child restraint system, or a lap held child restraint system during take off, landing, and movement on the surface.

(2) Except as required in paragraph (c)(1) of this section, no certificate holder may prohibit a child, if requested by the child's parent, guardian, or designated attendant, from occupying a child restraint system furnished by the child's parent, guardian, or designated attendant provided:

(i) The child holds a ticket for an approved seat or berth or such seat or berth is otherwise made available by the certificate holder for the child's use;

(ii) The requirements of paragraph (b)(2)(i) of this section are met;

(iii) The requirements of paragraph (b)(2)(iii) of this section are met; and

(iv) The child restraint system has one or more of the labels described in paragraphs (b)(2)(ii)(A) through (b)(2)(ii)(C) of this section.

(3) This section does not prohibit the certificate holder from providing child restraint systems authorized by this section or, consistent with safe operating practices, determining the most appropriate passenger seat location for the child restraint system.

(d) Each sideward facing seat must comply with the applicable requirements of §25.785(c) of this chapter.

(e) No certificate holder may take off or land an airplane unless each passenger seat back is in the upright position. Each passenger shall comply with instructions given by a crewmember in compliance with this paragraph. This paragraph does not apply to seats on which cargo or persons who are unable to sit erect for a medical reason are carried in accordance with procedures in the certificate holder's manual if the seat back does not obstruct any passenger's access to the aisle or to any emergency exit.

(f) Each occupant of a seat equipped with a shoulder harness must fasten the shoulder harness during takeoff and landing, except that, in the case of crewmembers, the shoulder harness need not be fastened if the crewmember cannot perform his required duties with the shoulder harness fastened.

[Doc. No. 19799, 45 FR 67235, Oct. 9, 1980, as amended by Amdt. 125–17, 57 FR 42674, Sept. 15, 1992; Amdt. 125–26, 61 FR 28422, June 4, 1996; Amdt. 125–48, 70 FR 50907, Aug. 26, 2005; Amdt. 125–51, 71 FR 40009, July 14, 2006; 71 FR 59373, Oct. 10, 2006]

§125.213 Miscellaneous equipment.

No person may conduct any operation unless the following equipment is installed in the airplane:

(a) If protective fuses are installed on an airplane, the number of spare fuses approved for the airplane and appropriately described in the certificate holder's manual.

(b) A windshield wiper or equivalent for each pilot station.

(c) A power supply and distribution system that meets the requirements of §§25.1309, 25.1331, 25.1351 (a) and (b) (1) through (4), 25.1353, 25.1355, and 25.1431(b) or that is able to produce and distribute the load for the required instruments and equipment, with use of an external power supply if any one power source or component of the power distribution system fails. The use of common elements in the system may be approved if the Administrator

finds that they are designed to be reasonably protected against malfunctioning. Engine-driven sources of energy, when used, must be on separate engines.

(d) A means for indicating the adequacy of the power being supplied to required flight instruments.

(e) Two independent static pressure systems, vented to the outside atmospheric pressure so that they will be least affected by air flow variation or moisture or other foreign matter, and installed so as to be airtight except for the vent. When a means is provided for transferring an instrument from its primary operating system to an alternative system, the means must include a positive positioning control and must be marked to indicate clearly which system is being used.

(f) A placard on each door that is the means of access to a required passenger emergency exit to indicate that it must be open during takeoff and landing.

(g) A means for the crew, in an emergency, to unlock each door that leads to a compartment that is normally accessible to passengers and that can be locked by passengers.

§ 125.215 Operating information required.

(a) The operator of an airplane must provide the following materials, in current and appropriate form, accessible to the pilot at the pilot station, and the pilot shall use them:

(1) A cockpit checklist.

(2) An emergency cockpit checklist containing the procedures required by paragraph (c) of this section, as appropriate.

(3) Pertinent aeronautical charts.

(4) For IFR operations, each pertinent navigational en route, terminal area, and approach and letdown chart;

(5) One-engine-inoperative climb performance data and, if the airplane is approved for use in IFR or over-the-top operations, that data must be sufficient to enable the pilot to determine that the airplane is capable of carrying passengers over-the-top or in IFR conditions at a weight that will allow it to climb, with the critical engine inoperative, at least 50 feet a minute when operating at the MEA's of the route to be flown or 5,000 feet MSL, whichever is higher.

(b) Each cockpit checklist required by paragraph (a)(1) of this section must contain the following procedures:

(1) Before starting engines;

(2) Before take-off;

(3) Cruise;

(4) Before landing;

(5) After landing;

(6) Stopping engines.

(c) Each emergency cockpit checklist required by paragraph (a)(2) of this section must contain the following procedures, as appropriate:

(1) Emergency operation of fuel, hydraulic, electrical, and mechanical systems.

(2) Emergency operation of instruments and controls.

(3) Engine inoperative procedures.

(4) Any other emergency procedures necessary for safety.

§ 125.217 Passenger information.

(a) Except as provided in paragraph (b) of this section, no person may operate an airplane carrying passengers unless it is equipped with signs that meet the requirements of § 25.791 of this chapter and that are visible to passengers and flight attendants to notify them when smoking is prohibited and when safety belts must be fastened. The signs must be so constructed that the crew can turn them on and off. They must be turned on during airplane movement on the surface, for each takeoff, for each landing, and when otherwise considered to be necessary by the pilot in command.

(b) No passenger or crewmember may smoke while any ''No Smoking'' sign is lighted nor may any passenger or crewmember smoke in any lavatory.

(c) Each passenger required by § 125.211(b) to occupy a seat or berth shall fasten his or her safety belt about him or her and keep it fastened while any ''Fasten Seat Belt'' sign is lighted.

(d) Each passenger shall comply with instructions given him or her by crewmembers regarding compliance with paragraphs (b) and (c) of this section.

[Doc. No. 26142, 57 FR 42675, Sept. 15, 1992]

§ 125.219 Oxygen for medical use by passengers.

(a) Except as provided in paragraphs (d) and (e) of this section, no certificate holder may allow the carriage or operation of equipment for the storage, generation or dispensing of medical oxygen unless the unit to be carried is constructed so that all valves, fittings, and gauges are protected from damage during that carriage or operation and unless the following conditions are met:

(1) The equipment must be—

(i) Of an approved type or in conformity with the manufacturing, packaging, marking, labeling, and maintenance requirements of title 49 CFR parts 171, 172, and 173, except §173.24(a)(1);

(ii) When owned by the certificate holder, maintained under the certificate holder's approved maintenance program;

(iii) Free of flammable contaminants on all exterior surfaces; and

(iv) Appropriately secured.

(2) When the oxygen is stored in the form of a liquid, the equipment must have been under the certificate holder's approved maintenance program since its purchase new or since the storage container was last purged.

(3) When the oxygen is stored in the form of a compressed gas as defined in title 49 CFR 173.300(a)—

(i) When owned by the certificate holder, it must be maintained under its approved maintenance program; and

(ii) The pressure in any oxygen cylinder must not exceed the rated cylinder pressure.

(4) The pilot in command must be advised when the equipment is on board and when it is intended to be used.

(5) The equipment must be stowed, and each person using the equipment must be seated so as not to restrict access to or use of any required emergency or regular exit or of the aisle in the passenger compartment.

(b) When oxygen is being used, no person may smoke and no certificate holder may allow any person to smoke within 10 feet of oxygen storage and dispensing equipment carried under paragraph (a) of this section.

(c) No certificate holder may allow any person other than a person trained in the use of medical oxygen equipment to connect or disconnect oxygen bottles or any other ancillary component while any passenger is aboard the airplane.

(d) Paragraph (a)(1)(i) of this section does not apply when that equipment is furnished by a professional or medical emergency service for use on board an airplane in a medical emergency when no other practical means of transportation (including any other properly equipped certificate holder) is reasonably available and the person carried under the medical emergency is accompanied by a person trained in the use of medical oxygen.

(e) Each certificate holder who, under the authority of paragraph (d) of this section, deviates from paragraph (a)(1)(i) of this section under a medical emergency shall, within 10 days, excluding Saturdays, Sundays, and Federal holidays, after the deviation, send to the FAA Flight Standards district office charged with the overall inspection of the certificate holder a complete report of the operation involved, including a description of the deviation and the reasons for it.

§ 125.221 Icing conditions: Operating limitations.

(a) No pilot may take off an airplane that has frost, ice, or snow adhering to any propeller, windshield, wing, stabilizing or control surface, to a powerplant installation, or to an airspeed, altimeter, rate of climb, or flight attitude instrument system, except under the follow conditions:

(1) Takeoffs may be made with frost adhering to the wings, or stabilizing or control surfaces, if the frost has been polished to make it smooth.

(2) Takeoffs may be made with frost under the wing in the area of the fuel tanks if authorized by the Administrator.

(b) No certificate holder may authorize an airplane to take off and no pilot may take off an airplane any time conditions are such that frost, ice, or snow may reasonably be expected to adhere to the airplane unless the pilot has completed the testing required under §125.287(a)(9) and unless one of the following requirements is met:

(1) A pretakeoff contamination check, that has been established by the certificate holder and approved by the Administrator for the specific airplane type, has been completed within 5 minutes prior to beginning takeoff. A pretakeoff contamination check is a check to make sure the wings and control surfaces are free of frost, ice, or snow.

(2) The certificate holder has an approved alternative procedure and under that procedure the airplane is determined to be free of frost, ice, or snow.

(3) The certificate holder has an approved deicing/anti-icing program that complies with §121.629(c) of this chapter and the takeoff complies with that program.

(c) Except for an airplane that has ice protection provisions that meet appendix C of this part or those for transport category airplane type certification, no pilot may fly—

(1) Under IFR into known or forecast light or moderate icing conditions; or

(2) Under VFR into known light or moderate icing conditions, unless the airplane has functioning deicing or anti-icing equipment protecting each propeller, windshield, wing, stabilizing or control surface, and each airspeed, altimeter, rate of climb, or flight attitude instrument system.

(d) Except for an airplane that has ice protection provisions that meet appendix C of this part or those for transport category airplane type certification, no pilot may fly an airplane into known or forecast severe icing conditions.

(e) If current weather reports and briefing information relied upon by the pilot in command indicate that the forecast icing condition that would otherwise prohibit the flight will not be encountered during the flight because of changed weather conditions since the forecast, the restrictions in paragraphs (b) and (c) of this section based on forecast conditions do not apply.

[45 FR 67235, Oct. 9, 1980, as amended by Amdt. 125–18, 58 FR 69629, Dec. 30, 1993]

§ 125.223 Airborne weather radar equipment requirements.

(a) No person may operate an airplane governed by this part in passenger-carrying operations unless approved airborne weather radar equipment is installed in the airplane.

(b) No person may begin a flight under IFR or night VFR conditions when current weather reports indicate that thunderstorms, or other potentially hazardous weather conditions that can be detected with airborne weather radar equipment, may reasonably be expected along the route to be flown, unless the airborne weather radar equipment required by paragraph (a) of this section is in satisfactory operating condition.

(c) If the airborne weather radar equipment becomes inoperative en route, the airplane must be operated under the instructions and procedures specified for that event in the manual required by §125.71.

(d) This section does not apply to airplanes used solely within the State of Hawaii, within the State of Alaska, within that part of Canada west of longitude 130 degrees W, between latitude 70 degrees N, and latitude 53 degrees N, or during any training, test, or ferry flight.

(e) Without regard to any other provision of this part, an alternate electrical power supply is not required for airborne weather radar equipment.

§ 125.224 Collision avoidance system.

Effective January 1, 2005, any airplane you operate under this part 125 must be equipped and operated according to the following table:

COLLISION AVOIDANCE SYSTEMS

If you operate any . . .	Then you must operate that airplane with:
(a) Turbine-powered airplane of more than 33,000 pounds maximum certificated takeoff weight.	(1) An appropriate class of Mode S transponder that meets Technical Standard Order (TSO) C–112, or a later version, and one of the following approved units: (i) TCAS II that meets TSO C–119b (version 7.0), or a later version.

COLLISION AVOIDANCE SYSTEMS—Continued

If you operate any . . .	Then you must operate that airplane with:
	(ii) TCAS II that meets TSO C–119a (version 6.04A Enhanced) that was installed in that airplane before May 1, 2003. If that TCAS II version 6.04A Enhanced no longer can be repaired to TSO C–119a standards, it must be replaced with a TCAS II that meets TSO C–119b (version 7.0), or a later version. (iii) A collision avoidance system equivalent to TSO C–119b (version 7.0), or a later version, capable of coordinating with units that meet TSO C–119a (version 6.04A Enhanced), or a later version.
(b) Piston-powered airplane of more than 33,000 pounds maximum certificated takeoff weight.	(1) TCAS I that meets TSO C–118, or a later version, or (2) A collision avoidance system equivalent to TSO C–118, or a later version, or (1)(3) A collision avoidance system and Mode S transponder that meet paragraph (a)(1) of this section.

[Doc. No. FAA–2001–10910, 68 FR 15903, Apr. 1, 2003]

§ 125.225 Flight recorders.

(a) Except as provided in paragraph (d) of this section, after October 11, 1991, no person may operate a large airplane type certificated before October 1, 1969, for operations above 25,000 feet altitude, nor a multiengine, turbine powered airplane type certificated before October 1, 1969, unless it is equipped with one or more approved flight recorders that utilize a digital method of recording and storing data and a method of readily retrieving that data from the storage medium. The following information must be able to be determined within the ranges, accuracies, resolution, and recording intervals specified in appendix D of this part:

(1) Time;
(2) Altitude;
(3) Airspeed;
(4) Vertical acceleration;
(5) Heading;
(6) Time of each radio transmission to or from air traffic control;
(7) Pitch attitude;
(8) Roll attitude;
(9) Longitudinal acceleration;
(10) Control column or pitch control surface position; and
(11) Thrust of each engine.

(b) Except as provided in paragraph (d) of this section, after October 11, 1991, no person may operate a large airplane type certificated after September 30, 1969, for operations above 25,000 feet altitude, nor a multiengine, turbine powered airplane type certificated after September 30, 1969, unless it is equipped with one or more approved flight recorders that utilize a digital method of recording and storing data and a method of readily retrieving that data from the storage medium. The following information must be able to be determined within the ranges, accuracies, resolutions, and recording intervals specified in appendix D of this part:

(1) Time;
(2) Altitude;
(3) Airspeed;
(4) Vertical acceleration;
(5) Heading;
(6) Time of each radio transmission either to or from air traffic control;
(7) Pitch attitude;
(8) Roll attitude;
(9) Longitudinal acceleration;
(10) Pitch trim position;
(11) Control column or pitch control surface position;
(12) Control wheel or lateral control surface position;
(13) Rudder pedal or yaw control surface position;
(14) Thrust of each engine;
(15) Position of each trust reverser;
(16) Trailing edge flap or cockpit flap control position; and
(17) Leading edge flap or cockpit flap control position.

(c) After October 11, 1991, no person may operate a large airplane equipped with a digital data bus and ARINC 717 digital flight data acquisition unit (DFDAU) or equivalent unless it is equipped with one or more approved flight recorders that utilize a digital method of recording and storing data and a method of readily retrieving that

data from the storage medium. Any parameters specified in appendix D of this part that are available on the digital data bus must be recorded within the ranges, accuracies, resolutions, and sampling intervals specified.

(d) No person may operate under this part an airplane that is manufactured after October 11, 1991, unless it is equipped with one or more approved flight recorders that utilize a digital method of recording and storing data and a method of readily retrieving that data from the storage medium. The parameters specified in appendix D of this part must be recorded within the ranges, accuracies, resolutions and sampling intervals specified. For the purpose of this section, ''manufactured'' means the point in time at which the airplane inspection acceptance records reflect that the airplane is complete and meets the FAA-approved type design data.

(e) Whenever a flight recorder required by this section is installed, it must be operated continuously from the instant the airplane begins the takeoff roll until it has completed the landing roll at an airport.

(f) Except as provided in paragraph (g) of this section, and except for recorded data erased as authorized in this paragraph, each certificate holder shall keep the recorded data prescribed in paragraph (a), (b), (c), or (d) of this section, as applicable, until the airplane has been operated for at least 25 hours of the operating time specified in §125.227(a) of this chapter. A total of 1 hour of recorded data may be erased for the purpose of testing the flight recorder or the flight recorder system. Any erasure made in accordance with this paragraph must be of the oldest recorded data accumulated at the time of testing. Except as provided in paragraph (g) of this section, no record need be kept more than 60 days.

(g) In the event of an accident or occurrence that requires immediate notification of the National Transportation Safety Board under 49 CFR part 830 and that results in termination of the flight, the certificate holder shall remove the recording media from the airplane and keep the recorded data required by paragraph (a), (b), (c), or (d) of this section, as applicable, for at least 60 days or for a longer period upon the request of the Board or the Administrator.

(h) Each flight recorder required by this section must be installed in accordance with the requirements of §25.1459 of this chapter in effect on August 31, 1977. The correlation required by §25.1459(c) of this chapter need be established only on one airplane of any group of airplanes.

(1) That are of the same type;

(2) On which the flight recorder models and their installations are the same; and

(3) On which there are no differences in the type design with respect to the installation of the first pilot's instruments associated with the flight recorder. The most recent instrument calibration, including the recording medium from which this calibration is derived, and the recorder correlation must be retained by the certificate holder.

(i) Each flight recorder required by this section that records the data specified in paragraphs (a), (b), (c), or (d) of this section must have an approved device to assist in locating that recorder under water.

[Doc. No. 25530, 53 FR 26148, July 11, 1988; 53 FR 30906, Aug. 16, 1988]

§125.226 Digital flight data recorders.

(a) Except as provided in paragraph (l) of this section, no person may operate under this part a turbine-engine-powered transport category airplane unless it is equipped with one or more approved flight recorders that use a digital method of recording and storing data and a method of readily retrieving that data from the storage medium. The operational parameters required to be recorded by digital flight data recorders required by this section are as follows: the phrase ''when an information source is installed'' following a parameter indicates that recording of that parameter is not intended to require a change in installed equipment:

(1) Time;

(2) Pressure altitude;

(3) Indicated airspeed;

(4) Heading—primary flight crew reference (if selectable, record discrete, true or magnetic);

(5) Normal acceleration (Vertical);

(6) Pitch attitude;
(7) Roll attitude;
(8) Manual radio transmitter keying, or CVR/DFDR synchronization reference;
(9) Thrust/power of each engine—primary flight crew reference;
(10) Autopilot engagement status;
(11) Longitudinal acceleration;
(12) Pitch control input;
(13) Lateral control input;
(14) Rudder pedal input;
(15) Primary pitch control surface position;
(16) Primary lateral control surface position;
(17) Primary yaw control surface position;
(18) Lateral acceleration;
(19) Pitch trim surface position or parameters of paragraph (a)(82) of this section if currently recorded;
(20) Trailing edge flap or cockpit flap control selection (except when parameters of paragraph (a)(85) of this section apply);
(21) Leading edge flap or cockpit flap control selection (except when parameters of paragraph (a)(86) of this section apply);
(22) Each Thrust reverser position (or equivalent for propeller airplane);
(23) Ground spoiler position or speed brake selection (except when parameters of paragraph (a)(87) of this section apply);
(24) Outside or total air temperature;
(25) Automatic Flight Control System (AFCS) modes and engagement status, including autothrottle;
(26) Radio altitude (when an information source is installed);
(27) Localizer deviation, MLS Azimuth;
(28) Glideslope deviation, MLS Elevation;
(29) Marker beacon passage;
(30) Master warning;
(31) Air/ground sensor (primary airplane system reference nose or main gear);
(32) Angle of attack (when information source is installed);
(33) Hydraulic pressure low (each system);
(34) Ground speed (when an information source is installed);
(35) Ground proximity warning system;
(36) Landing gear position or landing gear cockpit control selection;
(37) Drift angle (when an information source is installed);
(38) Wind speed and direction (when an information source is installed);
(39) Latitude and longitude (when an information source is installed);
(40) Stick shaker/pusher (when an information source is installed);
(41) Windshear (when an information source is installed);
(42) Throttle/power lever position;
(43) Additional engine parameters (as designed in appendix E of this part);
(44) Traffic alert and collision avoidance system;
(45) DME 1 and 2 distances;
(46) Nav 1 and 2 selected frequency;
(47) Selected barometric setting (when an information source is installed);
(48) Selected altitude (when an information source is installed);
(49) Selected speed (when an information source is installed);
(50) Selected mach (when an information source is installed);
(51) Selected vertical speed (when an information source is installed);
(52) Selected heading (when an information source is installed);
(53) Selected flight path (when an information source is installed);
(54) Selected decision height (when an information source is installed);
(55) EFIS display format;
(56) Multi-function/engine/alerts display format;
(57) Thrust command (when an information source is installed);
(58) Thrust target (when an information source is installed);
(59) Fuel quantity in CG trim tank (when an information source is installed);
(60) Primary Navigation System Reference;
(61) Icing (when an information source is installed);
(62) Engine warning each engine vibration (when an information source is installed);
(63) Engine warning each engine over temp. (when an information source is installed);
(64) Engine warning each engine oil pressure low (when an information source is installed);

(65) Engine warning each engine over speed (when an information source is installed);
(66) Yaw trim surface position;
(67) Roll trim surface position;
(68) Brake pressure (selected system);
(69) Brake pedal application (left and right);
(70) Yaw of sideslip angle (when an information source is installed);
(71) Engine bleed valve position (when an information source is installed);
(72) De-icing or anti-icing system selection (when an information source is installed);
(73) Computed center of gravity (when an information source is installed);
(74) AC electrical bus status;
(75) DC electrical bus status;
(76) APU bleed valve position (when an information source is installed);
(77) Hydraulic pressure (each system);
(78) Loss of cabin pressure;
(79) Computer failure;
(80) Heads-up display (when an information source is installed);
(81) Para-visual display (when an information source is installed);
(82) Cockpit trim control input position-pitch;
(83) Cockpit trim control input position—roll;
(84) Cockpit trim control input position—yaw;
(85) Trailing edge flap and cockpit flap control position;
(86) Leading edge flap and cockpit flap control position;
(87) Ground spoiler position and speed brake selection; and
(88) All cockpit flight control input forces (control wheel, control column, rudder pedal).

(b) For all turbine-engine powered transport category airplanes manufactured on or before October 11, 1991, by August 20, 2001—

(1) For airplanes not equipped as of July 16, 1996, with a flight data acquisition unit (FDAU), the parameters listed in paragraphs (a)(1) through (a)(18) of this section must be recorded within the ranges and accuracies specified in Appendix D of this part, and—

(i) For airplanes with more than two engines, the parameter described in paragraph (a)(18) is not required unless sufficient capacity is available on the existing recorder to record that parameter.

(ii) Parameters listed in paragraphs (a)(12) through (a)(17) each may be recorded from a single source.

(2) For airplanes that were equipped as of July 16, 1996, with a flight data acquisition unit (FDAU), the parameters listed in paragraphs (a)(1) through (a)(22) of this section must be recorded within the ranges, accuracies, and recording intervals specified in Appendix E of this part. Parameters listed in paragraphs (a)(12) through (a)(17) each may be recorded from a single source.

(3) The approved flight recorder required by this section must be installed at the earliest time practicable, but no later than the next heavy maintenance check after August 18, 1999 and no later than August 20, 2001. A heavy maintenance check is considered to be any time an airplane is scheduled to be out of service for 4 or more days and is scheduled to include access to major structural components.

(c) For all turbine-engine-powered transport category airplanes manufactured on or before October 11, 1991—

(1) That were equipped as of July 16, 1996, with one or more digital data bus(es) and an ARINC 717 digital flight data acquisition unit (DFDAU) or equivalent, the parameters specified in paragraphs (a)(1) through (a)(22) of this section must be recorded within the ranges, accuracies, resolutions, and sampling intervals specified in Appendix E of this part by August 20, 2001. Parameters listed in paragraphs (a)(12) through (a)(14) each may be recorded from a single source.

(2) Commensurate with the capacity of the recording system (DFDAU or equivalent and the DFDR), all additional parameters for which information sources are installed and which are connected to the recording system must be recorded within the ranges, accuracies, resolutions, and sampling intervals specified in Appendix E of this part by August 20, 2001.

(3) That were subject to §125.225(e) of this part, all conditions of §125.225(c)

must continue to be met until compliance with paragraph (c)(1) of this section is accomplished.

(d) For all turbine-engine-powered transport category airplanes that were manufactured after October 11, 1991—

(1) The parameters listed in paragraphs (a)(1) through (a)(34) of this section must be recorded within the ranges, accuracies, resolutions, and recording intervals specified in Appendix E of this part by August 20, 2001. Paramaters listed in paragraphs (a)(12) through (a)(14) each may be recorded from a single source.

(2) Commensurate with the capacity of the recording system, all additional parameters for which information sources are installed and which are connected to the recording system, must be recorded within the ranges, accuracies, resolutions, and sampling intervals specified in Appendix E of this part by August 20, 2001.

(e) For all turbine-engine-powered transport category airplanes that are manufactured after August 18, 2000—

(1) The parameters listed in paragraph (a) (1) through (57) of this section must be recorded within the ranges, accuracies, resolutions, and recording intervals specified in Appendix E of this part.

(2) Commensurate with the capacity of the recording system, all additional parameters for which information sources are installed and which are connected to the recording system, must be recorded within the ranges, accuracies, resolutions, and sampling intervals specified in Appendix E of this part.

(f) For all turbine-engine-powered transport category airplanes that are manufactured after August 19, 2002 parameters listed in paragraph (a)(1) through (a)(88) of this section must be recorded within the ranges, accuracies, resolutions, and recording intervals specified in Appendix E of this part.

(g) Whenever a flight data recorder required by this section is installed, it must be operated continuously from the instant the airplane begins its takeoff roll until it has completed its landing roll.

(h) Except as provided in paragraph (i) of this section, and except for recorded data erased as authorized in this paragraph, each certificate holder shall keep the recorded data prescribed by this section, as appropriate, until the airplane has been operated for at least 25 hours of the operating time specified in §121.359(a) of this part. A total of 1 hour of recorded data may be erased for the purpose of testing the flight recorder or the flight recorder system. Any erasure made in accordance with this paragraph must be of the oldest recorded data accumulated at the time of testing. Except as provided in paragraph (i) of this section, no record need to be kept more than 60 days.

(i) In the event of an accident or occurrence that requires immediate notification of the National Transportation Safety Board under 49 CFR 830 of its regulations and that results in termination of the flight, the certificate holder shall remove the recorder from the airplane and keep the recorder data prescribed by this section, as appropriate, for at least 60 days or for a longer period upon the request of the Board or the Administrator.

(j) Each flight data recorder system required by this section must be installed in accordance with the requirements of §25.1459 (a), (b), (d), and (e) of this chapter. A correlation must be established between the values recorded by the flight data recorder and the corresponding values being measured. The correlation must contain a sufficient number of correlation points to accurately establish the conversion from the recorded values to engineering units or discrete state over the full operating range of the parameter. Except for airplanes having separate altitude and airspeed sensors that are an integral part of the flight data recorder system, a single correlation may be established for any group of airplanes—

(1) That are of the same type;

(2) On which the flight recorder system and its installation are the same; and

(3) On which there is no difference in the type design with respect to the installation of those sensors associated with the flight data recorder system. Documentation sufficient to convert recorded data into the engineering units and discrete values specified in

the applicable appendix must be maintained by the certificate holder.

(k) Each flight data recorder required by this section must have an approved device to assist in locating that recorder under water.

(l) The following airplanes that were manufactured before August 18, 1997 need not comply with this section, but must continue to comply with applicable paragraphs of §125.225 of this chapter, as appropriate:

(1) Airplanes that meet the Stage 2 noise levels of part 36 of this chapter and are subject to §91.801(c) of this chapter, until January 1, 2000. On and after January 1, 2000, any Stage 2 airplane otherwise allowed to be operated under Part 91 of this chapter must comply with the applicable flight data recorder requirements of this section for that airplane.

(2) British Aerospace 1–11, General Dynamics Convair 580, General Dynamics Convair 600, General Dynamics Convair 640, deHavilland Aircraft Company Ltd. DHC–7, Fairchild Industries FH 227, Fokker F–27 (except Mark 50), F–28 Mark 1000 and Mark 4000, Gulfstream Aerospace G–159, Jetstream 4100 Series, Lockheed Aircraft Corporation Electra 10–A, Lockheed Aircraft Corporation Electra 10–B, Lockheed Aircraft Corporation Electra 10–E, Lockheed Aircraft Corporation Electra L–188, Lockheed Martin Model 382 (L–100) Hercules, Maryland Air Industries, Inc. F27, Mitsubishi Heavy Industries, Ltd. YS–11, Short Bros. Limited SD3–30, Short Bros. Limited SD3–60.

[Doc. No. 28109, 62 FR 38387, July 17, 1997; 62 FR 48135, Sept. 12, 1997, as amended by Amdt. 125–42, 68 FR 42937, July 18, 2003; 68 FR 50069, Aug. 20, 2003]

§125.227 Cockpit voice recorders.

(a) No certificate holder may operate a large turbine engine powered airplane or a large pressurized airplane with four reciprocating engines unless an approved cockpit voice recorder is installed in that airplane and is operated continuously from the start of the use of the checklist (before starting engines for the purpose of flight) to completion of the final checklist at the termination of the flight.

(b) Each certificate holder shall establish a schedule for completion, before the prescribed dates, of the cockpit voice recorder installations required by paragraph (a) of this section. In addition, the certificate holder shall identify any airplane specified in paragraph (a) of this section he intends to discontinue using before the prescribed dates.

(c) The cockpit voice recorder required by this section must also meet the following standards:

(1) The requirements of part 25 of this chapter in effect after October 11, 1991.

(2) After September 1, 1980, each recorder container must—

(i) Be either bright orange or bright yellow;

(ii) Have reflective tape affixed to the external surface to facilitate its location under water; and

(iii) Have an approved underwater locating device on or adjacent to the container which is secured in such a manner that it is not likely to be separated during crash impact, unless the cockpit voice recorder and the flight recorder, required by §125.225 of this chapter, are installed adjacent to each other in such a manner that they are not likely to be separated during crash impact.

(d) In complying with this section, an approved cockpit voice recorder having an erasure feature may be used so that, at any time during the operation of the recorder, information recorded more than 30 minutes earlier may be erased or otherwise obliterated.

(e) For those aircraft equipped to record the uninterrupted audio signals received by a boom or a mask microphone the flight crewmembers are required to use the boom microphone below 18,000 feet mean sea level. No person may operate a large turbine engine powered airplane or a large pressurized airplane with four reciprocating engines manufactured after October 11, 1991, or on which a cockpit voice recorder has been installed after October 11, 1991, unless it is equipped to record the uninterrupted audio signal received by a boom or mask microphone in accordance with §25.1457(c)(5) of this chapter.

(f) In the event of an accident or occurrence requiring immediate notification of the National Transportation Safety Board under 49 CFR part 830 of its regulations, which results in the

termination of the flight, the certificate holder shall keep the recorded information for at least 60 days or, if requested by the Administrator or the Board, for a longer period. Information obtained from the record is used to assist in determining the cause of accidents or occurrences in connection with investigations under 49 CFR part 830. The Administrator does not use the record in any civil penalty or certificate action.

[Doc. No. 25530, 53 FR 26149, July 11, 1988]

Subpart G—Maintenance

§ 125.241 Applicability.

This subpart prescribes rules, in addition to those prescribed in other parts of this chapter, for the maintenance of airplanes, airframes, aircraft engines, propellers, appliances, each item of survival and emergency equipment, and their component parts operated under this part.

§ 125.243 Certificate holder's responsibilities.

(a) With regard to airplanes, including airframes, aircraft engines, propellers, appliances, and survival and emergency equipment, operated by a certificate holder, that certificate holder is primarily responsible for—

(1) Airworthiness;

(2) The performance of maintenance, preventive maintenance, and alteration in accordance with applicable regulations and the certificate holder's manual;

(3) The scheduling and performance of inspections required by this part; and

(4) Ensuring that maintenance personnel make entries in the airplane maintenance log and maintenance records which meet the requirements of part 43 of this chapter and the certificate holder's manual, and which indicate that the airplane has been approved for return to service after maintenance, preventive maintenance, or alteration has been performed.

§ 125.245 Organization required to perform maintenance, preventive maintenance, and alteration.

The certificate holder must ensure that each person with whom it arranges for the performance of maintenance, preventive maintenance, alteration, or required inspection items identified in the certificate holder's manual in accordance with § 125.249(a)(3)(ii) must have an organization adequate to perform that work.

§ 125.247 Inspection programs and maintenance.

(a) No person may operate an airplane subject to this part unless

(1) The replacement times for life-limited parts specified in the aircraft type certificate data sheets, or other documents approved by the Administrator, are complied with;

(2) Defects disclosed between inspections, or as a result of inspection, have been corrected in accordance with part 43 of this chapter; and

(3) The airplane, including airframe, aircraft engines, propellers, appliances, and survival and emergency equipment, and their component parts, is inspected in accordance with an inspection program approved by the Administrator.

(b) The inspection program specified in paragraph (a)(3) of this section must include at least the following:

(1) Instructions, procedures, and standards for the conduct of inspections for the particular make and model of airplane, including necessary tests and checks. The instructions and procedures must set forth in detail the parts and areas of the airframe, aircraft engines, propellers, appliances, and survival and emergency equipment required to be inspected.

(2) A schedule for the performance of inspections that must be performed under the program, expressed in terms of the time in service, calendar time, number of system operations, or any combination of these.

(c) No person may be used to perform the inspections required by this part unless that person is authorized to perform maintenance under part 43 of this chapter.

(d) No person may operate an airplane subject to this part unless—

(1) The installed engines have been maintained in accordance with the overhaul periods recommended by the manufacturer or a program approved by the Administrator; and

(2) The engine overhaul periods are specified in the inspection programs required by §125.247(a)(3).

(e) Inspection programs which may be approved for use under this part include, but are not limited to—

(1) A continuous inspection program which is a part of a current continuous airworthiness program approved for use by a certificate holder under part 121 or part 135 of this chapter;

(2) Inspection programs currently recommended by the manufacturer of the airplane, aircraft engines, propellers, appliances, or survival and emergency equipment; or

(3) An inspection program developed by a certificate holder under this part.

[Doc. No. 19779, 45 FR 67235, Oct. 9, 1980, as amended by Amdt. 125–2, 46 FR 24409, Apr. 30, 1981]

§125.248 [Reserved]

§125.249 Maintenance manual requirements.

(a) Each certificate holder's manual required by §125.71 of this part shall contain, in addition to the items required by §125.73 of this part, at least the following:

(1) A description of the certificate holders maintenance organization, when the certificate holder has such an organization.

(2) A list of those persons with whom the certificate holder has arranged for performance of inspections under this part. The list shall include the persons' names and addresses.

(3) The inspection programs required by §125.247 of this part to be followed in the performance of inspections under this part including—

(i) The method of performing routine and nonroutine inspections (other than required inspections);

(ii) The designation of the items that must be inspected (required inspections), including at least those which if improperly accomplished could result in a failure, malfunction, or defect endangering the safe operation of the airplane;

(iii) The method of performing required inspections;

(iv) Procedures for the inspection of work performed under previously required inspection findings (''buy-back procedures'');

(v) Procedures, standards, and limits necessary for required inspections and acceptance or rejection of the items required to be inspected;

(vi) Instructions to prevent any person who performs any item of work from performing any required inspection of that work; and

(vii) Procedures to ensure that work interruptions do not adversely affect required inspections and to ensure required inspections are properly completed before the airplane is released to service.

(b) In addition, each certificate holder's manual shall contain a suitable system which may include a coded system that provides for the retention of the following:

(1) A description (or reference to data acceptable to the Administrator) of the work performed.

(2) The name of the person performing the work and the person's certificate type and number.

(3) The name of the person approving the work and the person's certificate type and number.

§125.251 Required inspection personnel.

(a) No person may use any person to perform required inspections unless the person performing the inspection is appropriately certificated, properly trained, qualified, and authorized to do so.

(b) No person may perform a required inspection if that person performed the item of work required to be inspected.

Subpart H—Airman and Crewmember Requirements

§125.261 Airman: Limitations on use of services.

(a) No certificate holder may use any person as an airman nor may any person serve as an airman unless that person—

(1) Holds an appropriate current airman certificate issued by the FAA;

(2) Has any required appropriate current airman and medical certificates in that person's possession while engaged in operations under this part; and

(3) Is otherwise qualified for the operation for which that person is to be used.

(b) Each airman covered by paragraph (a) of this section shall present the certificates for inspection upon the request of the Administrator.

§ 125.263 Composition of flightcrew.

(a) No certificate holder may operate an airplane with less than the minimum flightcrew specified in the type certificate and the Airplane Flight Manual approved for that type airplane and required by this part for the kind of operation being conducted.

(b) In any case in which this part requires the performance of two or more functions for which an airman certificate is necessary, that requirement is not satisfied by the performance of multiple functions at the same time by one airman.

(c) On each flight requiring a flight engineer, at least one flight crewmember, other than the flight engineer, must be qualified to provide emergency performance of the flight engineer's functions for the safe completion of the flight if the flight engineer becomes ill or is otherwise incapacitated. A pilot need not hold a flight engineer's certificate to perform the flight engineer's functions in such a situation.

§ 125.265 Flight engineer requirements.

(a) No person may operate an airplane for which a flight engineer is required by the type certification requirements without a flight crewmember holding a current flight engineer certificate.

(b) No person may serve as a required flight engineer on an airplane unless, within the preceding 6 calendar months, that person has had at least 50 hours of flight time as a flight engineer on that type airplane, or the Administrator has checked that person on that type airplane and determined that person is familiar and competent with all essential current information and operating procedures.

§ 125.267 Flight navigator and long-range navigation equipment.

(a) No certificate holder may operate an airplane outside the 48 conterminous States and the District of Columbia when its position cannot be reliably fixed for a period of more than 1 hour, without—

(1) A flight crewmember who holds a current flight navigator certificate; or

(2) Two independent, properly functioning, and approved long-range means of navigation which enable a reliable determination to be made of the position of the airplane by each pilot seated at that person's duty station.

(b) Operations where a flight navigator or long-range navigation equipment, or both, are required are specified in the operations specifications of the operator.

§ 125.269 Flight attendants.

(a) Each certificate holder shall provide at least the following flight attendants on each passenger-carrying airplane used:

(1) For airplanes having more than 19 but less than 51 passengers—one flight attendant.

(2) For airplanes having more than 50 but less than 101 passengers—two flight attendants.

(3) For airplanes having more than 100 passengers—two flight attendants plus one additional flight attendant for each unit (or part of a unit) of 50 passengers above 100 passengers.

(b) The number of flight attendants approved under paragraphs (a) and (b) of this section are set forth in the certificate holder's operations specifications.

(c) During takeoff and landing, flight attendants required by this section shall be located as near as practicable to required floor level exits and shall be uniformly distributed throughout the airplane to provide the most effective egress of passengers in event of an emergency evacuation.

§ 125.271 Emergency and emergency evacuation duties.

(a) Each certificate holder shall, for each type and model of airplane, assign to each category of required crewmember, as appropriate, the necessary

functions to be performed in an emergency or a situation requiring emergency evacuation. The certificate holder shall show those functions are realistic, can be practically accomplished, and will meet any reasonably anticipated emergency, including the possible incapacitation of individual crewmembers or their inability to reach the passenger cabin because of shifting cargo in combination cargo-passenger airplanes.

(b) The certificate holder shall describe in its manual the functions of each category of required crewmembers under paragraph (a) of this section.

Subpart I—Flight Crewmember Requirements

§ 125.281 Pilot-in-command qualifications.

No certificate holder may use any person, nor may any person serve, as pilot in command of an airplane unless that person—

(a) Holds at least a commercial pilot certificate, an appropriate category, class, and type rating, and an instrument rating; and

(b) Has had at least 1,200 hours of flight time as a pilot, including 500 hours of cross-country flight time, 100 hours of night flight time, including at least 10 night takeoffs and landings, and 75 hours of actual or simulated instrument flight time, at least 50 hours of which were actual flight.

§ 125.283 Second-in-command qualifications.

No certificate holder may use any person, nor may any person serve, as second in command of an airplane unless that person—

(a) Holds at least a commercial pilot certificate with appropriate category and class ratings, and an instrument rating; and

(b) For flight under IFR, meets the recent instrument experience requirements prescribed for a pilot in command in part 61 of this chapter.

§ 125.285 Pilot qualifications: Recent experience.

(a) No certificate holder may use any person, nor may any person serve, as a required pilot flight crewmember unless within the preceding 90 calendar days that person has made at least three takeoffs and landings in the type airplane in which that person is to serve. The takeoffs and landings required by this paragraph may be performed in a flight simulator if the flight simulator is qualified and approved by the Administrator for such purpose. However, any person who fails to qualify for a 90-consecutive-day period following the date of that person's last qualification under this paragraph must reestablish recency of experience as provided in paragraph (b) of this section.

(b) A required pilot flight crewmember who has not met the requirements of paragraph (a) of this section may reestablish recency of experience by making at least three takeoffs and landings under the supervision of an authorized check airman, in accordance with the following:

(1) At least one takeoff must be made with a simulated failure of the most critical powerplant.

(2) At least one landing must be made from an ILS approach to the lowest ILS minimums authorized for the certificate holder.

(3) At least one landing must be made to a complete stop.

(c) A required pilot flight crewmember who performs the maneuvers required by paragraph (b) of this section in a qualified and approved flight simulator, as prescribed in paragraph (a) of this section, must—

(1) Have previously logged 100 hours of flight time in the same type airplane in which the pilot is to serve; and

(2) Be observed on the first two landings made in operations under this part by an authorized check airman who acts as pilot in command and occupies a pilot seat. The landings must be made in weather minimums that are not less than those contained in the certificate holder's operations specifications for Category I operations and must be made within 45 days following completion of simulator testing.

(d) An authorized check airman who observes the takeoffs and landings prescribed in paragraphs (b) and (c)(3) of this section shall certify that the person being observed is proficient and

qualified to perform flight duty in operations under this part, and may require any additional maneuvers that are determined necessary to make this certifying statement.

[Doc. No. 19779, 45 FR 67235, Oct. 9, 1980, as amended by Amdt. 125–27, 61 FR 34561, July 2, 1996]

§ 125.287 Initial and recurrent pilot testing requirements.

(a) No certificate holder may use any person, nor may any person serve as a pilot, unless, since the beginning of the 12th calendar month before that service, that person has passed a written or oral test, given by the Administrator or an authorized check airman on that person's knowledge in the following areas—

(1) The appropriate provisions of parts 61, 91, and 125 of this chapter and the operations specifications and the manual of the certificate holder;

(2) For each type of airplane to be flown by the pilot, the airplane powerplant, major components and systems, major appliances, performance and operating limitations, standard and emergency operating procedures, and the contents of the approved Airplane Flight Manual or approved equivalent, as applicable;

(3) For each type of airplane to be flown by the pilot, the method of determining compliance with weight and balance limitations for takeoff, landing, and en route operations;

(4) Navigation and use of air navigation aids appropriate to the operation of pilot authorization, including, when applicable, instrument approach facilities and procedures;

(5) Air traffic control procedures, including IFR procedures when applicable;

(6) Meteorology in general, including the principles of frontal systems, icing, fog, thunderstorms, and windshear, and, if appropriate for the operation of the certificate holder, high altitude weather;

(7) Procedures for avoiding operations in thunderstorms and hail, and for operating in turbulent air or in icing conditions;

(8) New equipment, procedures, or techniques, as appropriate;

(9) Knowledge and procedures for operating during ground icing conditions, (i.e., any time conditions are such that frost, ice, or snow may reasonably be expected to adhere to the airplane), if the certificate holder expects to authorize takeoffs in ground icing conditions, including:

(i) The use of holdover times when using deicing/anti-icing fluids.

(ii) Airplane deicing/anti-icing procedures, including inspection and check procedures and responsibilities.

(iii) Communications.

(iv) Airplane surface contamination (i.e., adherence of frost, ice, or snow) and critical area identification, and knowledge of how contamination adversely affects airplane performance and flight characteristics.

(v) Types and characteristics of deicing/anti-icing fluids, if used by the certificate holder.

(vi) Cold weather preflight inspection procedures.

(vii) Techniques for recognizing contamination on the airplane.

(b) No certificate holder may use any person, nor may any person serve, as a pilot in any airplane unless, since the beginning of the 12th calendar month before that service, that person has passed a competency check given by the Administrator or an authorized check airman in that type of airplane to determine that person's competence in practical skills and techniques in that airplane or type of airplane. The extent of the competency check shall be determined by the Administrator or authorized check airman conducting the competency check. The competency check may include any of the maneuvers and procedures currently required for the original issuance of the particular pilot certificate required for the operations authorized and appropriate to the category, class, and type of airplane involved. For the purposes of this paragraph, type, as to an airplane, means any one of a group of airplanes determined by the Administrator to have a similar means of propulsion, the same manufacturer, and no significantly different handling or flight characteristics.

(c) The instrument proficiency check required by § 125.291 may be substituted for the competency check required by

this section for the type of airplane used in the check.

(d) For the purposes of this part, competent performance of a procedure or maneuver by a person to be used as a pilot requires that the pilot be the obvious master of the airplane with the successful outcome of the maneuver never in doubt.

(e) The Administrator or authorized check airman certifies the competency of each pilot who passes the knowledge or flight check in the certificate holder's pilot records.

(f) Portions of a required competency check may be given in an airplane simulator or other appropriate training device, if approved by the Administrator.

[45 FR 67235, Oct. 9, 1980, as amended by Amdt. 125–18, 58 FR 69629, Dec. 30, 1993]

§ 125.289 Initial and recurrent flight attendant crewmember testing requirements.

No certificate holder may use any person, nor may any person serve, as a flight attendant crewmember, unless, since the beginning of the 12th calendar month before that service, the certificate holder has determined by appropriate initial and recurrent testing that the person is knowledgeable and competent in the following areas as appropriate to assigned duties and responsibilities:

(a) Authority of the pilot in command;

(b) Passenger handling, including procedures to be followed in handling deranged persons or other persons whose conduct might jeopardize safety;

(c) Crewmember assignments, functions, and responsibilities during ditching and evacuation of persons who may need the assistance of another person to move expeditiously to an exit in an emergency;

(d) Briefing of passengers;

(e) Location and operation of portable fire extinguishers and other items of emergency equipment;

(f) Proper use of cabin equipment and controls;

(g) Location and operation of passenger oxygen equipment;

(h) Location and operation of all normal and emergency exits, including evacuation chutes and escape ropes; and

(i) Seating of persons who may need assistance of another person to move rapidly to an exit in an emergency as prescribed by the certificate holder's operations manual.

§ 125.291 Pilot in command: Instrument proficiency check requirements.

(a) No certificate holder may use any person, nor may any person serve, as a pilot in command of an airplane under IFR unless, since the beginning of the sixth calendar month before that service, that person has passed an instrument proficiency check and the Administrator or an authorized check airman has so certified in a letter of competency.

(b) No pilot may use any type of precision instrument approach procedure under IFR unless, since the beginning of the sixth calendar month before that use, the pilot has satisfactorily demonstrated that type of approach procedure and has been issued a letter of competency under paragraph (g) of this section. No pilot may use any type of nonprecision approach procedure under IFR unless, since the beginning of the sixth calendar month before that use, the pilot has satisfactorily demonstrated either that type of approach procedure or any other two different types of nonprecision approach procedures and has been issued a letter of competency under paragraph (g) of this section. The instrument approach procedure or procedures must include at least one straight-in approach, one circling approach, and one missed approach. Each type of approach procedure demonstrated must be conducted to published minimums for that procedure.

(c) The instrument proficiency check required by paragraph (a) of this section consists of an oral or written equipment test and a flight check under simulated or actual IFR conditions. The equipment test includes questions on emergency procedures, engine operation, fuel and lubrication systems, power settings, stall speeds, best engine-out speed, propeller and supercharge operations, and hydraulic, mechanical, and electrical systems, as appropriate. The flight check includes navigation by instruments, recovery

from simulated emergencies, and standard instrument approaches involving navigational facilities which that pilot is to be authorized to use.

(1) For a pilot in command of an airplane, the instrument proficiency check must include the procedures and maneuvers for a commercial pilot certificate with an instrument rating and, if required, for the appropriate type rating.

(2) The instrument proficiency check must be given by an authorized check airman or by the Administrator.

(d) If the pilot in command is assigned to pilot only one type of airplane, that pilot must take the instrument proficiency check required by paragraph (a) of this section in that type of airplane.

(e) If the pilot in command is assigned to pilot more than one type of airplane, that pilot must take the instrument proficiency check required by paragraph (a) of this section in each type of airplane to which that pilot is assigned, in rotation, but not more than one flight check during each period described in paragraph (a) of this section.

(f) Portions of a required flight check may be given in an airplane simulator or other appropriate training device, if approved by the Administrator.

(g) The Administrator or authorized check airman issues a letter of competency to each pilot who passes the instrument proficiency check. The letter of competency contains a list of the types of instrument approach procedures and facilities authorized.

§ 125.293 Crewmember: Tests and checks, grace provisions, accepted standards.

(a) If a crewmember who is required to take a test or a flight check under this part completes the test or flight check in the calendar month before or after the calendar month in which it is required, that crewmember is considered to have completed the test or check in the calendar month in which it is required.

(b) If a pilot being checked under this subpart fails any of the required maneuvers, the person giving the check may give additional training to the pilot during the course of the check. In addition to repeating the maneuvers failed, the person giving the check may require the pilot being checked to repeat any other maneuvers that are necessary to determine the pilot's proficiency. If the pilot being checked is unable to demonstrate satisfactory performance to the person conducting the check, the certificate holder may not use the pilot, nor may the pilot serve, in the capacity for which the pilot is being checked in operations under this part until the pilot has satisfactorily completed the check.

§ 125.295 Check airman authorization: Application and issue.

Each certificate holder desiring FAA approval of a check airman shall submit a request in writing to the FAA Flight Standards district office charged with the overall inspection of the certificate holder. The Administrator may issue a letter of authority to each check airman if that airman passes the appropriate oral and flight test. The letter of authority lists the tests and checks in this part that the check airman is qualified to give, and the category, class and type airplane, where appropriate, for which the check airman is qualified.

§ 125.296 Training, testing, and checking conducted by training centers: Special rules.

A crewmember who has successfully completed training, testing, or checking in accordance with an approved training program that meets the requirements of this part and that is conducted in accordance with an approved course conducted by a training center certificated under part 142 of this chapter, is considered to meet applicable requirements of this part.

[Doc. No. 26933, 61 FR 34561, July 2, 1996]

§ 125.297 Approval of flight simulators and flight training devices.

(a) Flight simulators and flight training devices approved by the Administrator may be used in training, testing, and checking required by this subpart.

(b) Each flight simulator and flight training device that is used in training, testing, and checking required under

this subpart must be used in accordance with an approved training course conducted by a training center certificated under part 142 of this chapter, or meet the following requirements:

(1) It must be specifically approved for—

(i) The certificate holder;

(ii) The type airplane and, if applicable, the particular variation within type for which the check is being conducted; and

(iii) The particular maneuver, procedure, or crewmember function involved.

(2) It must maintain the performance, functional, and other characteristics that are required for approval.

(3) It must be modified to conform with any modification to the airplane being simulated that changes the performance, functional, or other characteristics required for approval.

[Doc. No. 19779, 45 FR 67235, Oct. 9, 1980, as amended by Amdt. 125–27, 61 FR 34561, July 2, 1996]

Subpart J—Flight Operations

§ 125.311 Flight crewmembers at controls.

(a) Except as provided in paragraph (b) of this section, each required flight crewmember on flight deck duty must remain at the assigned duty station with seat belt fastened while the airplane is taking off or landing and while it is en route.

(b) A required flight crewmember may leave the assigned duty station—

(1) If the crewmember's absence is necessary for the performance of duties in connection with the operation of the airplane;

(2) If the crewmember's absence is in connection with physiological needs; or

(3) If the crewmember is taking a rest period and relief is provided—

(i) In the case of the assigned pilot in command, by a pilot qualified to act as pilot in command.

(ii) In the case of the assigned second in command, by a pilot qualified to act as second in command of that airplane during en route operations. However, the relief pilot need not meet the recent experience requirements of § 125.285.

§ 125.313 Manipulation of controls when carrying passengers.

No pilot in command may allow any person to manipulate the controls of an airplane while carrying passengers during flight, nor may any person manipulate the controls while carrying passengers during flight, unless that person is a qualified pilot of the certificate holder operating that airplane.

§ 125.315 Admission to flight deck.

(a) No person may admit any person to the flight deck of an airplane unless the person being admitted is—

(1) A crewmember;

(2) An FAA inspector or an authorized representative of the National Transportation Safety Board who is performing official duties; or

(3) Any person who has the permission of the pilot in command.

(b) No person may admit any person to the flight deck unless there is a seat available for the use of that person in the passenger compartment, except—

(1) An FAA inspector or an authorized representative of the Administrator or National Transportation Safety Board who is checking or observing flight operations; or

(2) A certificated airman employed by the certificate holder whose duties require an airman certificate.

§ 125.317 Inspector's credentials: Admission to pilots' compartment: Forward observer's seat.

(a) Whenever, in performing the duties of conducting an inspection, an FAA inspector presents an Aviation Safety Inspector credential, FAA Form 110A, to the pilot in command of an airplane operated by the certificate holder, the inspector must be given free and uninterrupted access to the pilot compartment of that airplane. However, this paragraph does not limit the emergency authority of the pilot in command to exclude any person from the pilot compartment in the interest of safety.

(b) A forward observer's seat on the flight deck, or forward passenger seat with headset or speaker, must be provided for use by the Administrator while conducting en route inspections. The suitability of the location of the seat and the headset or speaker for use

in conducting en route inspections is determined by the Administrator.

§ 125.319 Emergencies.

(a) In an emergency situation that requires immediate decision and action, the pilot in command may take any action considered necessary under the circumstances. In such a case, the pilot in command may deviate from prescribed operations, procedures and methods, weather minimums, and this chapter, to the extent required in the interests of safety.

(b) In an emergency situation arising during flight that requires immediate decision and action by appropriate management personnel in the case of operations conducted with a flight following service and which is known to them, those personnel shall advise the pilot in command of the emergency, shall ascertain the decision of the pilot in command, and shall have the decision recorded. If they cannot communicate with the pilot, they shall declare an emergency and take any action that they consider necessary under the circumstances.

(c) Whenever emergency authority is exercised, the pilot in command or the appropriate management personnel shall keep the appropriate ground radio station fully informed of the progress of the flight. The person declaring the emergency shall send a written report of any deviation, through the operator's director of operations, to the Administrator within 10 days, exclusive of Saturdays, Sundays, and Federal holidays, after the flight is completed or, in the case of operations outside the United States, upon return to the home base.

§ 125.321 Reporting potentially hazardous meteorological conditions and irregularities of ground and navigation facilities.

Whenever the pilot in command encounters a meteorological condition or an irregularity in a ground facility or navigation aid in flight, the knowledge of which the pilot in command considers essential to the safety of other flights, the pilot in command shall notify an appropriate ground station as soon as practicable.

[Doc. No. 19779, 45 FR 67235, Oct. 9, 1980, as amended by Amdt. 125–52, 72 FR 31683, June 7, 2007]

§ 125.323 Reporting mechanical irregularities.

The pilot in command shall ensure that all mechanical irregularities occurring during flight are entered in the maintenance log of the airplane at the next place of landing. Before each flight, the pilot in command shall ascertain the status of each irregularity entered in the log at the end of the preceding flight.

§ 125.325 Instrument approach procedures and IFR landing minimums.

No person may make an instrument approach at an airport except in accordance with IFR weather minimums and unless the type of instrument approach procedure to be used is listed in the certificate holder's operations specifications.

§ 125.327 Briefing of passengers before flight.

(a) Before each takeoff, each pilot in command of an airplane carrying passengers shall ensure that all passengers have been orally briefed on—

(1) *Smoking.* Each passenger shall be briefed on when, where, and under what conditions smoking is prohibited. This briefing shall include a statement that the Federal Aviation Regulations require passenger compliance with the lighted passenger information signs, posted placards, areas designated for safety purposes as no smoking areas, and crewmember instructions with regard to these items.

(2) *The use of safety belts, including instructions on how to fasten and unfasten the safety belts.* Each passenger shall be briefed on when, where, and under what conditions the safety belt must be fastened about him or her. This briefing shall include a statement that the Federal Aviation Regulations require passenger compliance with lighted passenger information signs and crewmember instructions concerning the use of safety belts.

(3) The placement of seat backs in an upright position before takeoff and landing;

(4) Location and means for opening the passenger entry door and emergency exits;

(5) Location of survival equipment;

(6) If the flight involves extended overwater operation, ditching procedures and the use of required flotation equipment;

(7) If the flight involves operations above 12,000 feet MSL, the normal and emergency use of oxygen; and

(8) Location and operation of fire extinguishers.

(b) Before each takeoff, the pilot in command shall ensure that each person who may need the assistance of another person to move expeditiously to an exit if an emergency occurs and that person's attendant, if any, has received a briefing as to the procedures to be followed if an evacuation occurs. This paragraph does not apply to a person who has been given a briefing before a previous leg of a flight in the same airplane.

(c) The oral briefing required by paragraph (a) of this section shall be given by the pilot in command or a member of the crew. It shall be supplemented by printed cards for the use of each passenger containing—

(1) A diagram and method of operating the emergency exits; and

(2) Other instructions necessary for the use of emergency equipment on board the airplane.

Each card used under this paragraph must be carried in the airplane in locations convenient for the use of each passenger and must contain information that is appropriate to the airplane on which it is to be used.

(d) The certificate holder shall describe in its manual the procedure to be followed in the briefing required by paragraph (a) of this section.

(e) If the airplane does not proceed directly over water after takeoff, no part of the briefing required by paragraph (a)(6) of this section has to be given before takeoff but the briefing required by paragraph (a)(6) must be given before reaching the overwater part of the flight.

[Doc. No. 19779, 45 FR 67235, Oct. 9, 1980, as amended by Amdt. 125–17, 57 FR 42675, Sept. 15, 1992]

§ 125.328 Prohibition on crew interference.

No person may assault, threaten, intimidate, or interfere with a crewmember in the performance of the crewmember's duties aboard an aircraft being operated under this part.

[Doc. No. FAA–1998–4954, 64 FR 1080, Jan. 7, 1999]

§ 125.329 Minimum altitudes for use of autopilot.

(a) Except as provided in paragraphs (b), (c), (d), and (e) of this section, no person may use an autopilot at an altitude above the terrain which is less than 500 feet or less than twice the maximum altitude loss specified in the approved Airplane Flight Manual or equivalent for a malfunction of the autopilot, whichever is higher.

(b) When using an instrument approach facility other than ILS, no person may use an autopilot at an altitude above the terrain that is less than 50 feet below the approved minimum descent altitude for that procedure, or less than twice the maximum loss specified in the approved Airplane Flight Manual or equivalent for a malfunction of the autopilot under approach conditions, whichever is higher.

(c) For ILS approaches when reported weather conditions are less than the basic weather conditions in §91.155 of this chapter, no person may use an autopilot with an approach coupler at an altitude above the terrain that is less than 50 feet above the terrain, or the maximum altitude loss specified in the approved Airplane Flight Manual or equivalent for the malfunction of the autopilot with approach coupler, whichever is higher.

(d) Without regard to paragraph (a), (b), or (c) of this section, the Administrator may issue operations specifications to allow the use, to touchdown, of an approved flight control guidance system with automatic capability, if—

(1) The system does not contain any altitude loss (above zero) specified in the approved Airplane Flight Manual

or equivalent for malfunction of the autopilot with approach coupler; and

(2) The Administrator finds that the use of the system to touchdown will not otherwise adversely affect the safety standards of this section.

(e) Notwithstanding paragraph (a) of this section, the Administrator issues operations specifications to allow the use of an approved autopilot system with automatic capability during the takeoff and initial climb phase of flight provided:

(1) The Airplane Flight Manual specifies a minimum altitude engagement certification restriction;

(2) The system is not engaged prior to the minimum engagement certification restriction specified in the Airplane Flight Manual or an altitude specified by the Administrator, whichever is higher; and

(3) The Administrator finds that the use of the system will not otherwise affect the safety standards required by this section.

[Doc. No. 19779, 45 FR 67325, Oct. 9, 1980, as amended by Amdt. 125–12, 54 FR 34332, Aug. 18, 1989; Amdt. 125–29, 62 FR 27922, May 21, 1997]

§ 125.331 Carriage of persons without compliance with the passenger-carrying provisions of this part.

The following persons may be carried aboard an airplane without complying with the passenger-carrying requirements of this part:

(a) A crewmember.

(b) A person necessary for the safe handling of animals on the airplane.

(c) A person necessary for the safe handling of hazardous materials (as defined in subchapter C of title 49 CFR).

(d) A person performing duty as a security or honor guard accompanying a shipment made by or under the authority of the U.S. Government.

(e) A military courier or a military route supervisor carried by a military cargo contract operator if that carriage is specifically authorized by the appropriate military service.

(f) An authorized representative of the Administrator conducting an en route inspection.

(g) A person authorized by the Administrator.

§ 125.333 Stowage of food, beverage, and passenger service equipment during airplane movement on the surface, takeoff, and landing.

(a) No certificate holder may move an airplane on the surface, take off, or land when any food, beverage, or tableware furnished by the certificate holder is located at any passenger seat.

(b) No certificate holder may move an airplane on the surface, take off, or land unless each food and beverage tray and seat back tray table is secured in its stowed position.

(c) No certificate holder may permit an airplane to move on the surface, take off, or land unless each passenger serving cart is secured in its stowed position.

(d) Each passenger shall comply with instructions given by a crewmember with regard to compliance with this section.

[Doc. No. 26142, 57 FR 42675, Sept. 15, 1992]

Subpart K—Flight Release Rules

§ 125.351 Flight release authority.

(a) No person may start a flight without authority from the person authorized by the certificate holder to exercise operational control over the flight.

(b) No person may start a flight unless the pilot in command or the person authorized by the cetificate holder to exercise operational control over the flight has executed a flight release setting forth the conditions under which the flight will be conducted. The pilot in command may sign the flight release only when both the pilot in command and the person authorized to exercise operational control believe the flight can be made safely, unless the pilot in command is authorized by the certificate holder to exercise operational control and execute the flight release without the approval of any other person.

(c) No person may continue a flight from an intermediate airport without a new flight release if the airplane has been on the ground more than 6 hours.

§ 125.353 Facilities and services.

During a flight, the pilot in command shall obtain any additional available

information of meteorological conditions and irregularities of facilities and services that may affect the safety of the flight.

§ 125.355 Airplane equipment.

No person may release an airplane unless it is airworthy and is equipped as prescribed.

§ 125.357 Communication and navigation facilities.

No person may release an airplane over any route or route segment unless communication and navigation facilities equal to those required by § 125.51 are in satisfactory operating condition.

§ 125.359 Flight release under VFR.

No person may release an airplane for VFR operation unless the ceiling and visibility en route, as indicated by available weather reports or forecasts, or any combination thereof, are and will remain at or above applicable VFR minimums until the airplane arrives at the airport or airports specified in the flight release.

§ 125.361 Flight release under IFR or over-the-top.

Except as provided in § 125.363, no person may release an airplane for operations under IFR or over-the-top unless appropriate weather reports or forecasts, or any combination thereof, indicate that the weather conditions will be at or above the authorized minimums at the estimated time of arrival at the airport or airports to which released.

§ 125.363 Flight release over water.

(a) No person may release an airplane for a flight that involves extended overwater operation unless appropriate weather reports or forecasts, or any combination thereof, indicate that the weather conditions will be at or above the authorized minimums at the estimated time of arrival at any airport to which released or to any required alternate airport.

(b) Each certificate holder shall conduct extended overwater operations under IFR unless it shows that operating under IFR is not necessary for safety.

(c) Each certificate holder shall conduct other overwater operations under IFR if the Administrator determines that operation under IFR is necessary for safety.

(d) Each authorization to conduct extended overwater operations under VFR and each requirement to conduct other overwater operations under IFR will be specified in the operations specifications.

§ 125.365 Alternate airport for departure.

(a) If the weather conditions at the airport of takeoff are below the landing minimums in the certificate holder's operations specifications for that airport, no person may release an airplane from that airport unless the flight release specifies an alternate airport located within the following distances from the airport of takeoff:

(1) *Airplanes having two engines.* Not more than 1 hour from the departure airport at normal cruising speed in still air with one engine inoperative.

(2) *Airplanes having three or more engines.* Not more than 2 hours from the departure airport at normal cruising speed in still air with one engine inoperative.

(b) For the purposes of paragraph (a) of this section, the alternate airport weather conditions must meet the requirements of the certificate holder's operations specifications.

(c) No person may release an airplane from an airport unless that person lists each required alternate airport in the flight release.

§ 125.367 Alternate airport for destination: IFR or over-the-top.

(a) Except as provided in paragraph (b) of this section, each person releasing an airplane for operation under IFR or over-the-top shall list at least one alternate airport for each destination airport in the flight release.

(b) An alternate airport need not be designated for IFR or over-the-top operations where the airplane carries enough fuel to meet the requirements of §§ 125.375 and 125.377 for flights outside the 48 conterminous States and the District of Columbia over routes without an available alternate airport for a particular airport of destination.

(c) For the purposes of paragraph (a) of this section, the weather requirements at the alternate airport must meet the requirements of the operator's operations specifications.

(d) No person may release a flight unless that person lists each required alternate airport in the flight release.

§ 125.369 Alternate airport weather minimums.

No person may list an airport as an alternate airport in the flight release unless the appropriate weather reports or forecasts, or any combination thereof, indicate that the weather conditions will be at or above the alternate weather minimums specified in the certificate holder's operations specifications for that airport when the flight arrives.

§ 125.371 Continuing flight in unsafe conditions.

(a) No pilot in command may allow a flight to continue toward any airport to which it has been released if, in the opinion of the pilot in command, the flight cannot be completed safely, unless, in the opinion of the pilot in command, there is no safer procedure. In that event, continuation toward that airport is an emergency situation.

§ 125.373 Original flight release or amendment of flight release.

(a) A certificate holder may specify any airport authorized for the type of airplane as a destination for the purpose of original release.

(b) No person may allow a flight to continue to an airport to which it has been released unless the weather conditions at an alternate airport that was specified in the flight release are forecast to be at or above the alternate minimums specified in the operations specifications for that airport at the time the airplane would arrive at the alternate airport. However, the flight release may be amended en route to include any alternate airport that is within the fuel range of the airplane as specified in § 125.375 or § 125.377.

(c) No person may change an original destination or alternate airport that is specified in the original flight release to another airport while the airplane is en route unless the other airport is authorized for that type of airplane.

(d) Each person who amends a flight release en route shall record that amendment.

§ 125.375 Fuel supply: Nonturbine and turbopropeller-powered airplanes.

(a) Except as provided in paragraph (b) of this section, no person may release for flight or take off a nonturbine or turbopropeller-powered airplane unless, considering the wind and other weather conditions expected, it has enough fuel—

(1) To fly to and land at the airport to which it is released;

(2) Thereafter, to fly to and land at the most distant alternate airport specified in the flight release; and

(3) Thereafter, to fly for 45 minutes at normal crusing fuel consumption.

(b) If the airplane is released for any flight other than from one point in the conterminous United States to another point in the conterminous United States, it must carry enough fuel to meet the requirements of paragraphs (a) (1) and (2) of this section and thereafter fly for 30 minutes plus 15 percent of the total time required to fly at normal cruising fuel consumption to the airports specified in paragraphs (a) (1) and (2) of this section, or fly for 90 minutes at normal cruising fuel consumption, whichever is less.

(c) No person may release a nonturbine or turbopropeller-powered airplane to an airport for which an alternate is not specified under § 125.367(b) unless it has enough fuel, considering wind and other weather conditions expected, to fly to that airport and thereafter to fly for 3 hours at normal cruising fuel consumption.

§ 125.377 Fuel supply: Turbine-engine-powered airplanes other than turbopropeller.

(a) Except as provided in paragraph (b) of this section, no person may release for flight or takeoff a turbine-powered airplane (other than a turbopropeller-powered airplane) unless, considering the wind and other weather conditions expected, it has enough fuel—

(1) To fly to and land at the airport to which it is released;

(2) Thereafter, to fly to and land at the most distant alternate airport specified in the flight release; and

(3) Thereafter, to fly for 45 minutes at normal cruising fuel consumption.

(b) For any operation outside the 48 conterminous United States and the District of Columbia, unless authorized by the Administrator in the operations specifications, no person may release for flight or take off a turbine-engine powered airplane (other than a turbopropeller-powered airplane) unless, considering wind and other weather conditions expected, it has enough fuel—

(1) To fly and land at the airport to which it is released;

(2) After that, to fly for a period of 10 percent of the total time required to fly from the airport of departure and land at the airport to which it was released;

(3) After that, to fly to and land at the most distant alternate airport specified in the flight release, if an alternate is required; and

(4) After that, to fly for 30 minutes at holding speed at 1,500 feet above the alternate airport (or the destination airport if no alternate is required) under standard temperature conditions.

(c) No person may release a turbine-engine-powered airplane (other than a turbopropeller airplane) to an airport for which an alternate is not specified under §125.367(b) unless it has enough fuel, considering wind and other weather conditions expected, to fly to that airport and thereafter to fly for at least 2 hours at normal cruising fuel consumption.

(d) The Administrator may amend the operations specifications of a certificate holder to require more fuel than any of the minimums stated in paragraph (a) or (b) of this section if the Administrator finds that additional fuel is necessary on a particular route in the interest of safety.

§125.379 Landing weather minimums: IFR.

(a) If the pilot in command of an airplane has not served 100 hours as pilot in command in the type of airplane being operated, the MDA or DA/DH and visibility landing minimums in the certificate holder's operations specification are increased by 100 feet and one-half mile (or the RVR equivalent). The MDA or DA/DH and visibility minimums need not be increased above those applicable to the airport when used as an alternate airport, but in no event may the landing minimums be less than a 300-foot ceiling and 1 mile of visibility.

(b) The 100 hours of pilot-in-command experience required by paragraph (a) may be reduced (not to exceed 50 percent) by substituting one landing in operations under this part in the type of airplane for 1 required hour of pilot-in-command experience if the pilot has at least 100 hours as pilot in command of another type airplane in operations under this part.

(c) Category II minimums, when authorized in the certificate holder's operations specifications, do not apply until the pilot in command subject to paragraph (a) of this section meets the requirements of that paragraph in the type of airplane the pilot is operating.

[Doc. No. 19779, 45 FR 67235, Oct. 9, 1980, as amended by Amdt. 125–52, 72 FR 31683, June 7, 2007]

§125.381 Takeoff and landing weather minimums: IFR.

(a) Regardless of any clearance from ATC, if the reported weather conditions are less than that specified in the certificate holder's operations specifications, no pilot may—

(1) Take off an airplane under IFR; or

(2) Except as provided in paragraph (c) of this section, land an airplane under IFR.

(b) Except as provided in paragraph (c) of this section, no pilot may execute an instrument approach procedure if the latest reported visibility is less than the landing minimums specified in the certificate holder's operations specifications.

(c) If a pilot initiates an instrument approach procedure based on a weather report that indicates that the specified visibility minimums exist and subsequently receives another weather report that indicates that conditions are below the minimum requirements, then the pilot may continue with the approach only if, the requirements of §91.175(l) of this chapter, or both of the following conditions are met—

(1) The later weather report is received when the airplane is in one of the following approach phases:

(i) The airplane is on a ILS approach and has passed the final approach fix;

(ii) The airplane is on an ASR or PAR final approach and has been turned over to the final approach controller; or

(iii) The airplane is on a nonprecision final approach and the airplane—

(A) Has passed the appropriate facility or final approach fix; or

(B) Where a final approach fix is not specified, has completed the procedure turn and is established inbound toward the airport on the final approach course within the distance prescribed in the procedure; and

(2) The pilot in command finds, on reaching the authorized MDA, or DA/DH, that the actual weather conditions are at or above the minimums prescribed for the procedure being used.

[Doc. No. 19779, 45 FR 67235, Oct. 9, 1980, as amended by Amdt. 125–2, 46 FR 24409, Apr. 30, 1981; Amdt. 125–45, 69 FR 1641, Jan. 9, 2004; Amdt. 125–52, 72 FR 31683, June 7, 2007]

§ 125.383 Load manifest.

(a) Each certificate holder is responsible for the preparation and accuracy of a load manifest in duplicate containing information concerning the loading of the airplane. The manifest must be prepared before each takeoff and must include—

(1) The number of passengers;

(2) The total weight of the loaded airplane;

(3) The maximum allowable takeoff and landing weights for that flight;

(4) The center of gravity limits;

(5) The center of gravity of the loaded airplane, except that the actual center of gravity need not be computed if the airplane is loaded according to a loading schedule or other approved method that ensures that the center of gravity of the loaded airplane is within approved limits. In those cases, an entry shall be made on the manifest indicating that the center of gravity is within limits according to a loading schedule or other approved method:

(6) The registration number of the airplane;

(7) The origin and destination ; and

(8) Names of passengers.

(b) The pilot in command of an airplane for which a load manifest must be prepared shall carry a copy of the completed load manifest in the airplane to its destination. The certificate holder shall keep copies of completed load manifests for at least 30 days at its principal operations base, or at another location used by it and approved by the Administrator.

Subpart L—Records and Reports

§ 125.401 Crewmember record.

(a) Each certificate holder shall—

(1) Maintain current records of each crewmember that show whether or not that crewmember complies with this chapter (e.g., proficiency checks, airplane qualifications, any required physical examinations, and flight time records); and

(2) Record each action taken concerning the release from employment or physical or professional disqualification of any flight crewmember and keep the record for at least 6 months thereafter.

(b) Each certificate holder shall maintain the records required by paragraph (a) of this section at its principal operations base, or at another location used by it and approved by the Administrator.

(c) Computer record systems approved by the Administrator may be used in complying with the requirements of paragraph (a) of this section.

§ 125.403 Flight release form.

(a) The flight release may be in any form but must contain at least the following information concerning each flight:

(1) Company or organization name.

(2) Make, model, and registration number of the airplane being used.

(3) Date of flight.

(4) Name and duty assignment of each crewmember.

(5) Departure airport, destination airports, alternate airports, and route.

(6) Minimum fuel supply (in gallons or pounds).

(7) A statement of the type of operation (e.g., IFR, VFR).

(b) The airplane flight release must contain, or have attached to it, weather reports, available weather forecasts, or a combination thereof.

§ 125.405 Disposition of load manifest, flight release, and flight plans.

(a) The pilot in command of an airplane shall carry in the airplane to its destination the original or a signed copy of the—

(1) Load manifest required by § 125.383;

(2) Flight release;

(3) Airworthiness release; and

(4) Flight plan, including route.

(b) If a flight originates at the principal operations base of the certificate holder, it shall retain at that base a signed copy of each document listed in paragraph (a) of this section.

(c) Except as provided in paragraph (d) of this section, if a flight originates at a place other than the principal operations base of the certificate holder, the pilot in command (or another person not aboard the airplane who is authorized by the operator) shall, before or immediately after departure of the flight, mail signed copies of the documents listed in paragraph (a) of this section to the principal operations base.

(d) If a flight originates at a place other than the principal operations base of the certificate holder and there is at that place a person to manage the flight departure for the operator who does not depart on the airplane, signed copies of the documents listed in paragraph (a) of this section may be retained at that place for not more than 30 days before being sent to the principal operations base of the certificate holder. However, the documents for a particular flight need not be further retained at that place or be sent to the principal operations base, if the originals or other copies of them have been previously returned to the principal operations base.

(e) The certificate holder shall:

(1) Identify in its operations manual the person having custody of the copies of documents retained in accordance with paragraph (d) of this section; and

(2) Retain at its principal operations base either the original or a copy of the records required by this section for at least 30 days.

§ 125.407 Maintenance log: Airplanes.

(a) Each person who takes corrective action or defers action concerning a reported or observed failure or malfunction of an airframe, aircraft engine, propeller, or appliance shall record the action taken in the airplane maintenance log in accordance with part 43 of this chapter.

(b) Each certificate holder shall establish a procedure for keeping copies of the airplane maintenance log required by this section in the airplane for access by appropriate personnel and shall include that procedure in the manual required by § 125.249.

§ 125.409 Service difficulty reports.

(a) Each certificate holder shall report the occurrence or detection of each failure, malfunction, or defect, in a form and manner prescribed by the Administrator.

(b) Each certificate holder shall submit each report required by this section, covering each 24-hour period beginning at 0900 local time of each day and ending at 0900 local time on the next day, to the FAA office in Oklahoma City, Oklahoma. Each report of occurrences during a 24-hour period shall be submitted to the collection point within the next 96 hours. However, a report due on Saturday or Sunday may be submitted on the following Monday, and a report due on a holiday may be submitted on the next work day.

[Doc. No. 19779, 45 FR 67235, Oct. 9, 1980, as amended by Amdt. 125–49, 70 FR 76979, Dec. 29, 2005]

§ 125.411 Airworthiness release or maintenance record entry.

(a) No certificate holder may operate an airplane after maintenance, preventive maintenance, or alteration is performed on the airplane unless the person performing that maintenance, preventive maintenance, or alteration prepares or causes to be prepared—

(1) An airworthiness release; or

(2) An entry in the aircraft maintenance records in accordance with the certificate holder's manual.

(b) The airworthiness release or maintenance record entry required by paragraph (a) of this section must—

(1) Be prepared in accordance with the procedures set forth in the certificate holder's manual;

(2) Include a certification that—

(i) The work was performed in accordance with the requirements of the certificate holder's manual;

(ii) All items required to be inspected were inspected by an authorized person who determined that the work was satisfactorily completed;

(iii) No known condition exists that would make the airplane unairworthy; and

(iv) So far as the work performed is concerned, the airplane is in condition for safe operation; and

(3) Be signed by a person authorized in part 43 of this chapter to perform maintenance, preventive maintenance, and alteration.

(c) When an airworthiness release form is prepared, the certificate holder must give a copy to the pilot in command and keep a record of it for at least 60 days.

(d) Instead of restating each of the conditions of the certification required by paragraph (b) of this section, the certificate holder may state in its manual that the signature of a person authorized in part 43 of this chapter constitutes that certification.

Subpart M—Continued Airworthiness and Safety Improvements

SOURCE: Amdt. 125–53, 72 FR 63412, Nov. 8, 2007, unless otherwise noted.

§ 125.501 Purpose and definition.

(a) This subpart requires operators to support the continued airworthiness of each airplane. These requirements may include, but are not limited to, revising the inspection program, incorporating design changes, and incorporating revisions to Instructions for Continued Airworthiness.

(b) For purposes of this subpart, the ''FAA Oversight Office'' is the aircraft certification office or office of the Transport Airplane Directorate with oversight responsibility for the relevant type certificate or supplemental type certificate, as determined by the Administrator.

§ 125.503 [Reserved]

§ 125.505 Repairs assessment for pressurized fuselages.

(a) No person may operate an Airbus Model A300 (exlcuding the –600 series), British Aerospace Model BAC 1–11, Boeing Model 707, 720, 727, 737 or 747, McDonnell Douglas Model DC–8, DC–9/MD–80 or DC–10, Fokker Model F28, or Lockheed Model L–1011 beyond the applicable flight cycle implementation time specified below, or May 25, 2001, whichever occurs later, unless operations specifications have been issued to reference repair assessment guidelines applicable to the fuselage pressure boundary (fuselage skin, door skin, and bulkhead webs), and those guidelines are incorporated in its maintenance program. The repair assessment guidelines must be approved by the FAA Aircraft Certification Office (ACO), or office of the Transport Airplane Directorate, having cognizance over the type certificate for the affected airplane.

(1) For the Airbus Model A300 (excluding the –600 series), the flight cycle implementation time is:

(i) Model B2: 36,000 flights.

(ii) Model B4–100 (including Model B4–2C): 30,000 flights above the window line, and 36,000 flights below the window line.

(iii) Model B4–200: 25,500 flights above the window line, and 34,000 flights below the window line.

(2) For all models of the British Aerospace BAC 1–11, the flight cycle implementation time is 60,000 flights.

(3) For all models of the Boeing 707, the flight cycle implementation time is 15,000 flights.

(4) For all models of the Boeing 720, the flight cycle implementation time is 23,000 flights.

(5) For all models of the Boeing 727, the flight cycle implementation time is 45,000 flights.

(6) For all models of the Boeing 737, the flight cycle implementation time is 60,000 flights.

(7) For all models of the Boeing 747, the flight cycle implementation time is 15,000 flights.

(8) For all models of the McDonnell Douglas DC–8, the flight cycle implementation time is 30,000 flights.

(9) For all models of the McDonnell Douglas DC–9/MD–80, the flight cycle implementation time is 60,000 flights.

(10) For all models of the McDonnell Douglas DC–10, the flight cycle implementation time is 30,000 flights.

(11) For all models of the Lockheed L–1011, the flight cycle implementation time is 27,000 flights.

(12) For the Fokker F–28 Mark, 1000, 2000, 3000, and 4000, the flight cycle implementation time is 60,000 flights.

(b) [Reserved]

[Doc. No. 29104, 65 FR 24126, Apr. 25, 2000; 65 FR 50744, Aug. 21, 2000, as amended by Amdt. 125–36, 66 FR 23131, May 7, 2001; Amdt. 125–40, 67 FR 72834, Dec. 9, 2002; Amdt. 125–46, 69 FR 45942, July 30, 2004. Redesignated by Amdt. 125–53, 72 FR 63412, Nov. 8, 2007]

§ 125.507 Fuel tank system inspection program.

(a) Except as provided in paragraph (g) of this section, this section applies to transport category, turbine-powered airplanes with a type certificate issued after January 1, 1958, that, as a result of original type certification or later increase in capacity, have—

(1) A maximum type-certificated passenger capacity of 30 or more, or

(2) A maximum payload capacity of 7500 pounds or more.

(b) For each airplane on which an auxiliary fuel tank is installed under a field approval, before June 16, 2008, the certificate holder must submit to the FAA Oversight Office proposed maintenance instructions for the tank that meet the requirements of Special Federal Aviation Regulation No. 88 (SFAR 88) of this chapter.

(c) After December 16, 2008, no certificate holder may operate an airplane identified in paragraph (a) of this section unless the inspection program for that airplane has been revised to include applicable inspections, procedures, and limitations for fuel tank systems.

(d) The proposed fuel tank system inspection program revisions must be based on fuel tank system Instructions for Continued Airworthiness (ICA) that have been developed in accordance with the applicable provisions of SFAR 88 of this chapter or §25.1529 and part 25, Appendix H, of this chapter, in effect on June 6, 2001 (including those developed for auxiliary fuel tanks, if any, installed under supplemental type certificates or other design approval) and that have been approved by the FAA Oversight Office.

(e) After December 16, 2008, before returning an aircraft to service after any alteration for which fuel tank ICA are developed under SFAR 88, or under §25.1529 in effect on June 6, 2001, the certificate holder must include in the inspection program for the airplane inspections and procedures for the fuel tank system based on those ICA.

(f) The fuel tank system inspection program changes identified in paragraphs (d) and (e) of this section and any later fuel tank system revisions must be submitted to the Principal Inspector for review and approval.

(g) This section does not apply to the following airplane models:

(1) Bombardier CL–44
(2) Concorde
(3) deHavilland D.H. 106 Comet 4C
(4) VFW–Vereinigte Flugtechnische Werk VFW–614
(5) Illyushin Aviation IL 96T
(6) Bristol Aircraft Britannia 305
(7) Handley Page Herald Type 300
(8) Avions Marcel Dassault—Breguet Aviation Mercure 100C
(9) Airbus Caravelle
(10) Lockheed L–300

APPENDIX A TO PART 125—ADDITIONAL EMERGENCY EQUIPMENT

(a) *Means for emergency evacuation.* Each passenger-carrying landplane emergency exit (other than over-the-wing) that is more that 6 feet from the ground with the airplane on the ground and the landing gear extended must have an approved means to assist the occupants in descending to the ground. The assisting means for a floor level emergency exit must meet the requirements of §25.809(f)(1) of this chapter in effect on April 30, 1972, except that, for any airplane for which the application for the type certificate was filed after that date, it must meet the requirements under which the airplane was type certificated. An assisting means that deploys automatically must be armed during taxiing, takeoffs, and landings. However, if the Administrator finds that the design of the exit makes compliance impractical, the Administrator may grant a deviation from the requirement of automatic deployment if

the assisting means automatically erects upon deployment and, with respect to required emergency exits, if an emergency evacuation demonstration is conducted in accordance with §125.189. This paragraph does not apply to the rear window emergency exit of DC–3 airplanes operated with less than 36 occupants, including crewmembers, and less than five exits authorized for passenger use.

(b) *Interior emergency exit marking.* The following must be complied with for each passenger-carrying airplane:

(1) Each passenger emergency exit, its means of access, and means of opening must be conspicuously marked. The identity and location of each passenger emergency exit must be recognizable from a distance equal to the width of the cabin. The location of each passenger emergency exit must be indicated by a sign visible to occupants approaching along the main passenger aisle. There must be a locating sign—

(i) Above the aisle near each over-the-wing passenger emergency exit, or at another ceiling location if it is more practical because of low headroom;

(ii) Next to each floor level passenger emergency exit, except that one sign may serve two such exits if they both can be seen readily from that sign; and

(iii) On each bulkhead or divider that prevents fore and aft vision along the passenger cabin, to indicate emergency exits beyond and obscured by it, except that if this is not possible the sign may be placed at another appropriate location.

(2) Each passenger emergency exit marking and each locating sign must meet the following:

(i) For an airplane for which the application for the type certificate was filed prior to May 1, 1972, each passenger emergency exit marking and each locating sign must be manufactured to meet the requirements of §25.812(b) of this chapter in effect on April 30, 1972. On these airplanes, no sign may continue to be used if its luminescence (brightness) decreases to below 100 microlamberts. The colors may be reversed if it increases the emergency illumination of the passenger compartment. However, the Administrator may authorize deviation from the 2-inch background requirements if the Administrator finds that special circumstances exist that make compliance impractical and that the proposed deviation provides an equivalent level of safety.

(ii) For an airplane for which the application for the type certificate was filed on or after May 1, 1972, each passenger emergency exit marking and each locating sign must be manufactured to meet the interior emergency exit marking requirements under which the airplane was type certificated. On these airplanes, no sign may continue to be used if its luminescence (brightness) decreases to below 250 microlamberts.

(c) *Lighting for interior emergency exit markings.* Each passenger-carrying airplane must have an emergency lighting system, independent of the main lighting system. However, sources of general cabin illumination may be common to both the emergency and the main lighting systems if the power supply to the emergency lighting system is independent of the power supply to the main lighting system. The emergency lighting system must—

(1) Illuminate each passenger exit marking and locating sign; and

(2) Provide enough general lighting in the passenger cabin so that the average illumination, when measured at 40-inch intervals at seat armrest height, on the centerline of the main passenger aisle, is at least 0.05 foot-candles.

(d) *Emergency light operation.* Except for lights forming part of emergency lighting subsystems provided in compliance with §25.812(g) of this chapter (as prescribed in paragraph (h) of this section) that serve no more than one assist means, are independent of the airplane's main emergency lighting systems, and are automatically activated when the assist means is deployed, each light required by paragraphs (c) and (h) must comply with the following:

(1) Each light must be operable manually and must operate automatically from the independent lighting system—

(i) In a crash landing; or

(ii) Whenever the airplane's normal electric power to the light is interrupted.

(2) Each light must—

(i) Be operable manually from the flightcrew station and from a point in the passenger compartment that is readily accessible to a normal flight attendant seat;

(ii) Have a means to prevent inadvertent operation of the manual controls; and

(iii) When armed or turned on at either station, remain lighted or become lighted upon interruption of the airplane's normal electric power.

Each light must be armed or turned on during taxiing, takeoff, and landing. In showing compliance with this paragraph, a transverse vertical separation of the fuselage need not be considered.

(3) Each light must provide the required level of illumination for at least 10 minutes at the critical ambient conditions after emergency landing.

(e) *Emergency exit operating handles.* (1) For a passenger-carrying airplane for which the application for the type certificate was filed prior to May 1, 1972, the location of each passenger emergency exit operating handle and instructions for opening the exit must be shown by a marking on or near the exit that is readable from a distance of 30 inches. In

addition, for each Type I and Type II emergency exit with a locking mechanism released by rotary motion of the handle, the instructions for opening must be shown by—

(i) A red arrow with a shaft at least ¾ inch wide and a head twice the width of the shaft, extending along at least 70 degrees of arc at a radius approximately equal to ¾ of the handle length; and

(ii) The word ''open'' in red letters 1 inch high placed horizontally near the head of the arrow.

(2) For a passenger-carrying airplane for which the application for the type certificate was filed on or after May 1, 1972, the location of each passenger emergency exit operating handle and instructions for opening the exit must be shown in accordance with the requirements under which the airplane was type certificated. On these airplanes, no operating handle or operating handle cover may continue to be used if its luminescence (brightness) decreases to below 100 microlamberts.

(f) *Emergency exit access.* Access to emergency exits must be provided as follows for each passenger-carrying airplane:

(1) Each passageway between individual passenger areas, or leading to a Type I or Type II emergency exit, must be unobstructed and at least 20 inches wide.

(2) There must be enough space next to each Type I or Type II emergency exit to allow a crewmember to assist in the evacuation of passengers without reducing the unobstructed width of the passageway below that required in paragraph (f)(1) of this section. However, the Administrator may authorize deviation from this requirement for an airplane certificated under the provisions of part 4b of the Civil Air Regulations in effect before December 20, 1951, if the Administrator finds that special circumstances exist that provide an equivalent level of safety.

(3) There must be access from the main aisle to each Type III and Type IV exit. The access from the aisle to these exits must not be obstructed by seats, berths, or other protrusions in a manner that would reduce the effectiveness of the exit. In addition—

(i) For an airplane for which the application for the type certificate was filed prior to May 1, 1972, the access must meet the requirements of §25.813(c) of this chapter in effect on April 30, 1972; and

(ii) For an airplane for which the application for the type certificate was filed on or after May 1, 1972, the access must meet the emergency exit access requirements under which the airplane was certificated.

(4) If it is necessary to pass through a passageway between passenger compartments to reach any required emergency exit from any seat in the passenger cabin, the passageway must not be obstructed. However, curtains may be used if they allow free entry through the passageway.

(5) No door may be installed in any partition between passenger compartments.

(6) If it is necessary to pass through a doorway separating the passenger cabin from other areas to reach any required emergency exit from any passenger seat, the door must have a means to latch it in open position, and the door must be latched open during each takeoff and landing. The latching means must be able to withstand the loads imposed upon it when the door is subjected to the ultimate interia forces, relative to the surrounding structure, listed in §25.561(b) of this chapter.

(g) *Exterior exit markings.* Each passenger emergency exit and the means of opening that exit from the outside must be marked on the outside of the airplane. There must be a 2-inch colored band outlining each passenger emergency exit on the side of the fuselage. Each outside marking, including the band, must be readily distinguishable from the surrounding fuselage area by contrast in color. The markings must comply with the following:

(1) If the reflectance of the darker color is 15 percent or less, the reflectance of the lighter color must be at least 45 percent. ''Reflectance'' is the ratio of the luminous flux reflected by a body to the luminous flux it receives.

(2) If the reflectance of the darker color is greater than 15 percent, at least a 30 percent difference between its reflectance and the reflectance of the lighter color must be provided.

(3) Exits that are not in the side of the fuselage must have the external means of opening and applicable instructions marked conspicuously in red or, if red is inconspicuous against the background color, in bright chrome yellow and, when the opening means for such an exit is located on only one side of the fuselage, a conspicuous marking to that effect must be provided on the other side.

(h) *Exterior emergency lighting and escape route.* (1) Each passenger-carrying airplane must be equipped with exterior lighting that meets the following requirements:

(i) For an airplane for which the application for the type certificate was filed prior to May 1, 1972, the requirements of §25.812(f) and (g) of this chapter in effect on April 30, 1972.

(ii) For an airplane for which the application for the type certificate was filed on or after May 1, 1972, the exterior emergency lighting requirements under which the airplane was type certificated.

(2) Each passenger-carrying airplane must be equipped with a slip-resistant escape route that meets the following requirements:

(i) For an airplane for which the application for the type certificate was filed prior to May 1, 1972, the requirements of §25.803(e) of this chapter in effect on April 30, 1972.

(ii) For an airplane for which the application for the type certificate was filed on or after May 1, 1972, the slip-resistant escape route requirements under which the airplane was type certificated.

(i) *Floor level exits.* Each floor level door or exit in the side of the fuselage (other than those leading into a cargo or baggage compartment that is not accessible from the passenger cabin) that is 44 or more inches high and 20 or more inches wide, but not wider than 46 inches, each passenger ventral exit (except the ventral exits on M–404 and CV–240 airplanes) and each tail cone exit must meet the requirements of this section for floor level emergency exits. However, the Administrator may grant a deviation from this paragraph if the Administrator finds that circumstances make full compliance impractical and that an acceptable level of safety has been achieved.

(j) *Additional emergency exits.* Approved emergency exits in the passenger compartments that are in excess of the minimum number of required emergency exits must meet all of the applicable provisions of this section except paragraph (f), (1), (2), and (3) and must be readily accessible.

(k) On each large passenger-carrying turbojet-powered airplane, each ventral exit and tailcone exit must be—

(1) Designed and constructed so that it cannot be opened during flight; and

(2) Marked with a placard readable from a distance of 30 inches and installed at a conspicuous location near the means of opening the exit, stating that the exit has been designed and constructed so that it cannot be opened during flight.

APPENDIX B TO PART 125—CRITERIA FOR DEMONSTRATION OF EMERGENCY EVACUATION PROCEDURES UNDER § 125.189

(a) *Aborted takeoff demonstration.* (1) The demonstration must be conducted either during the dark of the night or during daylight with the dark of the night simulated. If the demonstration is conducted indoors during daylight hours, it must be conducted with each window covered and each door closed to minimize the daylight effect. Illumination on the floor or ground may be used, but it must be kept low and shielded against shining into the airplane's windows or doors.

(2) The airplane must be in a normal ground attitude with landing gear extended.

(3) Stands or ramps may be used for descent from the wing to the ground. Safety equipment such as mats or inverted life rafts may be placed on the ground to protect participants. No other equipment that is not part of the airplane's emergency evacuation equipment may be used to aid the participants in reaching the ground.

(4) The airplane's normal electric power sources must be deenergized.

(5) All emergency equipment for the type of passenger-carrying operation involved must be installed in accordance with the certificate holder's manual.

(6) Each external door and exit and each internal door or curtain must be in position to simulate a normal takeoff.

(7) A representative passenger load of persons in normal health must be used. At least 30 percent must be females. At least 5 percent must be over 60 years of age with a proportionate number of females. At least 5 percent, but not more than 10 percent, must be children under 12 years of age, prorated through that age group. Three life-size dolls, not included as part of the total passenger load, must be carried by passengers to simulate live infants 2 years old or younger. Crewmembers, mechanics, and training personnel who maintain or operate the airplane in the normal course of their duties may not be used as passengers.

(8) No passenger may be assigned a specific seat except as the Administrator may require. Except as required by item (12) of this paragraph, no employee of the certificate holder may be seated next to an emergency exit.

(9) Seat belts and shoulder harnesses (as required) must be fastened.

(10) Before the start of the demonstration, approximately one-half of the total average amount of carry-on baggage, blankets, pillows, and other similar articles must be distributed at several locations in the aisles and emergency exit access ways to create minor obstructions.

(11) The seating density and arrangement of the airplane must be representative of the highest capacity passenger version of that airplane the certificate holder operates or proposes to operate.

(12) Each crewmember must be a member of a regularly scheduled line crew, must be seated in that crewmember's normally assigned seat for takeoff, and must remain in that seat until the signal for commencement of the demonstration is received.

(13) No crewmember or passenger may be given prior knowledge of the emergency exits available for the demonstration.

(14) The certificate holder may not practice, rehearse, or describe the demonstration for the participants nor may any participant have taken part in this type of demonstration within the preceding 6 months.

(15) The pretakeoff passenger briefing required by § 125.327 may be given in accordance with the certificate holder's manual. The passengers may also be warned to follow directions of crewmembers, but may not be instructed on the procedures to be followed in the demonstration.

(16) If safety equipment as allowed by item (3) of this section is provided, either all passenger and cockpit windows must be blacked out or all of the emergency exits must have safety equipment to prevent disclosure of the available emergency exits.

(17) Not more than 50 percent of the emergency exits in the sides of the fuselage of an airplane that meet all of the requirements applicable to the required emergency exits for that airplane may be used for the demonstration. Exits that are not to be used in the demonstration must have the exit handle deactivated or must be indicated by red lights, red tape or other acceptable means, placed outside the exits to indicate fire or other reason that they are unusable. The exits to be used must be representative of all of the emergency exits on the airplane and must be designated by the certificate holder, subject to approval by the Administrator. At least one floor level exit must be used.

(18) All evacuees, except those using an over-the-wing exit, must leave the airplane by a means provided as part of the airplane's equipment.

(19) The certificate holder's approved procedures and all of the emergency equipment that is normally available, including slides, ropes, lights, and megaphones, must be fully utilized during the demonstration.

(20) The evacuation time period is completed when the last occupant has evacuated the airplane and is on the ground. Evacuees using stands or ramps allowed by item (3) above are considered to be on the ground when they are on the stand or ramp: *Provided*, That the acceptance rate of the stand or ramp is no greater than the acceptance rate of the means available on the airplane for descent from the wing during an actual crash situation.

(b) *Ditching demonstration.* The demonstration must assume that daylight hours exist outside the airplane and that all required crewmembers are available for the demonstration.

(1) If the certificate holder's manual requires the use of passengers to assist in the launching of liferafts, the needed passengers must be aboard the airplane and participate in the demonstration according to the manual.

(2) A stand must be placed at each emergency exit and wing with the top of the platform at a height simulating the water level of the airplane following a ditching.

(3) After the ditching signal has been received, each evacuee must don a life vest according to the certificate holder's manual.

(4) Each liferaft must be launched and inflated according to the certificate holder's manual and all other required emergency equipment must be placed in rafts.

(5) Each evacuee must enter a liferaft and the crewmembers assigned to each liferaft must indicate the location of emergency equipment aboard the raft and describe its use.

(6) Either the airplane, a mockup of the airplane, or a floating device simulating a passenger compartment must be used.

(i) If a mockup of the airplane is used, it must be a life-size mockup of the interior and representative of the airplane currently used by or proposed to be used by the certificate holder and must contain adequate seats for use of the evacuees. Operation of the emergency exits and the doors must closely simulate that on the airplane. Sufficient wing area must be installed outside the over-the-wing exits to demonstrate the evacuation.

(ii) If a floating device simulating a passenger compartment is used, it must be representative, to the extent possible, of the passenger compartment of the airplane used in operations. Operation of the emergency exits and the doors must closely simulate operation on that airplane. Sufficient wing area must be installed outside the over-the-wing exits to demonstrate the evacuation. The device must be equipped with the same survival equipment as is installed on the airplane, to accommodate all persons participating in the demonstration.

APPENDIX C TO PART 125—ICE PROTECTION

If certification with ice protection provisions is desired, compliance with the following must be shown:

(a) The recommended procedures for the use of the ice protection equipment must be set forth in the Airplane Flight Manual.

(b) An analysis must be performed to establish, on the basis of the airplane's operational needs, the adequacy of the ice protection system for the various components of the airplane. In addition, tests of the ice protection system must be conducted to demonstrate that the airplane is capable of operating safely in continuous maximum and intermittent maximum icing conditions as described in appendix C of part 25 of this chapter.

(c) Compliance with all or portions of this section may be accomplished by reference, where applicable because of similarity of the designs, to analyses and tests performed by the applicant for a type certificated model.

APPENDIX D TO PART 125—AIRPLANE FLIGHT RECORDER SPECIFICATION

Parameters	Range	Accuracy sensor input to DFDR readout	Sampling interval (per second)	Resolution [4] read out
Time (GMT or Frame Counter) (range 0 to 4095, sampled 1 per frame).	24 Hrs	±0.125% Per Hrs	0.25 (1 per 4 seconds).	1 sec.
Altitude	−1,000 ft to max certificated altitude of aircraft.	±100 to ±700 ft (See Table 1, TSO-C51a).	1	5′ to 35′ [1]
Airspeed	50 KIAS to V_{so}, and V_{so} to 1.2 V_D.	±5%, ±3%	1	1 kt.
Heading	360°	±2°	1	0.5°
Normal Acceleration (Vertical)	−3g to +6g	±1% of max range excluding datum error of ±5%.	8	0.01g.
Pitch Attitude	±75°	±2°	1	0.5°.
Roll Attitude	±180°	±2°	1	0.5°.
Radio Transmitter Keying	On-Off (Discrete)		1	
Thrust/Power on Each Engine	Full range forward	±2%	1	0.2% [2]
Trailing Edge Flap or Cockpit Control Selection.	Full range or each discrete position.	±3° or as pilot's Indicator	0.5	0.5% [2]
Leading Edge Flap or Cockpit Control Selection.	Full range or each discrete position.	±3° or as pilot's indicator	0.5	0.5% [2]
Thrust Reverser Position	Stowed, in transit, and reverse (Discrete).		1 (per 4 seconds per engine).	
Ground Spoiler Position/Speed Brake Selection.	Full range or each discrete position.	±2% unless higher accuracy uniquely required.	1	0.2% [2].
Marker Beacon Passage	Discrete		1	
Autopilot Engagement	Discrete		1	
Longitudinal Acceleration	±1g	±1.5% max range excluding datum error of ±5%.	4	0.01g
Pilot Input and/or Surface Position-Primary Controls (Pitch, Roll, Yaw) [3].	Full range	±2° unless higher accuracy uniquely required.	1	0.2% [2].
Lateral Acceleration	±1g	±1.5% max range excluding datum error of ±5%.	4	0.01g.
Pitch Trim Position	Full range	±3% unless higher accuracy uniquely required.	1	0.3% [2]
Glideslope Deviation	±400 Microamps	±3%	1	0.3% [2]
Localizer Deviation	±400 Microamps	±3%	1	0.3% [2].
AFCS Mode and Engagement Status.	Discrete		1	
Radio Altitude	−20 ft to 2,500 ft	±2 Ft or ±3% Whichever is Greater Below 500 Ft and ±5% Above 500 Ft.		1 ft + 5% [2] above 500′.
Master Warning	Discrete		1	
Main Gear Squat Switch Status	Discrete		1	
Angle of Attack (if recorded directly).	As installed	As installed	2	0.3% [2].
Outside Air Temperature or Total Air Temperature.	−50° C to +90° C	±2° C	0.5	0.3° C
Hydraulics, Each System Low Pressure.	Discrete		0.5	or 0.5% [2].
Groundspeed	As Installed	Most Accurate Systems Installed (IMS Equipped Aircraft Only).	1	0.2% [2].
If additional recording capacity is available, recording of the following parameters is recommended. The parameters are listed in order of significance:				
Drift Angle	When available. As installed.	As installed	4	
Wind Speed and Direction	When available. As installed.	As installed	4	
Latitude and Longitude	When available. As installed.	As installed	4	
Brake pressure/Brake pedal position.	As installed	As installed	1	
Additional engine parameters:				
EPR	As installed	As installed	1 (per engine)	
N_1	As installed	As installed	1 (per engine)	
N_2	As installed	As installed	1 (per engine)	
EGT	As installed	As installed	1 (per engine)	
Throttle Lever Position	As installed	As installed	1 (per engine)	

Parameters	Range	Accuracy sensor input to DFDR readout	Sampling interval (per second)	Resolution [4] read out
Fuel Flow	As installed	As installed	1 (per engine)	
TCAS:				
TA	As installed	As installed	1	
RA	As installed	As installed	1	
Sensitivity level (as selected by crew).	As installed	As installed	2	
GPWS (ground proximity warning system).	Discrete		1	
Landing gear or gear selector position.	Discrete		0.25 (1 per 4 seconds).	
DME 1 and 2 Distance	0–200 NM;	As installed	0.25	1 mi.
Nav 1 and 2 Frequency Selection.	Full range	As installed	0.25	

[1] When altitude rate is recorded. Altitude rate must have sufficient resolution and sampling to permit the derivation of altitude to 5 feet.

[2] Percent of full range.

[3] For airplanes that can demonstrate the capability of deriving either the control input on control movement (one from the other) for all modes of operation and flight regimes, the ''or'' applies. For airplanes with non-mechanical control systems (fly-by-wire) the ''and'' applies. In airplanes with split surfaces, suitable combination of inputs is acceptable in lieu of recording each surface separately.

[4] This column applies to aircraft manufactured after October 11, 1991.

[Doc. No. 25530, 53 FR 26150, July 11, 1988; 53 FR 30906, Aug. 16, 1988]

APPENDIX E TO PART 125—AIRPLANE FLIGHT RECORDER SPECIFICATIONS

The recorded values must meet the designated range, resolution, and accuracy requirements during dynamic and static conditions. All data recorded must be correlated in time to within one second.

Parameters	Range	Accuracy (sensor input)	Seconds per sampling interval	Resolution	Remarks
1. Time or Relative Times Counts.[1].	24 Hrs, 0 to 4095.	±0.125% Per Hour.	4	1 sec	UTC time preferred when available. Count increments each 4 seconds of system operation.
2. Pressure Altitude.	−1000 ft to max certificated altitude of aircraft. +5000 ft.	±100 to ±700 ft (see table, TSO C124a or TSO C51a).	1	5′ to 35′	Data should be obtained from the air data computer when practicable.
3. Indicated airspeed or Calibrated airspeed.	50 KIAS or minimum value to Max V_{so}, to 1.2 $V._D$.	±5% and ±3%	1	1 kt	Data should be obtained from the air data computer when practicable.
4, Heading (Primary flight crew reference).	0–360° and Discrete ''true'' or ''mag''.	±2°	1	0.5°	When true or magnetic heading can be selected as the primary heading reference, a discrete indicating selection must be recorded.
5. Normal Acceleration (Vertical) [9].	−3g to +6g	±1% of max range excluding datum error of ±5%.	0.125	0.004g.	
6. Pitch Attitude	±75°	±2°	1 or 0.25 for airplanes operated under §125.226(f).	0.5°	A sampling rate of 0.25 is recommended.
7. Roll Attitude [2]	±180°	±2°	1 or 0.5 for airplanes operated under §121.344(f).	0.5°	A sampling rate of 0.5 is recommended.
8. Manual Radio Transmitter Keying or CVR/DFDR synchronization reference	On-Off (Discrete) None.		1		Preferably each crew member but one discrete acceptable for all transmission provided the CVR/FDR system complies with TSO C124a CVR synchronization requirements (paragraph 4.2.1 ED–55).

The recorded values must meet the designated range, resolution, and accuracy requirements during dynamic and static conditions. All data recorded must be correlated in time to within one second.

Parameters	Range	Accuracy (sensor input)	Seconds per sampling interval	Resolution	Remarks
9. Thrust/Power on each engine—primary flight crew reference.	Full Range Forward.	±2%	1 (per engine)	0.3% of full range.	Sufficient parameters (e.g., EPR, N1 or Torque, NP) as appropriate to the particular engine being recorded to determine power in forward and reverse thrust, including potential overspeed condition.
10. Autopilot Engagement.	Discrete "on" or "off".		1.		
11. Longitudinal Acceleration.	±1g	±1.5% max. range excluding datum error of ±5%.	0.25	0.004g.	
12a. Pitch Control(s) position (non-fly-by-wire systems).	Full Range	±2% Unless Higher Accuracy Uniquely Required.	0.5 or 0.25 for airplanes operated under §121.344(f).	0.5% of full range.	For airplanes that have a flight control break away capability that allows either pilot to operate the controls independently, record both control inputs. The control inputs may be sampled alternately once per second to produce the sampling interval of 0.5 or 0.25, as applicable.
12b. Pitch Control(s) position (fly-by-wire systems).[3].	Full Range	±2° Unless Higher Accuracy Uniquely Required.	0.5 or 0.25 for airplanes operated under §121.344(f).	0.2% of full range.	
13a. Lateral Control position(s) (non-fly-by-wire).	Full Range	±2° Unless Higher Accuracy Uniquely Required.	0.5 or 0.25 for airplanes operated under §125.226(f).	0.2% of full range.	For airplanes that have a flight control break away capability that allows either pilot to operate the controls independently, record both control inputs. The control inputs may be sampled alternately once per second to produce the sampling interval of 0.5 or 0.25, as applicable.
13b. Lateral Control position(s) (fly-by-wire).[4].	Full Range	±2° Unless Higher Accuracy Uniquely Required.	0.5 or 0.25 for airplanes operated under §121.344(f).	0.2% of full range.	
14a. Yaw Control position(s) (non-fly-by-wire)[5].	Full Range	±2° Unless Higher Accuracy Uniquely Required.	0.5	0.3% of full range.	For airplanes that have a flight control break away capability that allows either pilot to operate the controls independently, record both control inputs. The control inputs may be sampled alternately once per second to produce the sampling interval of 0.5.
14b. Yaw Control position(s) (fly-by-wire).	Full Range	±2° Unless Higher Accuracy Uniquely Required.	0.5	0.2% of full range.	
15. Pitch Control Surface(s) Position.[6].	Full Range	±2° Unless Higher Accuracy Uniquely Required..	0.5 or 0.25 for airplanes operated under §121.344(f)..	0.3% of full range..	For airplanes fitted with multiple or split surfaces, a suitable combination of inputs is acceptable in lieu of recording each surface separately. The control surfaces may be sampled alternately to produce the sampling interval of 0.5 or 0.25.

The recorded values must meet the designated range, resolution, and accuracy requirements during dynamic and static conditions. All data recorded must be correlated in time to within one second.

Parameters	Range	Accuracy (sensor input)	Seconds per sampling interval	Resolution	Remarks
16. Lateral Control Surface(s) Position[7].	Full Range	±2° Unless Higher Accuracy Uniquely Required.	0.5 or 0.25 for airplanes operated under §121.344(f).	0.3% of full range.	A suitable combination of surface position sensors is acceptable in lieu of recording each surface separately. The control surfaces may be sampled alternately to produce the sampling interval of 0.5 or 0.25.
17. Yaw Control Surface(s) Position.[8].	Full Range	±2° Unless Higher Accuracy Uniquely Required.	0.5	0.2% of full range.	For airplanes with multiple or split surfaces, a suitable combination of surface position sensors is acceptable in lieu of recording each surface separately. The control surfaces may be sampled alternately to produce the sapling interval of 0.5.
18. Lateral Acceleration.	±1g	±1.5% max. range excluding datum error of ±5%.	0.25	0.004g.	
19. Pitch Trim Surface Position.	Full Range	±3° Unless Higher Accuracy Uniquely Required.	1	0.6% of full range	
20. Trailing Edge Flap or Cockpit Control Selection.[10].	Full Range or Each Position (discrete).	±3° or as Pilot's indicator.	2	0.5% of full range.	Flap position and cockpit control may each be sampled at 4 second intervals, to give a data point every 2 seconds.
21. Leading Edge Flap or Cockpit Control Selection.[11].	Full Range or Each Discrete Position.	±3° or as Pilot's indicator and sufficient to determine each discrete position.	2	0.5% of full range.	Left and right sides, or flap position and cockpit control may each be sampled at 4 second intervals, so as to give a data point every 2 seconds.
22. Each Thrust Reverser Position (or equivalent for propeller airplane).	Stowed, In Transit, and Reverse (Discrete).	.....	1 (per engine). ..	.....	Turbo-jet—2 discretes enable the 3 states to be determined. Turbo-prop—1 discrete.
23. Ground Spoiler Position or Speed Brake Selection[12].	Full Range or Each Position (discrete).	±2° Unless Higher Accuracy Uniquely Required.	1 or 0.5 for airplanes operated under §121.344(f).	0.5% of full range	
24. Outside Air Temperature or Total Air Temperature.[13].	−50 °C to +90 °C.	±2 °C	2	0.3 °C..	
25. Autopilot/ Autothrottle/ AFCS Mode and Engagement Status.	A suitable combination of discretes.	.....	1	.....	Discretes should show which systems are engaged and which primary modes are controlling the flight path and speed of the aircraft.
26. Radio Altitude[14].	−20 ft to 2,500 ft.	±2 ft or ±3% Whichever is Greater Below 500 ft and ±5% above 500 ft.	1	1 ft +5% Above 500 ft.	For autoland/category 3 operations. Each radio altimeter should be recorded, but arranged so that at least one is recorded each second.

The recorded values must meet the designated range, resolution, and accuracy requirements during dynamic and static conditions. All data recorded must be correlated in time to within one second.

Parameters	Range	Accuracy (sensor input)	Seconds per sampling interval	Resolution	Remarks
27. Localizer Deviation, MLS Azimuth, or GPS Lateral Deviation.	±400 Microamps or available sensor range as installed ±62°.	As installed. ±3% recommended ...	1	0.3% of full range.	For autoland/category 3 operations. each system should be recorded but arranged so that at least one is recorded each second. It is not necessary to record ILS and MLS at the same time, only the approach aid in use need be recorded.
28. Glideslope Deviation, MLS Elevation, or GPS Vertical Deviation.	±400 Microamps or available sensor range as installed. 0.9 to + 30°	As installed ±3% recommended ...	1	0.3% of full range.	For autoland/category 3 operations. each system should be recorded but arranged so that at least one is recorded each second. It is not necessary to record ILS and MLS at the same time, only the approach aid in use need be recorded.
29. Marker Beacon Passage.	Discrete ''on'' or ''off''.	.....	1	.....	A single discrete is acceptable for all markers.
30. Master Warning.	Discrete	.....	1	.....	Record the master warning and record each 'red' warning that cannot be determined from other parameters or from the cockpit voice recorder.
31. Air/ground sensor (primary airplane system reference nose or main gear).	Discrete ''air'' or ''ground''.	.....	1 (0.25 recommended).		
32. Angle of Attack (If measured directly).	As installed	As Installed	2 or 0.5 for airplanes operated under §125.226(f).	0.3% of full range.	If left and right sensors are available, each may be recorded at 4 or 1 second intervals, as appropriate, so as to give a data point at 2 seconds or 0.5 second, as required.
33. Hydraulic Pressure Low, Each System.	Discrete or available sensor range, ''low'' or ''normal''.	±5%	2	0.5% of full range.	
34. Groundspeed	As Installed	Most Accurate Systems Installed.	1	0.2% of full range.	
35. GPWS (ground proximity warning system).	Discrete ''warning'' or ''off''.	.....	1	.....	A suitable combination of discretes unless recorder capacity is limited in which case a single discrete for all modes is acceptable.
36. Landing Gear Position or Landing gear cockpit control selection.	Discrete	.....	4	.....	A suitable combination of discretes should be recorded.
37. Drift Angle.[15]	As installed	As installed	4	0.1%.	
38. Wind Speed and Direction.	As installed	As installed	4	1 knot, and 1.0°.	
39. Latitude and Longitude.	As installed	As installed	4	0.002°, or as installed.	Provided by the Primary Navigation System Reference. Where capacity permits Latitude/longtitude resolution should be 0.0002°.
40. Stick shaker and pusher activation.	Discrete(s) ''on'' or ''off''.	.....	1	.....	A suitable combination of discretes to determine activation.
41. WIndshear Detection.	Discrete ''warning'' or ''off''.	.....	1		

The recorded values must meet the designated range, resolution, and accuracy requirements during dynamic and static conditions. All data recorded must be correlated in time to within one second.

Parameters	Range	Accuracy (sensor input)	Seconds per sampling interval	Resolution	Remarks
42. Throttle/power lever position.[16].	Full Range	±2%	1 for each lever	2% of full range	For airplanes with non-mechanically linked cockpit engine controls.
43. Additional Engine Parameters.	As installed	As installed	Each engine each second.	2% of full range	Where capacity permits, the preferred priority is indicated vibration level, N2, EGT, Fuel Flow, Fuel Cutoff lever position and N3, unless engine manufacturer recommends otherwise.
44. Traffic Alert and Collision Avoidance System (TCAS).	Discretes	As installed	1		A suitable combination of discretes should be recorded to determine the status of-Combined Control, Vertical Control, Up Advisory, and Down Advisory. (ref. ARINC Characteristic 735 Attachment 6E, TCAS VERTICAL RA DATA OUTPUT WORD.)
45. DME 1 and 2 Distance.	0–200 NM	As installed	4	1 NM	1 mile.
46. Nav 1 and 2 Selected Frequency.	Full range	As installed	4		Sufficient to determine selected frequency
47. Selected barometric setting.	Full range	±5%	(1 per 64 sec.)	0.2% of full range.	
48. Selected Altitude.	Full range	±5%	1	100 ft.	
49. Selected speed.	Full range	±5%	1	1 knot.	
50. Selected Mach.	Full range	±5%	1	.01.	
51. Selected vertical speed.	Full range	±5%	1	100 ft/min.	
52. Selected heading.	Full range	±5%	1	1°.	
53. Selected flight path.	Full range	±5%	1	1°.	
54. Selected decision height.	Full range	±5%	64	1 ft.	
55. EFIS display format.	Discrete(s)		4		Discretes should show the display system status (e.g., off, normal, fail, composite, sector, plan, nav aids, weather radar, range, copy).
56. Multi-function/ Engine Alerts Display format.	Discrete(s)		4		Discretes should show the display system status (e.g., off, normal, fail, and the identity of display pages for emergency procedures, need not be recorded).
57. Thrust command.[17].	Full Range	±2%	2	2% of full range	
58. Thrust target	Full range	±2%	4	2% of full range.	
59. Fuel quantity in CG trim tank.	Full range	±5%	(1 per 64 sec.)	1% of full range.	
60. Primary Navigation System Reference.	Discrete GPS, INS, VOR/ DME, MLS, Loran C, Omega, Localizer Glideslope.		4		A suitable combination of discrete to determine the Primary Navigation System reference.
61. Ice Detection	Discrete ''ice'' or ''no ice''.		4		
62. Engine warning each engine vibration.	Discrete		1		

The recorded values must meet the designated range, resolution, and accuracy requirements during dynamic and static conditions. All data recorded must be correlated in time to within one second.

Parameters	Range	Accuracy (sensor input)	Seconds per sampling interval	Resolution	Remarks
63. Engine warning each engine over temp.	Discrete		1		
64. Engine warning each engine oil pressure low.	Discrete		1		
65. Engine warning each engine over speed.	Discrete		1		
66. Yaw Trim Surface Position.	Full Range	±3% Unless Higher Accuracy Uniquely Required.	2	0.3% of full range..	
67. Roll Trim Surface Position.	Full Range	±3% Unless Higher Accuracy Uniquely Required.	2	0.3% of full range..	
68. Brake Pressure (left and right).	As installed	±5%	1		To determine braking effort applied by pilots or by autobrakes.
69. Brake Pedal Application (left and right).	Discrete or Analog ''applied'' or ''off''.	±5% (Analog)	1		To determine braking applied by pilots.
70. Yaw or sideslip angle.	Full Range	±5%	1	0,5°.	
71. Engine bleed valve position.	Decrete ''open'' or ''closed''.		4		
72. De-icing or anti-icing system selection.	Discrete ''on'' or ''off''.		4		
73. Computed center of gravity.	Full Range	±5%	(1 per 64 sec.)	1% of full range.	
74. AC electrical bus status.	Discrete ''power'' or ''off''.		4		Each bus.
75. DC electrical bus status.	Discrete ''power'' or ''off''.		4		Each bus.
76. APU bleed valve position.	Discrete ''open'' or ''closed.		4.		
77. Hydraulic Pressure (each system).	Full range	±5%	2	100 psi.	
78. Loss of cabin pressure.	Discrete ''loss'' or ''normal''.		1.		
79. Computer failure (critical flight and engine control systems).	Discrete ''fail'' or ''normal''.		4.		
80. Heads-up display (when an information source is installed).	Discrete(s) ''on'' or ''off''.		4.		
81. Para-visual display (when an information source is installed).	Discrete(s) ''on'' or ''off''.		1.		
82. Cockpit trim control input position—pitch.	Full Range	±5%	1	0.2% of full range.	Where mechanical means for control inputs are not available, cockpit display trim positions should be recorded.
83. Cockpit trim control input position—roll.	Full Range	±5%	1	0.7% of full range.	Where mechanical means for control inputs are not available, cockpit display trim position should be recorded.

The recorded values must meet the designated range, resolution, and accuracy requirements during dynamic and static conditions. All data recorded must be correlated in time to within one second.

Parameters	Range	Accuracy (sensor input)	Seconds per sampling interval	Resolution	Remarks
84. Cockpit trim control input position—yaw.	Full Range	±5%	1	0.3% of full range.	Where mechanical means for control input are not available, cockpit display trim positions should be recorded.
85. Trailing edge flap and cockpit flap control position.	Full Range	±5%	2	0.5% of full range.	Trailing edge flaps and cockpit flap control position may each be sampled alternately at 4 second intervals to provide a sample each 0.5 second.
86. Leading edge flap and cockpit flap control position.	Full Range or Discrete.	±5%	1	0.5% of full range.	
87. Ground spoiler position and speed brake selection.	Full Range or Discrete.	±5%	0.5	0.3% of full range	
88. All cockpit flight control input forces (control wheel, control column, rudder pedal).	Full Range Control Wheel ±70 lbs Control Column ±85 lb Rudder pedal ±165 lbs.	±5%	1	0.3% of full range	For fly-by-wire flight control systems, where flight control surface position is a function of the displacement of the control input device only, it is not necessary to record this parameter. For airplanes that have a flight control break away capability that allows either pilot to operate the control independently, record both control force inputs. The control force inputs may be sampled alternately once per 2 seconds to produce the sampling interval of 1.

[1] For A300 B2/B4 airplanes, resolution = 6 seconds.
[2] For A330/A340 series airplanes, resolution = 0.703°.
[3] For A318/A319/A320/A321 series airplanes, resolution = 0.275% (0.088°>0.064°)
For A330/A340 series airplanes, resolution = 2.20% (0.703°>0.064°)
[4] For A318/A319/A320/A321 series airplanes, resolution = 0.22% (0.088°>0.080°)
For A330/A340 series airplanes, resolution = 1.76% (0.703°>0.080°)
[5] For A330/A340 series airplanes, resolution = 1.18% (0.703°>0.120°).
[6] For A330/A340 series airplanes, resolution = 0.783% (0.352°>0.090°)
[7] For A330/A340 series airplanes, aileron resolution = 0.704% (0.352°>0.100°). For A330/A340 series airplanes, spoiler resolution = 1.406% (0.703°>0.100°).
[8] For A330/A340 series airplanes, resolution = 0.30% (0.176°>0.12°)
For A330/A340 series airplanes, seconds per sampling interval = 1
[9] For B–717 series airplanes, resolution = .005g. For Dassault F900C/F900EX airplanes, resolution = .007g.
[10] For A330/A340 series airplanes, resolution = 1.05% (0.250°>0.120°)
[11] For A330/A340 series airplanes, resolution = 1.05% (0.250°>0.120°). For A330 B2/B4 series airplanes, resolution = 0.92% (0.230°>0.125°).
[12] For A330/A340 series airplanes, spoiler resolution = 1.406% (0.703°>0.100°).
[13] For A330/A340 series airplanes, resolution = 0.5°C.
[14] For Dassault F900C/F900EX airplanes, Radio Altitude resolution = 1.25 ft.
[15] For A330/A340 series airplanes, resolution = 0.352 degrees.
[16] For A318/A319/A320/A321 series airplanes, resolution = 4.32%. For A330/A340 series airplanes, resolution is 3.27% of full range for throttle lever angle (TLA); for reverse thrust, reverse throttle lever angle (RLA) resolution is nonlinear over the active reverse thrust range, which is 51.54 degrees to 96.14 degrees. The resolved element is 2.8 degrees uniformly over the entire active reverse thrust range, or 2.9% of the full range value of 96.14 degrees.
[17] For A318/A319/A320/A321 series airplanes, with IAE engines, resolution = 2.58%.

[Doc. No. 28109, 62 FR 38390, July 17, 1997; 62 FR 48135, Sept. 12, 1997, as amended by Amdt. 125–32, 64 FR 46121, Aug. 24, 1999; 65 FR 2295, Jan. 14, 2000; Amdt. 125–32, 65 FR 2295, Jan. 14, 2000; Amdt. 125–34, 65 FR 51745, Aug. 24, 2000; 65 FR 81735, Dec. 27, 2000; Amdt. 125–39, 67 FR 54323, Aug. 21, 2002; Amdt. 125–42, 68 FR 42937, July 18, 2003; 68 FR 50069, Aug. 20, 2003; 68 FR 53877, Sept. 15, 2003]

PART 129—OPERATIONS: FOREIGN AIR CARRIERS AND FOREIGN OPERATORS OF U.S.-REGISTERED AIRCRAFT ENGAGED IN COMMON CARRIAGE

Sec.

SPECIAL FEDERAL AVIATION REGULATION NO. 97 [NOTE]

Subpart A—General

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APPENDIX A TO PART 129—APPLICATION FOR OPERATIONS SPECIFICATIONS BY FOREIGN AIR CARRIERS

AUTHORITY: 49 U.S.C. 1372, 40113, 40119, 44101, 44701–44702, 44705, 44709–44711, 44713, 44716–44717, 44722, 44901–44904, 44906, 44912, 46105, Pub. L. 107–71 sec. 104.

SOURCE: Docket No. 1994, 29 FR 1720, Feb. 5, 1964, unless otherwise noted.

SPECIAL FEDERAL AVIATION REGULATION NO. 97

EDITORIAL NOTE: For the text of SFAR No. 97, see part 91 of this chapter.

Subpart A—General

§ 129.1 Applicability and definitions.

(a) *Foreign air carrier operations in the United States.* This part prescribes rules governing the operation within the United States of each foreign air carrier holding the following:

(1) A permit issued by the Civil Aeronautics Board or the U.S. Department of Transportation under 49 U.S.C. 41301 through 41306 (formerly section 402 of the Federal Aviation Act of 1958, as amended), or

(2) Other appropriate economic or exemption authority issued by the Civil Aeronautics Board or the U.S. Department of Transportation.

(b) *Operations of U.S.-registered aircraft solely outside the United States.* In addition to the operations specified under paragraph (a) of this section, §§ 129.14 and 129.20 and subpart B of this part also apply to U.S.-registered aircraft operated solely outside the United States in common carriage by a foreign person or foreign air carrier.

(c) *Definitions.* For the purpose of this part—

(1) *Foreign person* means any person who is not a citizen of the United States and who operates a U.S.-registered aircraft in common carriage solely outside the United States.

(2) *Years in service* means the calendar time elapsed since an aircraft was issued its first U.S. or first foreign airworthiness certificate.

[Doc. No. FAA–1999–5401, 67 FR 72762, Dec. 6, 2002, as amended by Amdt. 129–43, 72 FR 63413, Nov. 8, 2007]

§ 129.11 Operations specifications.

(a) Each foreign air carrier shall conduct its operations within the United States in accordance with operations specifications issued by the Administrator under this part and in accordance with the Standards and Recommended Practices contained in part I (International Commercial Air Transport) of Annex 6 (Operation of Aircraft) to the Convention on International

Civil Aviation Organization. Operations specifications shall include:

(1) Airports to be used;

(2) Routes or airways to be flown, and

(3) Such operations rules and practices as are necessary to prevent collisions between foreign aircraft and other aircraft.

(4) Registration markings of each U.S.-registered aircraft.

(5) Registration and markings of each aircraft that meets equipment requirements of §129.28(a).

(b) An application for the issue or amendment of operations specifications must be submitted in duplicate, at least 30 days before beginning operations in the United States, to the Flight Standards District Office in the area where the applicant's principal business office is located or to the Regional Flight Standards Division Manager having jurisdiction over the area to be served by the operations. If a military airport of the United States is to be used as a regular, alternate, refueling, or provisional airport, the applicant must obtain written permission to do so from the Washington Headquarters of the military organization concerned and submit two copies of that written permission with his application. Detailed requirements governing applications for the issue or amendment of operations specifications are contained in Appendix A.

(c) No person operating under this part may operate or list on its operations specifications any airplane listed on operations specifications issued under part 125.

[Doc. No. 1994, 29 FR 1720, Feb. 5, 1964, as amended by Amdt. 129–14, 52 FR 20029, May. 28, 1987; Amdt. 129–19, 54 FR 39294, Sept. 25, 1989; 54 FR 51972, Dec. 19, 1989; Amdt. 129–33, 67 FR 42455, June 21, 2002; 72 FR 7740, Feb. 20, 2007]

§129.13 Airworthiness and registration certificates.

(a) Except as provided in §129.28(b) of this part, no foreign air carrier may operate any aircraft within the United States unless that aircraft carries current registration and airworthiness certificates issued or validated by the country of registry and displays the nationality and registration markings of that country.

(b) No foreign air carrier may operate a foreign aircraft within the United States except in accordance with the limitations on maximum certificated weights prescribed for that aircraft and that operation by the country of manufacture of the aircraft.

[Docket No. 1994, 29 FR 1720, Feb. 5, 1964, as amended byAmdt. 129–33, 67 FR 42455, June 21, 2002]

§129.14 Maintenance program and minimum equipment list requirements for U.S.-registered aircraft.

(a) Each foreign air carrier and each foreign person operating a U.S.-registered aircraft within or outside the United States in common carriage shall ensure that each aircraft is maintained in accordance with a program approved by the Administrator.

(b) No foreign air carrier or foreign person may operate a U.S.-registered aircraft with inoperable instruments or equipment unless the following conditions are met:

(1) A master minimum equipment list exists for the aircraft type.

(2) The foreign operator submits for review and approval its aircraft minimum equipment list based on the master minimum equipment list, to the FAA Flight Standards District Office having geographic responsibility for the operator. The foreign operator must show, before minimum equipment list approval can be obtained, that the maintenance procedures used under its maintenance program are adequate to support the use of its minimum equipment list.

(3) For leased aircraft maintained and operated under a U.S. operator's continuous airworthiness maintenance program and FAA-approved minimum equipment list, the foreign operator submits the U.S. operator's approved continuous airworthiness maintenance program and approved aircraft minimum equipment list to the FAA office prescribed in paragraph (b)(2) of this section for review and evaluation. The foreign operator must show that it is capable of operating under the lessor's approved maintenance program and that it is also capable of meeting the maintenance and operational requirements specified in the lessor's approved minimum equipment list.

(4) The FAA letter of authorization permitting the operator to use an approved minimum equipment list is carried aboard the aircraft. The minimum equipment list and the letter of authorization constitute a supplemental type certificate for the aircraft.

(5) The approved minimum equipment list provides for the operation of the aircraft with certain instruments and equipment in an inoperable condition.

(6) The aircraft records available to the pilot must include an entry describing the inoperable instruments and equipment.

(7) The aircraft is operated under all applicable conditions and limitations contained in the minimum equipment list and the letter authorizing the use of the list.

[Doc. No. 24856, 52 FR 20029, May 28, 1987]

§ 129.15 Flight crewmember certificates.

No person may act as a flight crewmember unless he holds a current certificate or license issued or validated by the country in which that aircraft is registered, showing his ability to perform his duties connected with operating that aircraft.

[Doc. No. 7084, 30 FR 16074, Dec. 24, 1965]

§ 129.17 Aircraft communication and navigation equipment for operations under IFR or over the top.

(a) *Aircraft navigation equipment requirements—General.* No foreign air carrier may conduct operations under IFR or over the top unless—

(1) The en route navigation aids necessary for navigating the aircraft along the route (e.g., ATS routes, arrival and departure routes, and instrument approach procedures, including missed approach procedures if a missed approach routing is specified in the procedure) are available and suitable for use by the aircraft navigation equipment required by this section;

(2) The aircraft used in those operations is equipped with at least the following—

(i) Except as provided in paragraph (c) of this section, two approved independent navigation systems suitable for navigating the aircraft along the route to be flown within the degree of accuracy required for ATC;

(ii) One marker beacon receiver providing visual and aural signals; and

(iii) One ILS receiver; and

(3) Any RNAV system used to meet the navigation equipment requirements of this section is authorized in the foreign air carrier's operations specifications.

(b) *Aircraft communication equipment requirements.* No foreign air carrier may operate an aircraft under IFR or over the top, unless it is equipped with—

(1) At least two independent communication systems necessary under normal operating conditions to fulfill the functions specified in §121.347(a) of this chapter; and

(2) At least one of the communication systems required by paragraph (b)(1) of this section must have two-way voice communication capability.

(c) *Use of a single independent navigation system for operations under IFR or over the top.* Notwithstanding the requirements of paragraph (a)(2)(i) of this section, the aircraft may be equipped with a single independent navigation system suitable for navigating the aircraft along the route to be flown within the degree of accuracy required for ATC if:

(1) It can be shown that the aircraft is equipped with at least one other independent navigation system suitable, in the event of loss of the navigation capability of the single independent navigation system permitted by this paragraph at any point along the route, for proceeding safely to a suitable airport and completing an instrument approach; and

(2) The aircraft has sufficient fuel so that the flight may proceed safely to a suitable airport by use of the remaining navigation system, and complete an instrument approach and land.

(d) *VOR navigation equipment.* If VOR navigation equipment is required by paragraph (a) or (c) of this section, no foreign air carrier may operate an aircraft unless it is equipped with at least one approved DME or suitable RNAV system.

[Doc. No. FAA–2002–14002, 72 FR 31683, June 7, 2007]

§ 129.18 Collision avoidance system.

Effective January 1, 2005, any airplane you, as a foreign air carrier, operate under part 129 must be equipped and operated according to the following table:

COLLISION AVOIDANCE SYSTEMS

If you operate in the United States any . . .	Then you must operate that airplane with:
(a) Turbine-powered airplane of more than 33,000 pounds maximum certificated takeoff weight.	(1) An appropriate class of Mode S transponder that meets Technical Standard Order (TSO) C–112, or a later version, and one of the followign approved units; (i) TCAS II that meets TSO C–119b (version 7.0), or takeoff weight a later version. (ii) TCAS II that meets TSO C–119a (version 6.04A Enhanced) that was installed in that airplane before May 1, 2003. If that TCAS II version 6.04A Enhanced no longer can be repaired to TSO C–119a standards, it must be replaced with a TCAS II that meets TSO C–119b (version 7.0), or a later version. (iii) A collision avoidance system equivalent to TSO C–119b (version 7.0), or a later version, capable of coordinating with units that meet TSO C–119a (version 6.04A Enhanced), or a later version.
(b) Turbine-powered airplane with a passenger-seat configuration, excluding any pilot seat, or 10–30 seats.	(1) TCAS I that meets TSO C–118, or a later version, or (2) A collision avoidance system equivalent to excluding any TSO C–118, or a later version, or (3) A collision avoidance system and Mode S transponder that meet paragraph (a)(1) of this section.

[Doc. No. FAA–2001–10910, 68 FR 15903, Apr. 1, 2003]

§ 129.19 Air traffic rules and procedures.

(a) Each pilot must be familiar with the applicable rules, the navigational and communications facilities, and the air traffic control and other procedures, of the areas to be traversed by him within the United States.

(b) Each foreign air carrier shall establish procedures to assure that each of its pilots has the knowledge required by paragraph (a) of this section and shall check the ability of each of its pilots to operate safely according to applicable rules and procedures.

(c) Each foreign air carrier shall conform to the practices, procedures, and other requirements prescribed by the Administrator for U.S. air carriers for the areas to be operated in.

§ 129.20 Digital flight data recorders.

No person may operate an aircraft under this part that is registered in the United States unless it is equipped with one or more approved flight recorders that use a digital method of recording and storing data and a method of readily retrieving that data from the storage medium. The flight data recorder must record the parameters that would be required to be recorded if the aircraft were operated under part 121, 125, or 135 of this chapter, and must be installed by the compliance times required by those parts, as applicable to the aircraft.

[Doc. No. 28109, 62 FR 38396, July 17, 1997]

§ 129.21 Control of traffic.

(a) Subject to applicable immigration laws and regulations, each foreign air carrier must furnish sufficient personnel necessary to provide two-way voice communications between its aircraft and stations at places where the FAA finds that communication is necessary but cannot be maintained in a language with which station operators are familiar.

(b) Each person furnished by a foreign air carrier under paragraph (a) of this section must be able to speak English and the language necessary to maintain communications with its aircraft and must assist station operators in directing traffic.

[Doc. No. FAA–2002–14002, 72 FR 31683, June 7, 2007]

§ 129.22 Communication and navigation equipment for rotorcraft operations under VFR over routes navigated by pilotage.

(a) No foreign air carrier may operate a rotorcraft under VFR over routes

that can be navigated by pilotage unless the rotorcraft is equipped with the radio communication equipment necessary under normal operating conditions to fulfill the following:

(1) Communicate with at least one appropriate station from any point on the route;

(2) Communicate with appropriate air traffic control facilities from any point within Class B, Class C, or Class D airspace, or within a Class E surface area designated for an airport in which flights are intended; and

(3) Receive meteorological information from any point en route.

(b) No foreign air carrier may operate a rotorcraft at night under VFR over routes that can be navigated by pilotage unless that rotorcraft is equipped with—

(1) Radio communication equipment necessary under normal operating conditions to fulfill the functions specified in paragraph (a) of this section; and

(2) Navigation equipment suitable for the route to be flown.

[Doc. No. FAA–2002–14002, 72 FR 31683, June 7, 2007]

§ 129.23 Transport category cargo service airplanes: Increased zero fuel and landing weights.

(a) Notwithstanding the applicable structural provisions of the transport category airworthiness regulations, but subject to paragraphs (b) through (g) of this section, a foreign air carrier may operate (for cargo service only) any of the following transport category airplanes (certificated under part 4b of the Civil Air Regulations effective before March 13, 1956) at increased zero fuel and landing weights—

(1) DC–6A, DC–6B, DC–7B, and DC–7C; and

(2) L–1049 B, C, D, E, F, G, and H, and the L–1649A when modified in accordance with supplemental type certificate SA 4–1402.

(b) The zero fuel weight (maximum weight of the airplane with no disposable fuel and oil) and the structural landing weight may be increased beyond the maximum approved in full compliance with applicable rules only if the Administrator finds that—

(1) The increase is not likely to reduce seriously the structural strength;

(2) The probability of sudden fatigue failure is not noticeably increased;

(3) The flutter, deformation, and vibration characteristics do not fall below those required by applicable regulations; and

(4) All other applicable weight limitations will be met.

(c) No zero fuel weight may be increased by more than five percent, and the increase in the structural landing weight may not exceed the amount, in pounds, of the increase in zero fuel weight.

(d) Each airplane must be inspected in accordance with the approved special inspection procedures, for operations at increased weights, established and issued by the manufacturer of the type of airplane.

(e) A foreign air carrier may not operate an airplane under this section unless the country of registry requires the airplane to be operated in accordance with the passenger-carrying transport category performance operating limitations in part 121 or the equivalent.

(f) The Airplane Flight Manual for each airplane operated under this section must be appropriately revised to include the operating limitations and information needed for operation at the increased weights.

(g) Each airplane operated at an increased weight under this section must, before it is used in passenger service, be inspected under the special inspection procedures for return to passenger service established and issued by the manufacturer and approved by the Administrator.

[Doc. No. 6403, 29 FR 19098, Dec. 30, 1964]

§ 129.25 Airplane security.

Foreign air carriers conducting operations under this part must comply with the applicable security requirements in 49 CFR chapter XII.

[67 FR 8350, Feb. 22, 2002]

§ 129.28 Flightdeck security.

(a) After August 20, 2002, except for a newly manufactured airplane on a nonrevenue delivery flight, no foreign air carrier covered by § 129.1(a), may operate:

(1) A passenger carrying transport category airplane within the United States, except for overflights, unless the airplane is equipped with a door between the passenger and pilot compartment that incorporates features to restrict the unwanted entry of persons into the flightdeck that are operable from the flightdeck only; or

(2) A transport category all-cargo airplane within the United States, except for overflights, that has a door installed between the pilot compartment and any other occupied compartment on or after June 21, 2002, unless the door incorporates features to restrict the unwanted entry of persons into the flightdeck that are operable from the flightdeck only.

(b) To the extent necessary to meet the requirements of paragraph (a) of this section, the requirements of §129.13(a) to maintain airworthiness certification are waived until April 9, 2003. After that date, the requirements of §129.13(a) apply in full.

(c) After April 9, 2003, except for a newly manufactured airplane on a non-revenue delivery flight, no foreign air carrier covered by §129.1(a) may operate a passenger carrying transport category airplane, or a transport category all-cargo airplane that has a door installed between the pilot compartment and any other occupied compartment on or after June 21, 2002, within the United States, except for overflights, unless the airplane's flightdeck door installation meets the requirements of paragraphs (c)(1) and(2) of this section or an alternative standard found acceptable to the Administrator.

(1) Except for a newly manufactured airplane on a non-revenue delivery flight, no foreign air carrier covered by §129.1(a) may operate:

(i) After April 9, 2003, a passenger carrying transport category airplane within the United States, except on overflights, unless the airplane's flightdeck door installation meets the requirements of paragraphs (c)(2) and (c)(3) of this section or an alternative standard found acceptable to the Administrator.

(ii) After October 1, 2003, a transport category all-cargo airplane that had a door installed between the pilot compartment and any other occupied compartment on or after June 21, 2002, within the United States, except on overflights, unless the airplane's flightdeck door installation meets the requirements of paragraphs (c)(2) and (c)(3) of this section or an alternative standard found acceptable to the Administrator; or the operator must implement a security program approved by the Transportation Security Administration (TSA) for the operation of all airplanes in that operator's fleet.

(2) The door must resist forcible intrusion by unauthorized persons and be capable of withstanding impacts of 300 joules (221.3 foot-pounds) at the critical locations on the door, as well as a 1,113-newton (250 pounds) constant tensile load on the knob or handle, and

(3) The door must resist penetration by small arms fire and fragmentation devices to a level equivalent to Level IIIa of the National Institute of Justice Standard (NIJ) 0101.04.

(d) After August 20, 2002, no foreign air carrier covered by §129.1 may operate a passenger carrying transport category airplane, or a transport category all-cargo airplane that has a door installed between the pilot compartment and any other occupied compartment on or after June 21, 2002, within the United States, except for overflights, unless the carrier has procedures in place that are acceptable to the civil aviation authority responsible for oversight of the foreign air carriers operating under this part to prevent access to the flightdeck except as authorized as follows:

(1) No person other than a person who is assigned to perform duty on the flight deck may have a key to the flight deck door that will provide access to the flightdeck.

(2) Except when it is necessary to permit access and egress by persons authorized in accordance with paragraph (d)(3) of this section, a pilot in command of an airplane that has a lockable flight deck door in accordance with §129.28(a) and that is carrying passengers shall ensure that the door separating the flight crew compartment from the passenger compartment is closed and locked at all times when the airplane is being operated.

(3) No person may admit any person to the flight deck of an airplane unless the person being admitted is—

(i) A crewmember,

(ii) An inspector of the civil aviation authority responsible for oversight of the part 129 operator, or

(iii) Any other person authorized by the civil aviation authority responsible for oversight of the part 129 operator.

(e) The requirements of paragraph (a) through (d) except (d)(3), do not apply to transport category passenger carrying airplanes originally type certificated with a maximum passenger seating configuration of 19 seats or less, or to all-cargo airplanes with a payload capacity of 7,500 pounds or less.

[Doc. No. FAA–2002–12504, 67 FR 79824, Dec. 30, 2002, as amended by Amdt. 129–38, 68 FR 42882, July 18, 2003]

§ 129.29 Smoking prohibitions.

(a) No person may smoke and no operator may permit smoking in any aircraft lavatory.

(b) Unless otherwise authorized by the Secretary of Transportation, no person may smoke and no operator may permit smoking anywhere on the aircraft (including the passenger cabin and the flight deck) during scheduled passenger foreign air transportation or during any scheduled passenger interstate or intrastate air transportation.

[Doc. No. FAA–2000–7467, 65 FR 36780, June 9, 2000]

Subpart B—Continued Airworthiness and Safety Improvements

§ 129.101 Purpose and definition.

(a) This subpart requires a foreign person or foreign air carrier operating a U.S. registered airplane in common carriage to support the continued airworthiness of each airplane. These requirements may include, but are not limited to, revising the maintenance program, incorporating design changes, and incorporating revisions to Instructions for Continued Airworthiness.

(b) For purposes of this subpart, the ''FAA Oversight Office'' is the aircraft certification office or office of the Transport Airplane Directorate with oversight responsibility for the relevant type certificate or supplemental type certificate, as determined by the Administrator.

[Amdt. 129–43, 72 FR 63413, Nov. 8, 2007]

§ 129.103 [Reserved]

§ 129.105 Aging airplane inspections and records reviews for U.S.-registered multiengine aircraft.

(a) *Operation after inspection and records review.* After the dates specified in this paragraph, a foreign air carrier or foreign person may not operate a U.S.-registered multiengine airplane under this part unless the Administrator has notified the foreign air carrier or foreign person that the Administrator has completed the aging airplane inspection and records review required by this section. During the inspection and records review, the foreign air carrier or foreign person must demonstrate to the Administrator that the maintenance of age sensitive parts and components of the airplane has been adequate and timely enough to ensure the highest degree of safety.

(1) *Airplanes exceeding 24 years in service on* December 8, 2003; *initial and repetitive inspections and records reviews.* For an airplane that has exceeded 24 years in service on December 8, 2003, no later than December 5, 2007, and thereafter at intervals not to exceed 7 years.

(2) *Airplanes exceeding 14 years in service but not 24 years in service on* December 8, 2003; *initial and repetitive inspections and records reviews.* For an airplane that has exceeded 14 years in service, but not 24 years in service, on December 8, 2003, no later than December 4, 2008, and thereafter at intervals not to exceed 7 years.

(3) *Airplanes not exceeding 14 years in service on* December 8, 2003; *initial and repetitive inspections and records reviews.* For an airplane that has not exceeded 14 years in service on December 8, 2003, no later than 5 years after the start of the airplane's 15th year in service and thereafter at intervals not to exceed 7 years.

(b) *Unforeseen schedule conflict.* In the event of an unforeseen scheduling conflict for a specific airplane, the Administrator may approve an extension of up to 90 days beyond an interval specified in paragraph (b) of this section.

(c) *Airplane and records availability.* The foreign air carrier or foreign person must make available to the Administrator each U.S.-registered multiengine airplane for which an inspection and records review is required under this section, in a condition for inspection specified by the Administrator, together with the records containing the following information:

(1) Total years in service of the airplane;

(2) Total time in service of the airframe;

(3) Total flight cycles of the airframe;

(4) Date of the last inspection and records review required by this section;

(5) Current status of life-limited parts of the airframe;

(6) Time since the last overhaul of all structural components required to be overhauled on a specific time basis;

(7) Current inspection status of the airplane, including the time since the last inspection required by the inspection program under which the airplane is maintained;

(8) Current status of applicable airworthiness directives, including the date and methods of compliance, and if the airworthiness directive involves recurring action, the time and date when the next action is required;

(9) A list of major structural alterations; and

(10) A report of major structural repairs and the current inspection status for those repairs.

(d) *Notification to Administrator.* Each foreign air carrier or foreign person must notify the Administrator at least 60 days before the date on which the airplane and airplane records will be made available for the inspection and records review.

[Doc. No. FAA–1999–5401, 67 FR 72763, Dec. 6, 2002, as amended by Amdt. 129–34, 70 FR 5533, Feb. 2, 2005; Amdt. 129–41, 70 FR 23936, May 6, 2005. Redesignated by Amdt. 129–43, 72 FR 63413, Nov. 8, 2007]

§ 129.107 Repairs assessment for pressurized fuselages.

(a) No foreign air carrier or foreign persons operating a U.S. registered airplane may operate an Airbus Model A300 (excluding −600 series), British Aerospace Model BAC 1–11, Boeing Model 707, 720, 727, 737, or 747, McDonnell Douglas Model DC–8, DC–9/MD–80 or DC–10, Fokker Model F28, or Lockheed Model L–1011 beyond the applicable flight cycle implementation time specified below, or May 25, 2001, whichever occurs later, unless operations specifications have been issued to reference repair assessment guidelines applicable to the fuselage pressure boundary (fuselage skin, door skin, and bulkhead webs), and those guidelines are incorporated in its maintenance program. The repair assessment guidelines must be approved by the FAA Aircraft Certification Office (ACO), or office of the Transport Airplane Directorate, having cognizance over the type certificate for the affected airplane.

(1) For the Airbus Model A300 (excluding the –600 series), the flight cycle implementation time is:

(i) Model B2: 36,000 flights.

(ii) Model B4–100 (including Model B4–2C): 30,000 flights above the window line, and 36,000 flights below the window line.

(iii) Model B4–200: 25,500 flights above the window line, and 34,000 flights below the window line.

(2) For all models of the British Aerospace BAC 1–11, the flight cycle implementation time is 60,000 flights.

(3) For all models of the Boeing 707, the flight cycle implementation time is 15,000 flights.

(4) For all models of the Boeing 720, the flight cycle implementation time is 23,000 flights.

(5) For all models of the Boeing 727, the flight cycle implementation time is 45,000 flights.

(6) For all models of the Boeing 737, the flight cycle implementation time is 60,00 flights.

(7) For all models of the Boeing 747, the flight cycle implementation time is 15,000 flights.

(8) For all models of the McDonnell Douglas DC–8, the flight cycle implementation time is 30,000 flights.

(9) For all models of the McDonnell Douglas DC–9/MD–80, the flight cycle implementation time is 60,000 flights.

(10) For all models of the McDonnell Douglas DC–10, the flight cycle implementation time is 30,000 flights.

(11) For all models of the Lockheed L–1011, the flight cycle implementation time is 27,000 flights.

(12) For the Fokker F–28 Mark 1000, 2000, 3000, and 4000, the flight cycle implementation time is 60,000 flights.

(b) [Reserved]

[Doc. No. 29104, 65 FR 24126, Apr. 25, 2000; 65 FR 35703, June 5, 2000, as amended by Amdt. 129–30, 66 FR 23131, May 7, 2001; Amdt. 129–35, 67 FR 72834, Dec. 9, 2002; Amdt. 129–39, 69 FR 45942, July 30, 2004. Redesignated and amended by Amdt. 129–43, 72 FR 63413, Nov. 8, 2007]

§ 129.109 Supplemental inspections for U.S.-registered aircraft.

(a) *Applicability*. This section applies to U.S.-registered, transport category, turbine powered airplanes with a type certificate issued after January 1, 1958 that as a result of original type certification or later increase in capacity have—

(1) A maximum type certificated passenger seating capacity of 30 or more; or

(2) A maximum payload capacity of 7,500 pounds or more.

(b) *General requirements*. After December 20, 2010, a foreign air carrier or foreign person may not operate an airplane under this part unless the following requirements have been met:

(1) The maintenance program for the airplane includes FAA-approved damage-tolerance-based inspections and procedures for airplane structure susceptible to fatigue cracking that could contribute to a catastrophic failure. These inspections and procedures must take into account the adverse affects repairs, alterations, and modifications may have on the fatigue cracking and the inspection of this airplane structure.

(2) The damage-tolerance-based inspections and procedures identified in this section and any revisions to these inspections and procedures must be approved by the Aircraft Certification Office or office of the Transport Airplane Directorate with oversight responsibility for the relevant type certificate or supplemental type certificate, as determined by the Administrator. The operator must include the damage-tolerance-based inspections and procedures in the operator's FAA-approved maintenance program.

[Doc. No. FAA–1999–5401, 70 FR 5532, Feb. 2, 2005. Redesignated by Amdt. 129–43, 72 FR 63413, Nov. 8, 2007]

EFFECTIVE DATE NOTE: At 72 FR 70508, Dec. 12, 2007, § 129.109 was amended by revising paragraph (b), effective Jan. 11, 2008. For the convenience of the user, the revised text is set forth as follows:

§ 129.109 Supplemental inspections for U.S.-registered aircraft.

* * * * *

(b) *General requirements*. After December 20, 2010, a certificate holder may not operate an airplane under this part unless the following requirements have been met:

(1) *Baseline Structure*. The certificate holder's maintenance program for the airplane includes FAA-approved damage-tolerance-based inspections and procedures for airplane structure susceptible to fatigue cracking that could contribute to a catastrophic failure. For the purpose of this section, this structure is termed ''fatigue critical structure.''

(2) *Adverse effects of repairs, alterations, and modifications*. The maintenance program for the airplane includes a means for addressing the adverse effects repairs, alterations, and modifications may have on fatigue critical structure and on inspections required by paragraph (b)(1) of this section. The means for addressing these adverse effects must be approved by the FAA Oversight Office.

(3) *Changes to maintenance program*. The changes made to the maintenance program required by paragraph (b)(1) and (b)(2) of this section, and any later revisions to these changes, must be submitted to the Principal Maintenance Inspector for review and approval.

§ 129.111 Electrical wiring interconnection systems (EWIS) maintenance program.

(a) Except as provided in paragraph (f) of this section, this section applies to transport category, turbine-powered airplanes with a type certificate issued after January 1, 1958, that, as a result of original type certification or later increase in capacity, have—

(1) A maximum type-certificated passenger capacity of 30 or more, or

(2) A maximum payload capacity of 7500 pounds or more.

(b) After March 10, 2011, no foreign person or foreign air carrier may operate a U.S.-registered airplane identified in paragraph (a) of this section unless the maintenance program for that airplane includes inspections and procedures for EWIS.

(c) The proposed EWIS maintenance program changes must be based on EWIS Instructions for Continued Airworthiness (ICA) that have been developed in accordance with the provisions of Appendix H of part 25 of this chapter applicable to each affected airplane (including those ICA developed for supplemental type certificates installed on each airplane) and that have been approved by the FAA Oversight Office.

(1) For airplanes subject to §26.11 of this chapter, the EWIS ICA must comply with paragraphs H25.5(a)(1) and (b).

(2) For airplanes subject to §25.1729 of this chapter, the EWIS ICA must comply with paragraph H25.4 and all of paragraph H25.5.

(d) After March 10, 2011, before returning a U.S.-registered airplane to service after any alterations for which EWIS ICA are developed, the foreign person or foreign air carrier must include in the maintenance program for that airplane inspections and procedures for EWIS based on those ICA.

(e) The EWIS maintenance program changes identified in paragraphs (c) and (d) of this section and any later EWIS revisions must be submitted to the Principal Inspector or Flight Standards International Field Office responsible for review and approval.

(f) This section does not apply to the following airplane models:

(1) Lockheed L–188
(2) Bombardier CL–44
(3) Mitsubishi YS–11
(4) British Aerospace BAC 1–11
(5) Concorde
(6) deHavilland D.H. 106 Comet 4C
(7) VFW–Vereinigte Flugtechnische Werk VFW–614
(8) Illyushin Aviation IL 96T
(9) Bristol Aircraft Britannia 305
(10) Handley Page Herald Type 300
(11) Avions Marcel Dassault—Breguet Aviation Mercure 100C
(12) Airbus Caravelle
(13) Lockheed L–300

[Amdt. 129–43, 72 FR 63413, Nov. 8, 2007]

§129.113 Fuel tank system maintenance program.

(a) Except as provided in paragraph (g) of this section, this section applies to transport category, turbine-powered airplanes with a type certificate issued after January 1, 1958, that, as a result of original type certification or later increase in capacity, have—

(1) A maximum type-certificated passenger capacity of 30 or more, or

(2) A maximum payload capacity of 7500 pounds or more.

(b) For each U.S.-registered airplane on which an auxiliary fuel tank is installed under a field approval, before June 16, 2008, the foreign person or foreign air carrier operating the airplane must submit to the FAA Oversight Office proposed maintenance instructions for the tank that meet the requirements of Special Federal Aviation Regulation No. 88 (SFAR 88) of this chapter.

(c) After December 16, 2008, no foreign person or foreign air carrier may operate a U.S.-registered airplane identified in paragraph (a) of this section unless the maintenance program for that airplane has been revised to include applicable inspections, procedures, and limitations for fuel tank systems.

(d) The proposed fuel tank system maintenance program revisions must be based on fuel tank system Instructions for Continued Airworthiness (ICA) that have been developed in accordance with the applicable provisions of SFAR 88 of this chapter or §25.1529 and part 25, Appendix H, of this chapter, in effect on June 6, 2001 (including those developed for auxiliary fuel tanks, if any, installed under supplemental type certificates or other design approval) and that have been approved by the FAA Oversight Office.

(e) After December 16, 2008, before returning a U.S.-registered airplane to service after any alteration for which fuel tank ICA are developed under SFAR 88, or under §25.1529 in effect on June 6, 2001, the foreign person or foreign air carrier must include in the maintenance program for the airplane inspections and procedures for the fuel tank system based on those ICA.

(f) The fuel tank system maintenance program changes identified in paragraphs (d) and (e) of this section and any later fuel tank system revisions must be submitted to the Principal Inspector or Flight Standards International Field Office responsible for review and approval.

(g) This section does not apply to the following airplane models:

(1) Bombardier CL–44
(2) Concorde
(3) deHavilland D.H. 106 Comet 4C
(4) VFW–Vereinigte Flugtechnische Werk VFW–614
(5) Illyushin Aviation IL 96T
(6) Bristol Aircraft Britannia 305
(7) Handley Page Herald Type 300
(8) Avions Marcel Dassault—Breguet Aviation Mercure 100C
(9) Airbus Caravelle
(10) Lockheed L–300

[Amdt. 129–43, 72 FR 63413, Nov. 8, 2007]

APPENDIX A TO PART 129—APPLICATION FOR OPERATIONS SPECIFICATIONS BY FOREIGN AIR CARRIERS

(a) *General.* Each application must be executed by an authorized officer or employee of the applicant having knowledge of the matter set forth therein, and must have attached thereto two copies of the appropriate written authority issued to that officer or employee by the applicant. Negotiations for permission to use airports under U.S. military jurisdiction is effected through the respective embassy of the foreign government and the United States Department of State.

(b) *Format of application.* The following outline must be followed in completing the information to be submitted in the application.

APPLICATION FOR FOREIGN AIR CARRIER OPERATIONS SPECIFICATIONS

(OUTLINE)

In accordance with the Federal Aviation Act of 1958 (49 U.S.C. 1372) and part 129 of the Federal Air Regulations, application is hereby made for the issuance of Foreign Operations Specifications.

Give exact name and full post office address of applicant.

Give the name, title, and post office address (within the United States if possible) of the official or employee to whom correspondence in regard to the application is to be addressed.

Unless otherwise specified, the applicant must submit the following information only with respect to those parts of his proposed operations that will be conducted within the United States.

SECTION I. *Operations.* State whether the operation proposed is day or night, visual flight rules, instrument flight rules, or a particular combination thereof.

SEC. II. *Operational plans.* State the route by which entry will be made into the United States, and the route to be flown therein.

SEC. III. A. *Route.* Submit a map suitable for aerial navigation upon which is indicated the exact geographical track of the proposed route from the last point of foreign departure to the United States terminal, showing the regular terminal, and alternate airports, and radio navigational facilities. This material will be indicated in a manner that will facilitate identification. The applicant may use any method that will clearly distinguish the information, such as different colors, different types of lines, etc. For example, if different colors are used, the identification will be accomplished as follows:

1. Regular route: Black.
2. Regular terminal airport: Green circle.
3. Alternate airports: Orange circle.
4. The location of radio navigational facilities which will be used in connection with the proposed operation, indicating the type of facility to be used, such as radio range ADF, VOR, etc.

B. *Airports.* Submit the following information with regard to each regular terminal and alternate to be used in the conduct of the proposed operation:

1. Name of airport or landing area.
2. Location (direction distance to and name of nearest city or town).

SEC. IV. *Communications facilities.* List all communication facilities to be used by the applicant in the conduct of the proposed operations within the United States and over that portion of the route between the last point of foreign departure and the United States.

SEC. V. *Aircraft.* Submit the following information in regard to each type and model aircraft to be used.

A. *Aircraft.*

1. Manufacturer and model number.
2. State of origin.
3. Single-engine or multiengine. If multiengine, indicate number of engines.
4. What is the maximum takeoff and landing weight to be used for each type of aircraft?
5. Registration markings of each U.S.-registered aircraft.

B. *Aircraft Radio.* List aircraft radio equipment necessary for instrument operation within the United States.

C. *Licensing.* State name of country by whom aircraft are certificated.

SEC. VI. *Airmen.* List the following information with respect to airmen to be employed in the proposed operation within the United States.

A. State the type and class of certificate held by each flight crewmember.

B. State whether or not pilot personnel have received training in the use of navigational facilities necessary for en route operation and instrument letdowns along or adjacent to the route to be flown within the United States.

C. State whether or not personnel are familiar with those parts of the Federal Air Regulations pertaining to the conduct of foreign air carrier operations within the United States.

D. State whether pilot personnel are able to speak and understand the English language to a degree necessary to enable them to properly communicate with Airport Traffic Control Towers and Airway Radio Communication Stations using radiotelephone communications.

SEC. VII. *Dispatchers.*

A. Describe briefly the dispatch organization which you propose to set up for air carrier operations within the United States.

B. State whether or not the dispatching personnel are familiar with the rules and regulations prescribed by the Federal Air Regulations governing air carrier operations.

C. Are dispatching personnel able to read and write the English language to a degree necessary to properly dispatch flights within the United States?

D. Are dispatching personnel certificated by the country of origin?

SEC. VIII. *Additional Data.*

A. Furnish such additional information and substantiating data as may serve to expedite the issuance of the operations specifications.

B. Each application shall be concluded with a statement as follows:

I certify that the above statements are true.

Signed this _____ day of _____ 19___

_____ (Name of Applicant)

By _____

(Name of person duly authorized to execute this application on behalf of the applicant.)

[Doc. No. 1994, 29 FR 1720, Feb. 5, 1964, as amended by Amdt. 129–14, 52 FR 20029, May. 28, 1987; Amdt. 129–19, 54 FR 39294, Sept. 25, 1989; 54 FR 51972, Dec. 19, 1989; Amdt. 129–42, 72 FR 31684, June 7, 2007]

PART 133—ROTORCRAFT EXTERNAL-LOAD OPERATIONS

Subpart A—Applicability

Sec.

133.1 Applicability.

Subpart B—Certification Rules

133.11 Certificate required.
133.13 Duration of certificate.
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133.15 Application for certificate issuance or renewal.
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133.47 Rotorcraft-load combination flight manual.
133.49 Markings and placards.
133.51 Airworthiness certification.

AUTHORITY: 49 U.S.C. 106(g), 40113, 44701–44702.

SOURCE: Docket No. 1529, 29 FR 603, Jan. 24, 1964, unless otherwise noted.

Subpart A—Applicability

§ 133.1 Applicability.

This part prescribes—

(a) Airworthiness certification rules for rotorcraft used in; and

(b) Operating and certification rules governing the conduct of rotorcraft external-load operations in the United States by any person.

(c) The certification rules of this part do not apply to—

(1) Rotorcraft manufacturers when developing external-load attaching means;

(2) Rotorcraft manufacturers demonstrating compliance of equipment utilized under this part or appropriate portions of part 27 or 29 of this chapter;

(3) Operations conducted by a person demonstrating compliance for the

issuance of a certificate or authorization under this part;

(4) Training flights conducted in preparation for the demonstration of compliance with this part; or

(5) A Federal, State, or local government conducting operations with public aircraft.

(d) For the purpose of this part, a person other than a crewmember or a person who is essential and directly connected with the external-load operation may be carried only in approved Class D rotorcraft-load combinations.

[Doc. No. 15176, 42 FR 24198, May 12, 1977, as amended by Amdt. 133–9, 51 FR 40707, Nov. 7, 1986]

Subpart B—Certification Rules

§ 133.11 Certificate required.

(a) No person subject to this part may conduct rotorcraft external-load operations within the United States without, or in violation of the terms of, a Rotorcraft External-Load Operator Certificate issued by the Administrator under § 133.17.

(b) No person holding a Rotorcraft External-Load Operator Certificate may conduct rotorcraft external-load operations subject to this part under a business name that is not on that certificate.

[Doc. No. 15176, 42 FR 24198, May 12, 1977, as amended by Amdt. 133–7, 42 FR 32531, June 27, 1977; Amdt. 133–9, 51 FR 40707, Nov. 7, 1986]

§ 133.13 Duration of certificate.

Unless sooner surrendered, suspended, or revoked, a Rotorcraft External-Load Operator Certificate expires at the end of the twenty-fourth month after the month in which it is issued or renewed.

[Doc. No. 15176, 42 FR 24198, May 12, 1977, as amended by Amdt. 133–7, 42 FR 32531, June 27, 1977; Amdt. 133–9, 51 FR 40707, Nov. 7, 1986]

§ 133.14 Carriage of narcotic drugs, marihuana, and depressant or stimulant drugs or substances.

If the holder of a certificate issued under this part permits any aircraft owned or leased by that holder to be engaged in any operation that the certificate holder knows to be in violation of § 91.19(a) of this chapter, that operation is a basis for suspending or revoking the certificate.

[Doc. No. 12035, 38 FR 17493, July 2, 1973, as amended by Amdt. 133–10, 54 FR 34332, Aug. 18, 1989]

§ 133.15 Application for certificate issuance or renewal.

Application for an original certificate or renewal of a certificate issued under this part is made on a form, and in a manner, prescribed by the Administrator. The form may be obtained from an FAA Flight Standards District Office. The completed application is sent to the district office that has jurisdiction over the area in which the applicant's home base of operation is located.

[Doc. No. 15176, 42 FR 24198, May 12, 1977, as amended by Amdt. 133–11, 54 FR 39294, Sept. 25, 1989]

§ 133.17 Requirements for issuance of a rotorcraft external-load operator certificate.

If an applicant shows that he complies with §§ 133.19, 133.21, and 133.23, the Administrator issues a Rotorcraft External-Load Operator Certificate to him with an authorization to operate specified rotorcraft with those classes of rotorcraft-load combinations for which he complies with the applicable provisions of subpart D of this part.

§ 133.19 Rotorcraft.

(a) The applicant must have the exclusive use of at least one rotorcraft that—

(1) Was type certificated under, and meets the requirements of, part 27 or 29 of this chapter (but not necessarily with external-load-carrying attaching means installed) or of § 21.25 of this chapter for the special purpose of rotorcraft external-load operations;

(2) Complies with the certification provisions in subpart D of this part that apply to the rotorcraft-load combinations for which authorization is requested; and

(3) Has a valid standard or restricted category airworthiness certificate.

(b) For the purposes of paragraph (a) of this section, a person has exclusive use of a rotorcraft if he has the sole possession, control, and use of it for

flight, as owner, or has a written agreement (including arrangements for the performance of required maintenance) giving him that possession, control, and use for at least six consecutive months.

[Doc. No. 15176, 42 FR 24198, May 12, 1977]

§ 133.21 Personnel.

(a) The applicant must hold, or have available the services of at least one person who holds, a current commercial or airline transport pilot certificate, with a rating appropriate for the rotorcraft prescribed in § 133.19, issued by the Administrator.

(b) The applicant must designate one pilot, who may be the applicant, as chief pilot for rotorcraft external-load operations. The applicant also may designate qualified pilots as assistant chief pilots to perform the functions of the chief pilot when the chief pilot is not readily available. The chief pilot and assistant chief pilots must be acceptable to the Administrator and each must hold a current Commercial or Airline Transport Pilot Certificate, with a rating appropriate for the rotorcraft prescribed in § 133.19.

(c) The holder of a Rotorcraft External-Load Operator Certificate shall report any change in designation of chief pilot or assistant chief pilot immediately to the FAA certificate-holding office. The new chief pilot must be designated and must comply with § 133.23 within 30 days or the operator may not conduct further operations under the Rotorcraft External-Load Operator Certificate unless otherwise authorized by the FAA certificate-holding office.

[Doc. No. 1529, 29 FR 603, Jan. 24, 1964, as amended by Amdt. 133–9, 51 FR 40707, Nov. 7, 1986]

§ 133.23 Knowledge and skill.

(a) Except as provided in paragraph (d) of this section, the applicant, or the chief pilot designated in accordance with § 133.21(b), must demonstrate to the Administrator satisfactory knowledge and skill regarding rotorcraft external-load operations as set forth in paragraphs (b) and (c) of this section.

(b) The test of knowledge (which may be oral or written, at the option of the applicant) covers the following subjects:

(1) Steps to be taken before starting operations, including a survey of the flight area.

(2) Proper method of loading, rigging, or attaching the external load.

(3) Performance capabilities, under approved operating procedures and limitations, of the rotorcraft to be used.

(4) Proper instructions of flight crew and ground workers.

(5) Appropriate rotorcraft-load combination flight manual.

(c) The test of skill requires appropriate maneuvers for each class requested. The appropriate maneuvers for each load class must be demonstrated in the rotorcraft prescribed in § 133.19.

(1) Takeoffs and landings.

(2) Demonstration of directional control while hovering.

(3) Acceleration from a hover.

(4) Flight at operational airspeeds.

(5) Approaches to landing or working area.

(6) Maneuvering the external load into the release position.

(7) Demonstration of winch operation, if a winch is installed to hoist the external load.

(d) Compliance with paragraphs (b) and (c) of this section need not be shown if the Administrator finds, on the basis of the applicant's (or his designated chief pilot's) previous experience and safety record in rotorcraft external-load operations, that his knowledge and skill are adequate.

[Doc. No. 1529, 29 FR 603, Jan. 24, 1964, as amended by Amdt. 133–9, 51 FR 40707, Nov. 7, 1986]

§ 133.25 Amendment of certificate.

(a) The holder of a Rotorcraft External-Load Certificate may apply to the FAA Flight Standards District Office having jurisdiction over the area in which the applicant's home base of operation is located, or to the Flight Standards District Office nearest the area in which operations are to be conducted, for an amendment of the applicant's certificate, to add or delete a rotorcraft-load combination authorization, by executing the appropriate portion of the form used in applying for a Rotorcraft External-Load Operator

Certificate. If the applicant for the amendment shows compliance with §§133.19, and 133.49, the Flight Standards District Office issues an amended Rotorcraft External-Load Operator Certificate to the applicant with authorization to operate with those classes of rotorcraft-load combinations for which the applicant complies with the applicable provisions of subpart D of this part.

(b) The holder of a rotorcraft external-load certificate may apply for an amendment to add or delete a rotorcraft authorization by submitting to the certificate-holding FAA Flight Standards District Office a new list of rotorcraft, by registration number, with the classes of rotorcraft-load combinations for which authorization is requested.

[Doc. No. 18434, 43 FR 52206, Nov. 9, 1978, as amended by Amdt. 133–9, 51 FR 40707, Nov. 7, 1986; Amdt. 133–11, 54 FR 39294, Sept. 25, 1989]

§ 133.27 Availability, transfer, and surrender of certificate.

(a) Each holder of a rotorcraft external-load operator certificate shall keep that certificate and a list of authorized rotorcraft at the home base of operations and shall make it available for inspection by the Administrator upon request.

(b) Each person conducting a rotorcraft external-load operation shall carry a facsimile of the Rotorcraft External-Load Operator Certificate in each rotorcraft used in the operation.

(c) If the Administrator suspends or revokes a Rotorcraft External-Load Operator Certificate, the holder of that certificate shall return it to the Administrator. If the certificate holder, for any other reason, discontinues operations under his certificate, and does not resume operations within two years, he shall return the certificate to the FAA Flight Standards District Office having jurisdiction over the area in which his home base of operations is located.

[Doc. No. 1529, 29 FR 603, Jan. 24, 1964, as amended by Amdt. 133–9, 51 FR 40708, Nov. 7, 1986; Amdt. 133–11, 54 FR 39294, Sept. 25, 1989]

Subpart C—Operating Rules and Related Requirements

§ 133.31 Emergency operations.

(a) In an emergency involving the safety of persons or property, the certificate holder may deviate from the rules of this part to the extent required to meet that emergency.

(b) Each person who, under the authority of this section, deviates from a rule of this part shall notify the Administrator within 10 days after the deviation. Upon the request of the Administrator, that person shall provide the certificate-holding FAA Flight Standards District Office a complete report of the aircraft operation involved, including a description of the deviation and reasons for it.

[Doc. No. 24550, 51 FR 40708, Nov. 7, 1986, as amended by Amdt. 133–11, 54 FR 39294, Sept. 25, 1989]

§ 133.33 Operating rules.

(a) No person may conduct a rotorcraft external-load operation without, or contrary to, the Rotorcraft-Load Combination Flight Manual prescribed in §133.47.

(b) No person may conduct a rotorcraft external-load operation unless—

(1) The rotorcraft complies with §133.19; and

(2) The rotorcraft and rotorcraft-load combination is authorized under the Rotorcraft External-Load Operator Certificate.

(c) Before a person may operate a rotorcraft with an external-load configuration that differs substantially from any that person has previously carried with that type of rotorcraft (whether or not the rotorcraft-load combination is of the same class), that person must conduct, in a manner that will not endanger persons or property on the surface, such of the following flight-operational checks as the Administrator determines are appropriate to the rotorcraft-load combination:

(1) A determination that the weight of the rotorcraft-load combination and the location of its center of gravity are within approved limits, that the external load is securely fastened, and that the external load does not interfere

with devices provided for its emergency release.

(2) Make an initial liftoff and verify that controllability is satisfactory.

(3) While hovering, verify that directional control is adequate.

(4) Accelerate into forward flight to verify that no attitude (whether of the rotorcraft or of the external load) is encountered in which the rotorcraft is uncontrollable or which is otherwise hazardous.

(5) In forward flight, check for hazardous oscillations of the external load, but if the external load is not visible to the pilot, other crewmembers or ground personnel may make this check and signal the pilot.

(6) Increase the forward airspeed and determine an operational airspeed at which no hazardous oscillation or hazardous aerodynamic turbulence is encountered.

(d) Notwithstanding the provisions of part 91 of this chapter, the holder of a Rotorcraft External-Load Operator Certificate may conduct (in rotorcraft type certificated under and meeting the requirements of part 27 or 29 of this chapter, including the external-load attaching means) rotorcraft external-load operations over congested areas if those operations are conducted without hazard to persons or property on the surface and comply with the following:

(1) The operator must develop a plan for each complete operation, coordinate this plan with the FAA Flight Standards District Office having jurisdiction over the area in which the operation will be conducted, and obtain approval for the operation from that district office. The plan must include an agreement with the appropriate political subdivision that local officials will exclude unauthorized persons from the area in which the operation will be conducted, coordination with air traffic control, if necessary, and a detailed chart depicting the flight routes and altitudes.

(2) Each flight must be conducted at an altitude, and on a route, that will allow a jettisonable external load to be released, and the rotorcraft landed, in an emergency without hazard to persons or property on the surface.

(e) Notwithstanding the provisions of part 91 of this chapter, and except as provided in §133.45(d), the holder of a Rotorcraft External-Load Operator Certificate may conduct external-load operations, including approaches, departures, and load positioning maneuvers necessary for the operation, below 500 feet above the surface and closer than 500 feet to persons, vessels, vehicles, and structures, if the operations are conducted without creating a hazard to persons or property on the surface.

(f) No person may conduct rotorcraft external-load operations under IFR unless specifically approved by the Administrator. However, under no circumstances may a person be carried as part of the external-load under IFR.

[Doc. No. 24550, 51 FR 40708, Nov. 7, 1986, as amended by Amdt. 133–11, 54 FR 39294, Sept. 25, 1989]

§133.35 Carriage of persons.

(a) No certificate holder may allow a person to be carried during rotorcraft external-load operations unless that person—

(1) Is a flight crewmember;

(2) Is a flight crewmember trainee;

(3) Performs an essential function in connection with the external-load operation; or

(4) Is necessary to accomplish the work activity directly associated with that operation.

(b) The pilot in command shall ensure that all persons are briefed before takeoff on all pertinent procedures to be followed (including normal, abnormal, and emergency procedures) and equipment to be used during the external-load operation.

[Doc. No. 24550, 51 FR 40708, Nov. 7, 1986]

§133.37 Crewmember training, currency, and testing requirements.

(a) No certificate holder may use, nor may any person serve, as a pilot in operations conducted under this part unless that person—

(1) Has successfully demonstrated, to the Administrator knowledge and skill with respect to the rotorcraft-load combination in accordance with §133.23 (in the case of a pilot other than the chief pilot or an assistant chief pilot who has been designated in accordance with §133.21(b), this demonstration

may be made to the chief pilot or assistant chief pilot); and

(2) Has in his or her personal possession a letter of competency or an appropriate logbook entry indicating compliance with paragraph (a)(1) of this section.

(b) No certificate holder may use, nor may any person serve as, a crewmember or other operations personnel in Class D operations conducted under this part unless, within the preceding 12 calendar months, that person has successfully completed either an approved initial or a recurrent training program.

(c) Notwithstanding the provisions of paragraph (b) of this section, a person who has performed a rotorcraft external-load operation of the same class and in an aircraft of the same type within the past 12 calendar months need not undergo recurrent training.

[Doc. No. 24550, 51 FR 40708, Nov. 7, 1986]

§ 133.39 Inspection authority.

Each person conducting an operation under this part shall allow the Administrator to make any inspections or tests that he considers necessary to determine compliance with the Federal Aviation Regulations and the Rotorcraft External-Load Operator Certificate.

[Doc. No. 1529, 29 FR 603, Jan. 24, 1964. Redesignated by Amdt. 133–9, 51 FR 40708, Nov. 7, 1986]

Subpart D—Airworthiness Requirements

§ 133.41 Flight characteristics requirements.

(a) The applicant must demonstrate to the Administrator, by performing the operational flight checks prescribed in paragraphs (b), (c), and (d) of this section, as applicable, that the rotorcraft-load combination has satisfactory flight characteristics, unless these operational flight checks have been demonstrated previously and the rotorcraft-load combination flight characteristics were satisfactory. For the purposes of this demonstration, the external-load weight (including the external-load attaching means) is the maximum weight for which authorization is requested.

(b) Class A rotorcraft-load combinations: The operational flight check must consist of at least the following maneuvers:

(1) Take off and landing.

(2) Demonstration of adequate directional control while hovering.

(3) Acceleration from a hover.

(4) Horizontal flight at airspeeds up to the maximum airspeed for which authorization is requested.

(c) *Class B and D rotorcraft-load combinations:* The operational flight check must consist of at least the following maneuvers:

(1) Pickup of the external load.

(2) Demonstration of adequate directional control while hovering.

(3) Acceleration from a hover.

(4) Horizontal flight at airspeeds up to the maximum airspeed for which authorization is requested.

(5) Demonstrating appropriate lifting device operation.

(6) Maneuvering of the external load into release position and its release, under probable flight operation conditions, by means of each of the quick-release controls installed on the rotorcraft.

(d) Class C rotorcraft-load combinations: For Class C rotorcraft-load combinations used in wire-stringing, cable-laying, or similar operations, the operational flight check must consist of the maneuvers, as applicable, prescribed in paragraph (c) of this section.

[Doc. No. 1529, 29 FR 603, Jan. 24, 1964, as amended by Amdt. 133–5, 41 FR 55475, Dec. 20, 1976; Amdt. 133–9, 51 FR 40709, Nov. 7, 1986]

§ 133.43 Structures and design.

(a) *External-load attaching means.* Each external-load attaching means must have been approved under—

(1) Part 8 of the Civil Air Regulations on or before January 17, 1964;

(2) Part 133, before February 1, 1977;

(3) Part 27 or 29 of this chapter, as applicable, irrespective of the date of approval; or

(4) Section 21.25 of this chapter.

(b) *Quick release devices.* Each quick release device must have been approved under—

(1) Part 27 or 29 of this chapter, as applicable;

(2) Part 133, before February 1, 1977; or

(3) Section 21.25 of this chapter, except the device must comply with §§27.865(b) and 29.865(b), as applicable, of this chapter.

(c) *Weight and center of gravity*—

(1) *Weight.* The total weight of the rotorcraft-load combination must not exceed the total weight approved for the rotorcraft during its type certification.

(2) *Center of gravity.* The location of the center of gravity must, for all loading conditions, be within the range established for the rotorcraft during its type certification. For Class C rotorcraft-load combinations, the magnitude and direction of the loading force must be established at those values for which the effective location of the center of gravity remains within its established range.

[Doc. No. 14324, 41 FR 55475, Dec. 20, 1976, as amended by Amdt. 133–12, 55 FR 8006, Mar. 6, 1990]

§133.45 Operating limitations.

In addition to the operating limitations set forth in the approved Rotorcraft Flight Manual, and to any other limitations the Administrator may prescribe, the operator shall establish at least the following limitations and set them forth in the Rotorcraft-Load Combination Flight Manual for rotorcraft-load combination operations:

(a) The rotorcraft-load combination may be operated only within the weight and center of gravity limitations established in accordance with §133.43(c).

(b) The rotorcraft-load combination may not be operated with an external load weight exceeding that used in showing compliance with §§133.41 and 133.43.

(c) The rotorcraft-load combination may not be operated at airspeeds greater than those established in accordance with §133.41 (b), (c), and (d).

(d) No person may conduct an external-load operation under this part with a rotorcraft type certificated in the restricted category under §21.25 of this chapter over a densely populated area, in a congested airway, or near a busy airport where passenger transport operations are conducted.

(e) The rotorcraft-load combination of Class D may be conducted only in accordance with the following:

(1) The rotorcraft to be used must have been type certificated under transport Category A for the operating weight and provide hover capability with one engine inoperative at that operating weight and altitude.

(2) The rotorcraft must be equipped to allow direct radio intercommunication among required crewmembers.

(3) The personnel lifting device must be FAA approved.

(4) The lifting device must have an emergency release requiring two distinct actions.

[Doc. No. 1529, 29 FR 603, Jan. 24, 1964, as amended by Amdt. 133–1, 30 FR 883, Jan. 28, 1965; Amdt. 133–5, 41 FR 55476, Dec. 20, 1976; Amdt. 133–6, 42 FR 24198, May 12, 1977; Amdt. 133–9, 51 FR 40709, Nov. 7, 1986]

§133.47 Rotorcraft-load combination flight manual.

The applicant must prepare a Rotorcraft-Load Combination Flight Manual and submit it for approval by the Administrator. The manual must be prepared in accordance with the rotorcraft flight manual provisions of subpart G of part 27 or 29 of this chapter, whichever is applicable. The limiting height-speed envelope data need not be listed as operating limitations. The manual must set forth—

(a) Operating limitations, procedures (normal and emergency), performance, and other information established under this subpart;

(b) The class of rotorcraft-load combinations for which the airworthiness of the rotorcraft has been demonstrated in accordance with §§133.41 and 133.43; and

(c) In the information section of the Rotorcraft-Load Combination Flight Manual—

(1) Information on any peculiarities discovered when operating particular rotorcraft-load combinations;

(2) Precautionary advice regarding static electricity discharges for Class B, Class C, and Class D rotorcraft-load combinations; and

(3) Any other information essential for safe operation with external loads.

[Doc. No. 1529, 29 FR 603, Jan. 24, 1964, as amended by Amdt. 133–9, 51 FR 40709, Nov. 7, 1986]

§ 133.49 Markings and placards.

The following markings and placards must be displayed conspicuously and must be such that they cannot be easily erased, disfigured, or obscured:

(a) A placard (displayed in the cockpit or cabin) stating the class of rotorcraft-load combination for which the rotorcraft has been approved and the occupancy limitation prescribed in §133.45(a).

(b) A placard, marking, or instruction (displayed next to the external-load attaching means) stating the maximum external load prescribed as an operating limitation in §133.45(c).

§ 133.51 Airworthiness certification.

A Rotorcraft External-Load Operator Certificate is a current and valid airworthiness certificate for each rotorcraft type certificated under part 27 or 29 of this chapter (or their predecessor parts) and listed by registration number on a list attached to the certificate, when the rotorcraft is being used in operations conducted under this part.

[Doc. No. 24550, 51 FR 40709, Nov. 7, 1986]

PART 135—OPERATING REQUIREMENTS: COMMUTER AND ON DEMAND OPERATIONS AND RULES GOVERNING PERSONS ON BOARD SUCH AIRCRAFT

SPECIAL FEDERAL AVIATION REGULATION NO. 36 [NOTE]

SPECIAL FEDERAL AVIATION REGULATION NO. 50–2 [NOTE]

SPECIAL FEDERAL AVIATION REGULATION NO. 71 [NOTE]

SPECIAL FEDERAL AVIATION REGULATION NO. 89 [NOTE]

SPECIAL FEDERAL AVIATION REGULATION NO. 93 [NOTE]

SPECIAL FEDERAL AVIATION REGULATION NO. 97 [NOTE]

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APPENDIX G TO PART 135—EXTENDED OPERATIONS (ETOPS)

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SPECIAL FEDERAL AVIATION REGULATION NO. 36

EDITORIAL NOTE: For the text of SFAR No. 36, see part 121 of this chapter.

SPECIAL FEDERAL AVIATION REGULATION NO. 50–2

EDITORIAL NOTE: For the text of SFAR No. 50–2, see part 91 of this chapter.

SPECIAL FEDERAL AVIATION REGULATION NO. 71

EDITORIAL NOTE: For the text of SFAR No. 71, see part 91 of this chapter.

SPECIAL FEDERAL AVIATION REGULATION NO. 89

EDITORIAL NOTE: For the text of SFAR No. 89, see part 121 of this chapter.

SPECIAL FEDERAL AVIATION REGULATION NO. 93

EDITORIAL NOTE: For the text of SFAR No. 93, see part 61 of this chapter.

SPECIAL FEDERAL AVIATION REGULATION NO. 97

EDITORIAL NOTE: For the text of SFAR No. 97, see part 91 of this chapter.

SPECIAL FEDERAL AVIATION REGULATION NO. 106

EDITORIAL NOTE: For the text of SFAR No. 106, see part 121 of this chapter.

Subpart A—General

§ 135.1 Applicability.

(a) This part prescribes rules governing—

(1) The commuter or on-demand operations of each person who holds or is required to hold an Air Carrier Certificate or Operating Certificate under part 119 of this chapter.

(2) Each person employed or used by a certificate holder conducting operations under this part including the

maintenance, preventative maintenance and alteration of an aircraft.

(3) The transportation of mail by aircraft conducted under a postal service contract awarded under 39 U.S.C. 5402c.

(4) Each person who applies for provisional approval of an Advanced Qualification Program curriculum, curriculum segment, or portion of a curriculum segment under subpart Y of part 121 of this chapter of 14 CFR part 121 and each person employed or used by an air carrier or commercial operator under this part to perform training, qualification, or evaluation functions under an Advanced Qualification Program under subpart Y of part 121 of this chapter of 14 CFR part 121.

(5) Nonstop Commercial Air Tour flights conducted for compensation or hire in accordance with §119.1(e)(2) of this chapter that begin and end at the same airport and are conducted within a 25-statute-mile radius of that airport; provided further that these operations must comply only with the drug and alcohol testing requirements in §§135.249, 135.251, 135.253, 135.255, and 135.353; and with the provisions of part 136, subpart A, and §91.147 of this chapter by September 11, 2007.

(6) Each person who is on board an aircraft being operated under this part.

(7) Each person who is an applicant for an Air Carrier Certificate or an Operating Certificate under 119 of this chapter, when conducting proving tests.

(8) Commercial Air tours conducted by holders of operations specifications issued under this part must comply with the provisions of part 136, Subpart A of this chapter by September 11, 2007.

(b) [Reserved]

(c) An operator who does not hold a part 119 certificate and who operates under the provisions of §91.147 of this chapter is permitted to use a person who is otherwise authorized to perform aircraft maintenance or preventive maintenance duties and who is not subject to anti-drug and alcohol misuse prevent programs to perform—

(1) Aircraft maintenance or preventive maintenance on the operator's aircraft if the operator would otherwise be required to transport the aircraft more than 50 nautical miles further than the repair point closest to operator's principal place of operation to obtain these services; or

(2) Emergency repairs on the operator's aircraft if the aircraft cannot be safely operated to a location where an employee subject to FAA-approved programs can perform the repairs.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–5, 45 FR 43162, June 26, 1980; Amdt. 135–7, 45 FR 67235, Oct. 9, 1980; Amdt. 135–20, 51 FR 40709, Nov. 7, 1986; Amdt. 135–28, 53 FR 47060, Nov. 21, 1988; Amdt. 135–32, 54 FR 34332, Aug. 18, 1989; Amdt. 135–37, 55 FR 40278, Oct. 2, 1990; Amdt. 135–48, 59 FR 7396, Feb. 15, 1994; Amdt. 135–58, 60 FR 65938, Dec. 20, 1995; Amdt. 135–99, 70 FR 54819, Sept. 16, 2005; Amdt. 135–107, 72 FR 6912, Feb. 13, 2007; Amdt. 135–107, 72 FR 6912, Feb. 13, 2007]

§135.2 Compliance schedule for operators that transition to part 121 of this chapter; certain new entrant operators.

(a) *Applicability*. This section applies to the following:

(1) Each certificate holder that was issued an air carrier or operating certificate and operations specifications under the requirements of part 135 of this chapter or under SFAR No. 38–2 of 14 CFR part 121 before January 19, 1996, and that conducts scheduled passenger-carrying operations with:

(i) Nontransport category turbopropeller powered airplanes type certificated after December 31, 1964, that have a passenger seat configuration of 10–19 seats;

(ii) Transport category turbopropeller powered airplanes that have a passenger seat configuration of 20–30 seats; or

(iii) Turbojet engine powered airplanes having a passenger seat configuration of 1–30 seats.

(2) Each person who, after January 19, 1996, applies for or obtains an initial air carrier or operating certificate and operations specifications to conduct scheduled passenger-carrying operations in the kinds of airplanes described in paragraphs (a)(1)(i), (a)(1)(ii), or paragraph (a)(1)(iii) of this section.

(b) *Obtaining operations specifications*. A certificate holder described in paragraph (a)(1) of this section may not, after March 20, 1997, operate an airplane described in paragraphs (a)(1)(i), (a)(1)(ii), or (a)(1)(iii) of this section in

scheduled passenger-carrying operations, unless it obtains operations specifications to conduct its scheduled operations under part 121 of this chapter on or before March 20, 1997.

(c) *Regular or accelerated compliance.* Except as provided in paragraphs (d), and (e) of this section, each certificate holder described in paragraph (a)(1) of this section shall comply with each applicable requirement of part 121 of this chapter on and after March 20, 1997 or on and after the date on which the certificate holder is issued operations specifications under this part, whichever occurs first. Except as provided in paragraphs (d) and (e) of this section, each person described in paragraph (a)(2) of this section shall comply with each applicable requirement of part 121 of this chapter on and after the date on which that person is issued a certificate and operations specifications under part 121 of this chapter.

(d) *Delayed compliance dates.* Unless paragraph (e) of this section specifies an earlier compliance date, no certificate holder that is covered by paragraph (a) of this section may operate an airplane in 14 CFR part 121 operations on or after a date listed in this paragraph unless that airplane meets the applicable requirement of this paragraph:

(1) *Nontransport category turbopropeller powered airplanes type certificated after December 31, 1964, that have a passenger seat configuration of 10–19 seats.* No certificate holder may operate under this part an airplane that is described in paragraph (a)(1)(i) of this section on or after a date listed in paragraph (d)(1) of this section unless that airplane meets the applicable requirement listed in paragraph (d)(1) of this section:

(i) December 20, 1997:

(A) Section 121.289, Landing gear aural warning.

(B) Section 121.308, Lavatory fire protection.

(C) Section 121.310(e), Emergency exit handle illumination.

(D) Section 121.337(b)(8), Protective breathing equipment.

(E) Section 121.340, Emergency flotation means.

(ii) December 20, 1999: Section 121.342, Pitot heat indication system.

(iii) December 20, 2010:

(A) For airplanes described in §121.157(f), the Airplane Performance Operating Limitations in §§121.189 through 121.197.

(B) Section 121.161(b), Ditching approval.

(C) Section 121.305(j), Third attitude indicator.

(D) Section 121.312(c), Passenger seat cushion flammability.

(iv) March 12, 1999: Section 121.310(b)(1), Interior emergency exit locating sign.

(2) *Transport category turbopropeller powered airplanes that have a passenger seat configuration of 20–30 seats.* No certificate holder may operate under this part an airplane that is described in paragraph (a)(1)(ii) of this section on or after a date listed in paragraph (d)(2) of this section unless that airplane meets the applicable requirement listed in paragraph (d)(2) of this section:

(i) December 20, 1997:

(A) Section 121.308, Lavatory fire protection.

(B) Section 121.337(b) (8) and (9), Protective breathing equipment.

(C) Section 121.340, Emergency flotation means.

(ii) December 20, 2010: Section 121.305(j), Third attitude indicator.

(e) *Newly manufactured airplanes.* No certificate holder that is described in paragraph (a) of this section may operate under part 121 of this chapter an airplane manufactured on or after a date listed in this paragraph (e) unless that airplane meets the applicable requirement listed in this paragraph (e).

(1) For nontransport category turbopropeller powered airplanes type certificated after December 31, 1964, that have a passenger seat configuration of 10–19 seats:

(i) Manufactured on or after March 20, 1997:

(A) Section 121.305(j), Third attitude indicator.

(B) Section 121.311(f), Safety belts and shoulder harnesses.

(ii) Manufactured on or after December 20, 1997: Section 121.317(a), Fasten seat belt light.

(iii) Manufactured on or after December 20, 1999: Section 121.293, Takeoff warning system.

(iv) Manufactured on or after March 12, 1999: Section 121.310(b)(1), Interior emergency exit locating sign.

(2) For transport category turbopropeller powered airplanes that have a passenger seat configuration of 20–30 seats manufactured on or after March 20, 1997: Section 121.305(j), Third attitude indicator.

(f) *New type certification requirements.* No person may operate an airplane for which the application for a type certificate was filed after March 29, 1995, in 14 CFR part 121 operations unless that airplane is type certificated under part 25 of this chapter.

(g) *Transition plan.* Before March 19, 1996 each certificate holder described in paragraph (a)(1) of this section must submit to the FAA a transition plan (containing a calendar of events) for moving from conducting its scheduled operations under the commuter requirements of part 135 of this chapter to the requirements for domestic or flag operations under part 121 of this chapter. Each transition plan must contain details on the following:

(1) Plans for obtaining new operations specifications authorizing domestic or flag operations;

(2) Plans for being in compliance with the applicable requirements of part 121 of this chapter on or before March 20, 1997; and

(3) Plans for complying with the compliance date schedules contained in paragraphs (d) and (e) of this section.

[Doc. No. 28154, 60 FR 65938, Dec. 20, 1995, as amended by Amdt. 135–65, 61 FR 30435, June 14, 1996; Amdt. 135–66, 62 FR 13257, Mar. 19, 1997]

§ 135.3 Rules applicable to operations subject to this part.

(a) Each person operating an aircraft in operations under this part shall—

(1) While operating inside the United States, comply with the applicable rules of this chapter; and

(2) While operating outside the United States, comply with Annex 2, Rules of the Air, to the Convention on International Civil Aviation or the regulations of any foreign country, whichever applies, and with any rules of parts 61 and 91 of this chapter and this part that are more restrictive than that Annex or those regulations and that can be complied with without violating that Annex or those regulations. Annex 2 is incorporated by reference in §91.703(b) of this chapter.

(b) After March 19, 1997, each certificate holder that conducts commuter operations under this part with airplanes in which two pilots are required by the type certification rules of this chapter shall comply with subparts N and O of part 121 of this chapter instead of the requirements of subparts E, G, and H of this part. Each affected certificate holder must submit to the Administrator and obtain approval of a transition plan (containing a calendar of events) for moving from its present part 135 training, checking, testing, and qualification requirements to the requirements of part 121 of this chapter. Each transition plan must be submitted by March 19, 1996, and must contain details on how the certificate holder plans to be in compliance with subparts N and O of part 121 on or before March 19, 1997.

(c) If authorized by the Administrator upon application, each certificate holder that conducts operations under this part to which paragraph (b) of this section does not apply, may comply with the applicable sections of subparts N and O of part 121 instead of the requirements of subparts E, G, and H of this part, except that those authorized certificate holders may choose to comply with the operating experience requirements of §135.244, instead of the requirements of §121.434 of this chapter.

[Doc. No. 27993, 60 FR 65949, Dec. 20, 1995, as amended by Amdt. 135–65, 61 FR 30435, June 14, 1996]

§ 135.4 Applicability of rules for eligible on-demand operations.

(a) An ''eligible on-demand operation'' is an on-demand operation conducted under this part that meets the following requirements:

(1) *Two-pilot crew.* The flightcrew must consist of at least two qualified pilots employed or contracted by the certificate holder.

(2) *Flight crew experience.* The crewmembers must have met the applicable requirements of part 61 of this chapter and have the following experience and ratings:

(i) Total flight time for all pilots:

(A) Pilot in command—A minimum of 1,500 hours.

(B) Second in command—A minimum of 500 hours.

(ii) For multi-engine turbine-powered fixed-wing and powered-lift aircraft, the following FAA certification and ratings requirements:

(A) Pilot in command—Airline transport pilot and applicable type ratings.

(B) Second in command—Commercial pilot and instrument ratings.

(iii) For all other aircraft, the following FAA certification and rating requirements:

(A) Pilot in command—Commercial pilot and instrument ratings.

(B) Second in command—Commercial pilot and instrument ratings.

(3) *Pilot operating limitations.* If the second in command of a fixed-wing aircraft has fewer than 100 hours of flight time as second in command flying in the aircraft make and model and, if a type rating is required, in the type aircraft being flown, and the pilot in command is not an appropriately qualified check pilot, the pilot in command shall make all takeoffs and landings in any of the following situations:

(i) Landings at the destination airport when a Destination Airport Analysis is required by §135.385(f); and

(ii) In any of the following conditions:

(A) The prevailing visibility for the airport is at or below ¾ mile.

(B) The runway visual range for the runway to be used is at or below 4,000 feet.

(C) The runway to be used has water, snow, slush, ice, or similar contamination that may adversely affect aircraft performance.

(D) The braking action on the runway to be used is reported to be less than ''good.''

(E) The crosswind component for the runway to be used is in excess of 15 knots.

(F) Windshear is reported in the vicinity of the airport.

(G) Any other condition in which the pilot in command determines it to be prudent to exercise the pilot in command's authority.

(4) *Crew pairing.* Either the pilot in command or the second in command must have at least 75 hours of flight time in that aircraft make or model and, if a type rating is required, for that type aircraft, either as pilot in command or second in command.

(b) The Administrator may authorize deviations from paragraphs (a)(2)(i) or (a)(4) of this section if the Flight Standards District Office that issued the certificate holder's operations specifications finds that the crewmember has comparable experience, and can effectively perform the functions associated with the position in accordance with the requirements of this chapter. The Administrator may, at any time, terminate any grant of deviation authority issued under this paragraph. Grants of deviation under this paragraph may be granted after consideration of the size and scope of the operation, the qualifications of the intended personnel and the following circumstances:

(1) A newly authorized certificate holder does not employ any pilots who meet the minimum requirements of paragraphs (a)(2)(i) or (a)(4) of this section.

(2) An existing certificate holder adds to its fleet a new category and class aircraft not used before in its operation.

(3) An existing certificate holder establishes a new base to which it assigns pilots who will be required to become qualified on the aircraft operated from that base.

(c) An eligible on-demand operation may comply with alternative requirements specified in §§135.225(b), 135.385(f), and 135.387(b) instead of the requirements that apply to other on-demand operations.

[Doc. No. FAA–2001–10047, 68 FR 54585, Sept. 17, 2003]

§135.7 Applicability of rules to unauthorized operators.

The rules in this part which apply to a person certificated under part 119 of this chapter also apply to a person who engages in any operation governed by this part without an appropriate certificate and operations specifications required by part 119 of this chapter.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–58, 60 FR 65939, Dec. 20, 1995]

§ 135.12 Previously trained crewmembers.

A certificate holder may use a crewmember who received the certificate holder's training in accordance with subparts E, G, and H of this part before March 19, 1997 without complying with initial training and qualification requirements of subparts N and O of part 121 of this chapter. The crewmember must comply with the applicable recurrent training requirements of part 121 of this chapter.

[Doc. No. 27993, 60 FR 65950, Dec. 20, 1995]

§ 135.19 Emergency operations.

(a) In an emergency involving the safety of persons or property, the certificate holder may deviate from the rules of this part relating to aircraft and equipment and weather minimums to the extent required to meet that emergency.

(b) In an emergency involving the safety of persons or property, the pilot in command may deviate from the rules of this part to the extent required to meet that emergency.

(c) Each person who, under the authority of this section, deviates from a rule of this part shall, within 10 days, excluding Saturdays, Sundays, and Federal holidays, after the deviation, send to the FAA Flight Standards District Office charged with the overall inspection of the certificate holder a complete report of the aircraft operation involved, including a description of the deviation and reasons for it.

§ 135.21 Manual requirements.

(a) Each certificate holder, other than one who uses only one pilot in the certificate holder's operations, shall prepare and keep current a manual setting forth the certificate holder's procedures and policies acceptable to the Administrator. This manual must be used by the certificate holder's flight, ground, and maintenance personnel in conducting its operations. However, the Administrator may authorize a deviation from this paragraph if the Administrator finds that, because of the limited size of the operation, all or part of the manual is not necessary for guidance of flight, ground, or maintenance personnel.

(b) Each certificate holder shall maintain at least one copy of the manual at its principal base of operations.

(c) The manual must not be contrary to any applicable Federal regulations, foreign regulation applicable to the certificate holder's operations in foreign countries, or the certificate holder's operating certificate or operations specifications.

(d) A copy of the manual, or appropriate portions of the manual (and changes and additions) shall be made available to maintenance and ground operations personnel by the certificate holder and furnished to—

(1) Its flight crewmembers; and

(2) Representatives of the Administrator assigned to the certificate holder.

(e) Each employee of the certificate holder to whom a manual or appropriate portions of it are furnished under paragraph (d)(1) of this section shall keep it up to date with the changes and additions furnished to them.

(f) Except as provided in paragraph (h) of this section, each certificate holder must carry appropriate parts of the manual on each aircraft when away from the principal operations base. The appropriate parts must be available for use by ground or flight personnel.

(g) For the purpose of complying with paragraph (d) of this section, a certificate holder may furnish the persons listed therein with all or part of its manual in printed form or other form, acceptable to the Administrator, that is retrievable in the English language. If the certificate holder furnishes all or part of the manual in other than printed form, it must ensure there is a compatible reading device available to those persons that provides a legible image of the information and instructions, or a system that is able to retrieve the information and instructions in the English language.

(h) If a certificate holder conducts aircraft inspections or maintenance at specified stations where it keeps the approved inspection program manual, it is not required to carry the manual

aboard the aircraft en route to those stations.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–18, 47 FR 33396, Aug. 2, 1982; Amdt. 135–58, 60 FR 65939, Dec. 20, 1995; Amdt. 135–66, 62 FR 13257, Mar. 19, 1997; Amdt. 135–91, 68 FR 54585, Sept. 17, 2003]

§ 135.23 Manual contents.

Each manual shall have the date of the last revision on each revised page. The manual must include—

(a) The name of each management person required under § 119.69(a) of this chapter who is authorized to act for the certificate holder, the person's assigned area of responsibility, the person's duties, responsibilities, and authority, and the name and title of each person authorized to exercise operational control under § 135.77;

(b) Procedures for ensuring compliance with aircraft weight and balance limitations and, for multiengine aircraft, for determining compliance with § 135.185;

(c) Copies of the certificate holder's operations specifications or appropriate extracted information, including area of operations authorized, category and class of aircraft authorized, crew complements, and types of operations authorized;

(d) Procedures for complying with accident notification requirements;

(e) Procedures for ensuring that the pilot in command knows that required airworthiness inspections have been made and that the aircraft has been approved for return to service in compliance with applicable maintenance requirements;

(f) Procedures for reporting and recording mechanical irregularities that come to the attention of the pilot in command before, during, and after completion of a flight;

(g) Procedures to be followed by the pilot in command for determining that mechanical irregularities or defects reported for previous flights have been corrected or that correction has been deferred;

(h) Procedures to be followed by the pilot in command to obtain maintenance, preventive maintenance, and servicing of the aircraft at a place where previous arrangements have not been made by the operator, when the pilot is authorized to so act for the operator;

(i) Procedures under § 135.179 for the release for, or continuation of, flight if any item of equipment required for the particular type of operation becomes inoperative or unserviceable en route;

(j) Procedures for refueling aircraft, eliminating fuel contamination, protecting from fire (including electrostatic protection), and supervising and protecting passengers during refueling;

(k) Procedures to be followed by the pilot in command in the briefing under § 135.117;

(l) Flight locating procedures, when applicable;

(m) Procedures for ensuring compliance with emergency procedures, including a list of the functions assigned each category of required crewmembers in connection with an emergency and emergency evacuation duties under § 135.123;

(n) En route qualification procedures for pilots, when applicable;

(o) The approved aircraft inspection program, when applicable;

(p)(1) Procedures and information, as described in paragraph (p)(2) of this section, to assist each crewmember and person performing or directly supervising the following job functions involving items for transport on an aircraft:

(i) Acceptance;

(ii) Rejection;

(iii) Handling;

(iv) Storage incidental to transport;

(v) Packaging of company material; or

(vi) Loading.

(2) Ensure that the procedures and information described in this paragraph are sufficient to assist a person in identifying packages that are marked or labeled as containing hazardous materials or that show signs of containing undeclared hazardous materials. The procedures and information must include:

(i) Procedures for rejecting packages that do not conform to the Hazardous Materials Regulations in 49 CFR parts 171 through 180 or that appear to contain undeclared hazardous materials;

(ii) Procedures for complying with the hazardous materials incident reporting requirements of 49 CFR 171.15

and 171.16 and discrepancy reporting requirements of 49 CFR 175.31.

(iii) The certificate holder's hazmat policies and whether the certificate holder is authorized to carry, or is prohibited from carrying, hazardous materials; and

(iv) If the certificate holder's operations specifications permit the transport of hazardous materials, procedures and information to ensure the following:

(A) That packages containing hazardous materials are properly offered and accepted in compliance with 49 CFR parts 171 through 180;

(B) That packages containing hazardous materials are properly handled, stored, packaged, loaded and carried on board an aircraft in compliance with 49 CFR parts 171 through 180;

(C) That the requirements for Notice to the Pilot in Command (49 CFR 175.33) are complied with; and

(D) That aircraft replacement parts, consumable materials or other items regulated by 49 CFR parts 171 through 180 are properly handled, packaged, and transported.

(q) Procedures for the evacuation of persons who may need the assistance of another person to move expeditiously to an exit if an emergency occurs; and

(r) If required by §135.385, an approved Destination Airport Analysis establishing runway safety margins at destination airports, taking into account the following factors as supported by published aircraft performance data supplied by the aircraft manufacturer for the appropriate runway conditions—

(1) Pilot qualifications and experience;

(2) Aircraft performance data to include normal, abnormal and emergency procedures as supplied by the aircraft manufacturer;

(3) Airport facilities and topography;

(4) Runway conditions (including contamination);

(5) Airport or area weather reporting;

(6) Appropriate additional runway safety margins, if required;

(7) Airplane inoperative equipment;

(8) Environmental conditions; and

(9) Other criteria affecting aircraft performance.

(s) Other procedures and policy instructions regarding the certificate holder's operations issued by the certificate holder.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–20, 51 FR 40709, Nov. 7, 1986; Amdt. 135–58, 60 FR 65939, Dec. 20, 1995; Amdt. 135–91, 68 FR 54586, Sept. 17, 2003; Amdt. 135–101, 70 FR 58829, Oct. 7, 2005]

§ 135.25 Aircraft requirements.

(a) Except as provided in paragraph (d) of this section, no certificate holder may operate an aircraft under this part unless that aircraft—

(1) Is registered as a civil aircraft of the United States and carries an appropriate and current airworthiness certificate issued under this chapter; and

(2) Is in an airworthy condition and meets the applicable airworthiness requirements of this chapter, including those relating to identification and equipment.

(b) Each certificate holder must have the exclusive use of at least one aircraft that meets the requirements for at least one kind of operation authorized in the certificate holder's operations specifications. In addition, for each kind of operation for which the certificate holder does not have the exclusive use of an aircraft, the certificate holder must have available for use under a written agreement (including arrangements for performing required maintenance) at least one aircraft that meets the requirements for that kind of operation. However, this paragraph does not prohibit the operator from using or authorizing the use of the aircraft for other than operations under this part and does not require the certificate holder to have exclusive use of all aircraft that the certificate holder uses.

(c) For the purposes of paragraph (b) of this section, a person has exclusive use of an aircraft if that person has the sole possession, control, and use of it for flight, as owner, or has a written agreement (including arrangements for performing required maintenance), in effect when the aircraft is operated, giving the person that possession, control, and use for at least 6 consecutive months.

(d) A certificate holder may operate in common carriage, and for the carriage of mail, a civil aircraft which is leased or chartered to it without crew and is registered in a country which is a party to the Convention on International Civil Aviation if—

(1) The aircraft carries an appropriate airworthiness certificate issued by the country of registration and meets the registration and identification requirements of that country;

(2) The aircraft is of a type design which is approved under a U.S. type certificate and complies with all of the requirements of this chapter (14 CFR chapter I) that would be applicable to that aircraft were it registered in the United States, including the requirements which must be met for issuance of a U.S. standard airworthiness certificate (including type design conformity, condition for safe operation, and the noise, fuel venting, and engine emission requirements of this chapter), except that a U.S. registration certificate and a U.S. standard airworthiness certificate will not be issued for the aircraft;

(3) The aircraft is operated by U.S.-certificated airmen employed by the certificate holder; and

(4) The certificate holder files a copy of the aircraft lease or charter agreement with the FAA Aircraft Registry, Department of Transportation, 6400 South MacArthur Boulevard, Oklahoma City, OK (Mailing address: P.O. Box 25504, Oklahoma City, OK 73125).

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–8, 45 FR 68649, Oct. 16, 1980; Amdt. 135–66, 62 FR 13257, Mar. 19, 1997]

§ 135.41 Carriage of narcotic drugs, marihuana, and depressant or stimulant drugs or substances.

If the holder of a certificate operating under this part allows any aircraft owned or leased by that holder to be engaged in any operation that the certificate holder knows to be in violation of §91.19(a) of this chapter, that operation is a basis for suspending or revoking the certificate.

[Doc. No. 28154, 60 FR 65939, Dec. 20, 1995]

§ 135.43 Crewmember certificates: International operations.

(a) This section describes the certificates that were issued to United States citizens who were employed by air carriers at the time of issuance as flight crewmembers on United States registered aircraft engaged in international air commerce. The purpose of the certificate is to facilitate the entry and clearance of those crewmembers into ICAO contracting states. They were issued under Annex 9, as amended, to the Convention on International Civil Aviation.

(b) The holder of a certificate issued under this section, or the air carrier by whom the holder is employed, shall surrender the certificate for cancellation at the nearest FAA Flight Standards District Office at the termination of the holder's employment with that air carrier.

[Doc. No. 28154, 61 FR 30435, June 14, 1996]

Subpart B—Flight Operations

§ 135.61 General.

This subpart prescribes rules, in addition to those in part 91 of this chapter, that apply to operations under this part.

§ 135.63 Recordkeeping requirements.

(a) Each certificate holder shall keep at its principal business office or at other places approved by the Administrator, and shall make available for inspection by the Administrator the following—

(1) The certificate holder's operating certificate;

(2) The certificate holder's operations specifications;

(3) A current list of the aircraft used or available for use in operations under this part and the operations for which each is equipped;

(4) An individual record of each pilot used in operations under this part, including the following information:

(i) The full name of the pilot.

(ii) The pilot certificate (by type and number) and ratings that the pilot holds.

(iii) The pilot's aeronautical experience in sufficient detail to determine

the pilot's qualifications to pilot aircraft in operations under this part.

(iv) The pilot's current duties and the date of the pilot's assignment to those duties.

(v) The effective date and class of the medical certificate that the pilot holds.

(vi) The date and result of each of the initial and recurrent competency tests and proficiency and route checks required by this part and the type of aircraft flown during that test or check.

(vii) The pilot's flight time in sufficient detail to determine compliance with the flight time limitations of this part.

(viii) The pilot's check pilot authorization, if any.

(ix) Any action taken concerning the pilot's release from employment for physical or professional disqualification.

(x) The date of the completion of the initial phase and each recurrent phase of the training required by this part; and

(5) An individual record for each flight attendant who is required under this part, maintained in sufficient detail to determine compliance with the applicable portions of §135.273 of this part.

(b) Each certificate holder must keep each record required by paragraph (a)(3) of this section for at least 6 months, and must keep each record required by paragraphs (a)(4) and (a)(5) of this section for at least 12 months.

(c) For multiengine aircraft, each certificate holder is responsible for the preparation and accuracy of a load manifest in duplicate containing information concerning the loading of the aircraft. The manifest must be prepared before each takeoff and must include:

(1) The number of passengers;

(2) The total weight of the loaded aircraft;

(3) The maximum allowable takeoff weight for that flight;

(4) The center of gravity limits;

(5) The center of gravity of the loaded aircraft, except that the actual center of gravity need not be computed if the aircraft is loaded according to a loading schedule or other approved method that ensures that the center of gravity of the loaded aircraft is within approved limits. In those cases, an entry shall be made on the manifest indicating that the center of gravity is within limits according to a loading schedule or other approved method;

(6) The registration number of the aircraft or flight number;

(7) The origin and destination; and

(8) Identification of crew members and their crew position assignments.

(d) The pilot in command of an aircraft for which a load manifest must be prepared shall carry a copy of the completed load manifest in the aircraft to its destination. The certificate holder shall keep copies of completed load manifests for at least 30 days at its principal operations base, or at another location used by it and approved by the Administrator.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–52, 59 FR 42993, Aug. 19, 1994]

§135.64 Retention of contracts and amendments: Commercial operators who conduct intrastate operations for compensation or hire.

Each commercial operator who conducts intrastate operations for compensation or hire shall keep a copy of each written contract under which it provides services as a commercial operator for a period of at least one year after the date of execution of the contract. In the case of an oral contract, it shall keep a memorandum stating its elements, and of any amendments to it, for a period of at least one year after the execution of that contract or change.

[Doc. No. 28154, 60 FR 65939, Dec. 20, 1995, as amended by Amdt. 135–65, 61 FR 30435, June 14, 1996; Amdt. 135–66, 62 FR 13257, Mar. 19, 1997]

§135.65 Reporting mechanical irregularities.

(a) Each certificate holder shall provide an aircraft maintenance log to be carried on board each aircraft for recording or deferring mechanical irregularities and their correction.

(b) The pilot in command shall enter or have entered in the aircraft maintenance log each mechanical irregularity that comes to the pilot's attention during flight time. Before each flight, the

pilot in command shall, if the pilot does not already know, determine the status of each irregularity entered in the maintenance log at the end of the preceding flight.

(c) Each person who takes corrective action or defers action concerning a reported or observed failure or malfunction of an airframe, powerplant, propeller, rotor, or applicance, shall record the action taken in the aircraft maintenance log under the applicable maintenance requirements of this chapter.

(d) Each certificate holder shall establish a procedure for keeping copies of the aircraft maintenance log required by this section in the aircraft for access by appropriate personnel and shall include that procedure in the manual required by §135.21.

§135.67 Reporting potentially hazardous meteorological conditions and irregularities of ground facilities or navigation aids.

Whenever a pilot encounters a potentially hazardous meteorological condition or an irregularity in a ground facility or navigation aid in flight, the knowledge of which the pilot considers essential to the safety of other flights, the pilot shall notify an appropriate ground radio station as soon as practicable.

[Doc. No. 16097, 43 FR 46783, Oct. 1, 1978, as amended at Amdt. 135–1, 44 FR 26737, May 7, 1979; Amdt. 135–110, 72 FR 31684, June 7, 2007]

§135.69 Restriction or suspension of operations: Continuation of flight in an emergency.

(a) During operations under this part, if a certificate holder or pilot in command knows of conditions, including airport and runway conditions, that are a hazard to safe operations, the certificate holder or pilot in command, as the case may be, shall restrict or suspend operations as necessary until those conditions are corrected.

(b) No pilot in command may allow a flight to continue toward any airport of intended landing under the conditions set forth in paragraph (a) of this section, unless, in the opinion of the pilot in command, the conditions that are a hazard to safe operations may reasonably be expected to be corrected by the estimated time of arrival or, unless there is no safer procedure. In the latter event, the continuation toward that airport is an emergency situation under §135.19.

§135.71 Airworthiness check.

The pilot in command may not begin a flight unless the pilot determines that the airworthiness inspections required by §91.409 of this chapter, or §135.419, whichever is applicable, have been made.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–32, 54 FR 34332, Aug. 18, 1989]

§135.73 Inspections and tests.

Each certificate holder and each person employed by the certificate holder shall allow the Administrator, at any time or place, to make inspections or tests (including en route inspections) to determine the holder's compliance with the Federal Aviation Act of 1958, applicable regulations, and the certificate holder's operating certificate, and operations specifications.

§135.75 Inspectors credentials: Admission to pilots' compartment: Forward observer's seat.

(a) Whenever, in performing the duties of conducting an inspection, an FAA inspector presents an Aviation Safety Inspector credential, FAA Form 110A, to the pilot in command of an aircraft operated by the certificate holder, the inspector must be given free and uninterrupted access to the pilot compartment of that aircraft. However, this paragraph does not limit the emergency authority of the pilot in command to exclude any person from the pilot compartment in the interest of safety.

(b) A forward observer's seat on the flight deck, or forward passenger seat with headset or speaker must be provided for use by the Administrator while conducting en route inspections. The suitability of the location of the seat and the headset or speaker for use in conducting en route inspections is determined by the Administrator.

§ 135.76 DOD Commercial Air Carrier Evaluator's Credentials: Admission to pilots compartment: Forward observer's seat.

(a) Whenever, in performing the duties of conducting an evaluation, a DOD commercial air carrier evaluator presents S&A Form 110B, ''DOD Commercial Air Carrier Evaluator's Credential,'' to the pilot in command of an aircraft operated by the certificate holder, the evaluator must be given free and uninterrupted access to the pilot's compartment of that aircraft. However, this paragraph does not limit the emergency authority of the pilot in command to exclude any person from the pilot compartment in the interest of safety.

(b) A forward observer's seat on the flight deck or forward passenger seat with headset or speaker must be provided for use by the evaluator while conducting en route evaluations. The suitability of the location of the seat and the headset or speaker for use in conducting en route evaluations is determined by the FAA.

[Doc. No. FAA–2003–15571, 68 FR 41218, July 10, 2003]

§ 135.77 Responsibility for operational control.

Each certificate holder is responsible for operational control and shall list, in the manual required by § 135.21, the name and title of each person authorized by it to exercise operational control.

§ 135.78 Instrument approach procedures and IFR landing minimums.

No person may make an instrument approach at an airport except in accordance with IFR weather minimums and instrument approach procedures set forth in the certificate holder's operations specifications.

[Doc. No. FAA–2002–14002, 72 FR 31684, June 7, 2007]

§ 135.79 Flight locating requirements.

(a) Each certificate holder must have procedures established for locating each flight, for which an FAA flight plan is not filed, that—

(1) Provide the certificate holder with at least the information required to be included in a VFR flight plan;

(2) Provide for timely notification of an FAA facility or search and rescue facility, if an aircraft is overdue or missing; and

(3) Provide the certificate holder with the location, date, and estimated time for reestablishing communications, if the flight will operate in an area where communications cannot be maintained.

(b) Flight locating information shall be retained at the certificate holder's principal place of business, or at other places designated by the certificate holder in the flight locating procedures, until the completion of the flight.

(c) Each certificate holder shall furnish the representative of the Administrator assigned to it with a copy of its flight locating procedures and any changes or additions, unless those procedures are included in a manual required under this part.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–110, 72 FR 31684, June 7, 2007]

§ 135.81 Informing personnel of operational information and appropriate changes.

Each certificate holder shall inform each person in its employment of the operations specifications that apply to that person's duties and responsibilities and shall make available to each pilot in the certificate holder's employ the following materials in current form:

(a) Airman's Information Manual (Alaska Supplement in Alaska and Pacific Chart Supplement in Pacific-Asia Regions) or a commercial publication that contains the same information.

(b) This part and part 91 of this chapter.

(c) Aircraft Equipment Manuals, and Aircraft Flight Manual or equivalent.

(d) For foreign operations, the International Flight Information Manual or a commercial publication that contains the same information concerning the pertinent operational and entry requirements of the foreign country or countries involved.

§ 135.83 Operating information required.

(a) The operator of an aircraft must provide the following materials, in current and appropriate form, accessible to the pilot at the pilot station, and the pilot shall use them:

(1) A cockpit checklist.

(2) For multiengine aircraft or for aircraft with retractable landing gear, an emergency cockpit checklist containing the procedures required by paragraph (c) of this section, as appropriate.

(3) Pertinent aeronautical charts.

(4) For IFR operations, each pertinent navigational en route, terminal area, and approach and letdown chart.

(5) For multiengine aircraft, one-engine-inoperative climb performance data and if the aircraft is approved for use in IFR or over-the-top operations, that data must be sufficient to enable the pilot to determine compliance with § 135.181(a)(2).

(b) Each cockpit checklist required by paragraph (a)(1) of this section must contain the following procedures:

(1) Before starting engines;

(2) Before takeoff;

(3) Cruise;

(4) Before landing;

(5) After landing;

(6) Stopping engines.

(c) Each emergency cockpit checklist required by paragraph (a)(2) of this section must contain the following procedures, as appropriate:

(1) Emergency operation of fuel, hydraulic, electrical, and mechanical systems.

(2) Emergency operation of instruments and controls.

(3) Engine inoperative procedures.

(4) Any other emergency procedures necessary for safety.

§ 135.85 Carriage of persons without compliance with the passenger-carrying provisions of this part.

The following persons may be carried aboard an aircraft without complying with the passenger-carrying requirements of this part:

(a) A crewmember or other employee of the certificate holder.

(b) A person necessary for the safe handling of animals on the aircraft.

(c) A person necessary for the safe handling of hazardous materials (as defined in subchapter C of title 49 CFR).

(d) A person performing duty as a security or honor guard accompanying a shipment made by or under the authority of the U.S. Government.

(e) A military courier or a military route supervisor carried by a military cargo contract air carrier or commercial operator in operations under a military cargo contract, if that carriage is specifically authorized by the appropriate military service.

(f) An authorized representative of the Administrator conducting an en route inspection.

(g) A person, authorized by the Administrator, who is performing a duty connected with a cargo operation of the certificate holder.

(h) A DOD commercial air carrier evaluator conducting an en route evaluation.

[Docket No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–88, 68 FR 41218, July 10, 2003]

§ 135.87 Carriage of cargo including carry-on baggage.

No person may carry cargo, including carry-on baggage, in or on any aircraft unless—

(a) It is carried in an approved cargo rack, bin, or compartment installed in or on the aircraft;

(b) It is secured by an approved means; or

(c) It is carried in accordance with each of the following:

(1) For cargo, it is properly secured by a safety belt or other tie-down having enough strength to eliminate the possibility of shifting under all normally anticipated flight and ground conditions, or for carry-on baggage, it is restrained so as to prevent its movement during air turbulence.

(2) It is packaged or covered to avoid possible injury to occupants.

(3) It does not impose any load on seats or on the floor structure that exceeds the load limitation for those components.

(4) It is not located in a position that obstructs the access to, or use of, any required emergency or regular exit, or the use of the aisle between the crew

and the passenger compartment, or located in a position that obscures any passenger's view of the ''seat belt'' sign, ''no smoking'' sign, or any required exit sign, unless an auxiliary sign or other approved means for proper notification of the passengers is provided.

(5) It is not carried directly above seated occupants.

(6) It is stowed in compliance with this section for takeoff and landing.

(7) For cargo only operations, paragraph (c)(4) of this section does not apply if the cargo is loaded so that at least one emergency or regular exit is available to provide all occupants of the aircraft a means of unobstructed exit from the aircraft if an emergency occurs.

(d) Each passenger seat under which baggage is stowed shall be fitted with a means to prevent articles of baggage stowed under it from sliding under crash impacts severe enough to induce the ultimate inertia forces specified in the emergency landing condition regulations under which the aircraft was type certificated.

(e) When cargo is carried in cargo compartments that are designed to require the physical entry of a crewmember to extinguish any fire that may occur during flight, the cargo must be loaded so as to allow a crewmember to effectively reach all parts of the compartment with the contents of a hand fire extinguisher.

§ 135.89 Pilot requirements: Use of oxygen.

(a) *Unpressurized aircraft.* Each pilot of an unpressurized aircraft shall use oxygen continuously when flying—

(1) At altitudes above 10,000 feet through 12,000 feet MSL for that part of the flight at those altitudes that is of more than 30 minutes duration; and

(2) Above 12,000 feet MSL.

(b) *Pressurized aircraft.* (1) Whenever a pressurized aircraft is operated with the cabin pressure altitude more than 10,000 feet MSL, each pilot shall comply with paragraph (a) of this section.

(2) Whenever a pressurized aircraft is operated at altitudes above 25,000 feet through 35,000 feet MSL, unless each pilot has an approved quick-donning type oxygen mask—

(i) At least one pilot at the controls shall wear, secured and sealed, an oxygen mask that either supplies oxygen at all times or automatically supplies oxygen whenever the cabin pressure altitude exceeds 12,000 feet MSL; and

(ii) During that flight, each other pilot on flight deck duty shall have an oxygen mask, connected to an oxygen supply, located so as to allow immediate placing of the mask on the pilot's face sealed and secured for use.

(3) Whenever a pressurized aircraft is operated at altitudes above 35,000 feet MSL, at least one pilot at the controls shall wear, secured and sealed, an oxygen mask required by paragraph (b)(2)(i) of this section.

(4) If one pilot leaves a pilot duty station of an aircraft when operating at altitudes above 25,000 feet MSL, the remaining pilot at the controls shall put on and use an approved oxygen mask until the other pilot returns to the pilot duty station of the aircraft.

§ 135.91 Oxygen for medical use by passengers.

(a) Except as provided in paragraphs (d) and (e) of this section, no certificate holder may allow the carriage or operation of equipment for the storage, generation or dispensing of medical oxygen unless the unit to be carried is constructed so that all valves, fittings, and gauges are protected from damage during that carriage or operation and unless the following conditions are met—

(1) The equipment must be—

(i) Of an approved type or in conformity with the manufacturing, packaging, marking, labeling, and maintenance requirements of title 49 CFR parts 171, 172, and 173, except §173.24(a)(1);

(ii) When owned by the certificate holder, maintained under the certificate holder's approved maintenance program;

(iii) Free of flammable contaminants on all exterior surfaces; and

(iv) Appropriately secured.

(2) When the oxygen is stored in the form of a liquid, the equipment must have been under the certificate holder's approved maintenance program since its purchase new or since the storage container was last purged.

(3) When the oxygen is stored in the form of a compressed gas as defined in title 49 CFR 173.300(a)—

(i) When owned by the certificate holder, it must be maintained under its approved maintenance program; and

(ii) The pressure in any oxygen cylinder must not exceed the rated cylinder pressure.

(4) The pilot in command must be advised when the equipment is on board, and when it is intended to be used.

(5) The equipment must be stowed, and each person using the equipment must be seated, so as not to restrict access to or use of any required emergency or regular exit, or of the aisle in the passenger compartment.

(b) No person may smoke and no certificate holder may allow any person to smoke within 10 feet of oxygen storage and dispensing equipment carried under paragraph (a) of this section.

(c) No certificate holder may allow any person other than a person trained in the use of medical oxygen equipment to connect or disconnect oxygen bottles or any other ancillary component while any passenger is aboard the aircraft.

(d) Paragraph (a)(1)(i) of this section does not apply when that equipment is furnished by a professional or medical emergency service for use on board an aircraft in a medical emergency when no other practical means of transportation (including any other properly equipped certificate holder) is reasonably available and the person carried under the medical emergency is accompanied by a person trained in the use of medical oxygen.

(e) Each certificate holder who, under the authority of paragraph (d) of this section, deviates from paragraph (a)(1)(i) of this section under a medical emergency shall, within 10 days, excluding Saturdays, Sundays, and Federal holidays, after the deviation, send to the certificate-holding district office a complete report of the operation involved, including a description of the deviation and the reasons for it.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–60, 61 FR 2616, Jan. 26, 1996]

§ 135.93 Autopilot: Minimum altitudes for use.

(a) Except as provided in paragraphs (b), (c), (d), and (e) of this section, no person may use an autopilot at an altitude above the terrain which is less than 500 feet or less than twice the maximum altitude loss specified in the approved Aircraft Flight Manual or equivalent for a malfunction of the autopilot, whichever is higher.

(b) When using an instrument approach facility other than ILS, no person may use an autopilot at an altitude above the terrain that is less than 50 feet below the approved minimum descent altitude for that procedure, or less than twice the maximum loss specified in the approved Airplane Flight Manual or equivalent for a malfunction of the autopilot under approach conditions, whichever is higher.

(c) For ILS approaches, when reported weather conditions are less than the basic weather conditions in § 91.155 of this chapter, no person may use an autopilot with an approach coupler at an altitude above the terrain that is less than 50 feet above the terrain, or the maximum altitude loss specified in the approved Airplane Flight Manual or equivalent for the malfunction of the autopilot with approach coupler, whichever is higher.

(d) Without regard to paragraph (a), (b), or (c) of this section, the Administrator may issue operations specifications to allow the use, to touchdown, of an approved flight control guidance system with automatic capability, if—

(1) The system does not contain any altitude loss (above zero) specified in the approved Aircraft Flight Manual or equivalent for malfunction of the autopilot with approach coupler; and

(2) The Administrator finds that the use of the system to touchdown will not otherwise adversely affect the safety standards of this section.

(e) Notwithstanding paragraph (a) of this section, the Administrator issues operations specifications to allow the use of an approved autopilot system with automatic capability during the takeoff and initial climb phase of flight provided:

(1) The Airplane Flight Manual specifies a minimum altitude engagement certification restriction;

(2) The system is not engaged prior to the minimum engagement certification restriction specified in the Airplane Flight Manual, or an altitude specified by the Administrator, whichever is higher; and

(3) The Administrator finds that the use of the system will not otherwise affect the safety standards required by this section.

(f) This section does not apply to operations conducted in rotorcraft.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–32, 54 FR 34332, Aug. 18, 1989; Amdt. 135–68, 62 FR 27923, May 21, 1997]

§ 135.95 Airmen: Limitations on use of services.

No certificate holder may use the services of any person as an airman unless the person performing those services—

(a) Holds an appropriate and current airman certificate; and

(b) Is qualified, under this chapter, for the operation for which the person is to be used.

§ 135.97 Aircraft and facilities for recent flight experience.

Each certificate holder shall provide aircraft and facilities to enable each of its pilots to maintain and demonstrate the pilot's ability to conduct all operations for which the pilot is authorized.

§ 135.98 Operations in the North Polar Area.

After February 15, 2008, no certificate holder may operate an aircraft in the region north of 78° N latitude (''North Polar Area''), other than intrastate operations wholly within the state of Alaska, unless authorized by the FAA. The certificate holder's operation specifications must include the following:

(a) The designation of airports that may be used for en-route diversions and the requirements the airports must meet at the time of diversion.

(b) Except for all-cargo operations, a recovery plan for passengers at designated diversion airports.

(c) A fuel-freeze strategy and procedures for monitoring fuel freezing for operations in the North Polar Area.

(d) A plan to ensure communication capability for operations in the North Polar Area.

(e) An MEL for operations in the North Polar Area.

(f) A training plan for operations in the North Polar Area.

(g) A plan for mitigating crew exposure to radiation during solar flare activity.

(h) A plan for providing at least two cold weather anti-exposure suits in the aircraft, to protect crewmembers during outside activity at a diversion airport with extreme climatic conditions. The FAA may relieve the certificate holder from this requirement if the season of the year makes the equipment unnecessary.

[Doc. No. FAA–2002–6717, 72 FR 1885, Jan. 16, 2007]

§ 135.99 Composition of flight crew.

(a) No certificate holder may operate an aircraft with less than the minimum flight crew specified in the aircraft operating limitations or the Aircraft Flight Manual for that aircraft and required by this part for the kind of operation being conducted.

(b) No certificate holder may operate an aircraft without a second in command if that aircraft has a passenger seating configuration, excluding any pilot seat, of ten seats or more.

§ 135.100 Flight crewmember duties.

(a) No certificate holder shall require, nor may any flight crewmember perform, any duties during a critical phase of flight except those duties required for the safe operation of the aircraft. Duties such as company required calls made for such nonsafety related purposes as ordering galley supplies and confirming passenger connections, announcements made to passengers promoting the air carrier or pointing out sights of interest, and filling out company payroll and related records are not required for the safe operation of the aircraft.

(b) No flight crewmember may engage in, nor may any pilot in command permit, any activity during a critical phase of flight which could distract any flight crewmember from the performance of his or her duties or which could interfere in any way with the

proper conduct of those duties. Activities such as eating meals, engaging in nonessential conversations within the cockpit and nonessential communications between the cabin and cockpit crews, and reading publications not related to the proper conduct of the flight are not required for the safe operation of the aircraft.

(c) For the purposes of this section, critical phases of flight includes all ground operations involving taxi, takeoff and landing, and all other flight operations conducted below 10,000 feet, except cruise flight.

NOTE: Taxi is defined as ''movement of an airplane under its own power on the surface of an airport.''

[Doc. No. 20661, 46 FR 5502, Jan. 19, 1981]

§ 135.101 Second in command required under IFR.

Except as provided in § 135.105, no person may operate an aircraft carrying passengers under IFR unless there is a second in command in the aircraft.

[Doc. No. 28743, 62 FR 42374, Aug. 6, 1997]

§ 135.103 [Reserved]

§ 135.105 Exception to second in command requirement: Approval for use of autopilot system.

(a) Except as provided in §§ 135.99 and 135.111, unless two pilots are required by this chapter for operations under VFR, a person may operate an aircraft without a second in command, if it is equipped with an operative approved autopilot system and the use of that system is authorized by appropriate operations specifications. No certificate holder may use any person, nor may any person serve, as a pilot in command under this section of an aircraft operated in a commuter operation, as defined in part 119 of this chapter unless that person has at least 100 hours pilot in command flight time in the make and model of aircraft to be flown and has met all other applicable requirements of this part.

(b) The certificate holder may apply for an amendment of its operations specifications to authorize the use of an autopilot system in place of a second in command.

(c) The Administrator issues an amendment to the operations specifications authorizing the use of an autopilot system, in place of a second in command, if—

(1) The autopilot is capable of operating the aircraft controls to maintain flight and maneuver it about the three axes; and

(2) The certificate holder shows, to the satisfaction of the Administrator, that operations using the autopilot system can be conducted safely and in compliance with this part.

The amendment contains any conditions or limitations on the use of the autopilot system that the Administrator determines are needed in the interest of safety.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–3, 45 FR 7542, Feb. 4, 1980; Amdt. 135–58, 60 FR 65939, Dec. 20, 1995]

§ 135.107 Flight attendant crewmember requirement.

No certificate holder may operate an aircraft that has a passenger seating configuration, excluding any pilot seat, of more than 19 unless there is a flight attendant crewmember on board the aircraft.

§ 135.109 Pilot in command or second in command: Designation required.

(a) Each certificate holder shall designate a—

(1) Pilot in command for each flight; and

(2) Second in command for each flight requiring two pilots.

(b) The pilot in command, as designated by the certificate holder, shall remain the pilot in command at all times during that flight.

§ 135.111 Second in command required in Category II operations.

No person may operate an aircraft in a Category II operation unless there is a second in command of the aircraft.

§ 135.113 Passenger occupancy of pilot seat.

No certificate holder may operate an aircraft type certificated after October 15, 1971, that has a passenger seating configuration, excluding any pilot seat, of more than eight seats if any person other than the pilot in command, a second in command, a company check airman, or an authorized representative of

the Administrator, the National Transportation Safety Board, or the United States Postal Service occupies a pilot seat.

§ 135.115 Manipulation of controls.

No pilot in command may allow any person to manipulate the flight controls of an aircraft during flight conducted under this part, nor may any person manipulate the controls during such flight unless that person is—

(a) A pilot employed by the certificate holder and qualified in the aircraft; or

(b) An authorized safety representative of the Administrator who has the permission of the pilot in command, is qualified in the aircraft, and is checking flight operations.

§ 135.117 Briefing of passengers before flight.

(a) Before each takeoff each pilot in command of an aircraft carrying passengers shall ensure that all passengers have been orally briefed on—

(1) *Smoking.* Each passenger shall be briefed on when, where, and under what conditions smoking is prohibited (including, but not limited to, any applicable requirements of part 252 of this title). This briefing shall include a statement that the Federal Aviation Regulations require passenger compliance with the lighted passenger information signs (if such signs are required), posted placards, areas designated for safety purposes as no smoking areas, and crewmember instructions with regard to these items. The briefing shall also include a statement (if the aircraft is equipped with a lavatory) that Federal law prohibits: tampering with, disabling, or destroying any smoke detector installed in an aircraft lavatory; smoking in lavatories; and, when applicable, smoking in passenger compartments.

(2) The use of safety belts, including instructions on how to fasten and unfasten the safety belts. Each passenger shall be briefed on when, where, and under what conditions the safety belt must be fastened about that passenger. This briefing shall include a statement that the Federal Aviation Regulations require passenger compliance with lighted passenger information signs and crewmember instructions concerning the use of safety belts.

(3) The placement of seat backs in an upright position before takeoff and landing;

(4) Location and means for opening the passenger entry door and emergency exits;

(5) Location of survival equipment;

(6) If the flight involves extended overwater operation, ditching procedures and the use of required flotation equipment;

(7) If the flight involves operations above 12,000 feet MSL, the normal and emergency use of oxygen; and

(8) Location and operation of fire extinguishers.

(b) Before each takeoff the pilot in command shall ensure that each person who may need the assistance of another person to move expeditiously to an exit if an emergency occurs and that person's attendant, if any, has received a briefing as to the procedures to be followed if an evacuation occurs. This paragraph does not apply to a person who has been given a briefing before a previous leg of a flight in the same aircraft.

(c) The oral briefing required by paragraph (a) of this section shall be given by the pilot in command or a crewmember.

(d) Notwithstanding the provisions of paragraph (c) of this section, for aircraft certificated to carry 19 passengers or less, the oral briefing required by paragraph (a) of this section shall be given by the pilot in command, a crewmember, or other qualified person designated by the certificate holder and approved by the Administrator.

(e) The oral briefing required by paragraph (a) of this section must be supplemented by printed cards which must be carried in the aircraft in locations convenient for the use of each passenger. The cards must—

(1) Be appropriate for the aircraft on which they are to be used;

(2) Contain a diagram of, and method of operating, the emergency exits;

(3) Contain other instructions necessary for the use of emergency equipment on board the aircraft; and

(4) No later than June 12, 2005, for scheduled Commuter passenger-carrying flights, include the sentence,

''Final assembly of this aircraft was completed in [INSERT NAME OF COUNTRY].''

(f) The briefing required by paragraph (a) may be delivered by means of an approved recording playback device that is audible to each passenger under normal noise levels.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–9, 51 FR 40709, Nov. 7, 1986; Amdt. 135–25, 53 FR 12362, Apr. 13, 1988; Amdt. 135–44, 57 FR 42675, Sept. 15, 1992; 57 FR 43776, Sept. 22, 1992; 69 FR 39294, June 29, 2004]

§ 135.119 Prohibition against carriage of weapons.

No person may, while on board an aircraft being operated by a certificate holder, carry on or about that person a deadly or dangerous weapon, either concealed or unconcealed. This section does not apply to—

(a) Officials or employees of a municipality or a State, or of the United States, who are authorized to carry arms; or

(b) Crewmembers and other persons authorized by the certificate holder to carry arms.

§ 135.120 Prohibition on interference with crewmembers.

No person may assault, threaten, intimidate, or interfere with a crewmember in the performance of the crewmember's duties aboard an aircraft being operated under this part.

[Doc. No. FAA–1998–4954, 64 FR 1080, Jan. 7, 1999]

§ 135.121 Alcoholic beverages.

(a) No person may drink any alcoholic beverage aboard an aircraft unless the certificate holder operating the aircraft has served that beverage.

(b) No certificate holder may serve any alcoholic beverage to any person aboard its aircraft if that person appears to be intoxicated.

(c) No certificate holder may allow any person to board any of its aircraft if that person appears to be intoxicated.

§ 135.122 Stowage of food, beverage, and passenger service equipment during aircraft movement on the surface, takeoff, and landing.

(a) No certificate holder may move an aircraft on the surface, take off, or land when any food, beverage, or tableware furnished by the certificate holder is located at any passenger seat.

(b) No certificate holder may move an aircraft on the surface, take off, or land unless each food and beverage tray and seat back tray table is secured in its stowed position.

(c) No certificate holder may permit an aircraft to move on the surface, take off, or land unless each passenger serving cart is secured in its stowed position.

(d) Each passenger shall comply with instructions given by a crewmember with regard to compliance with this section.

[Doc. No. 26142, 57 FR 42675, Sept. 15, 1992]

§ 135.123 Emergency and emergency evacuation duties.

(a) Each certificate holder shall assign to each required crewmember for each type of aircraft as appropriate, the necessary functions to be performed in an emergency or in a situation requiring emergency evacuation. The certificate holder shall ensure that those functions can be practicably accomplished, and will meet any reasonably anticipated emergency including incapacitation of individual crewmembers or their inability to reach the passenger cabin because of shifting cargo in combination cargo-passenger aircraft.

(b) The certificate holder shall describe in the manual required under § 135.21 the functions of each category of required crewmembers assigned under paragraph (a) of this section.

§ 135.125 Aircraft security.

Certificate holders conducting operators conducting operations under this part must comply with the applicable security requirements in 49 CFR chapter XII.

[67 FR 8350, Feb. 22, 2002]

§ 135.127 Passenger information requirements and smoking prohibitions.

(a) No person may conduct a scheduled flight on which smoking is prohibited by part 252 of this title unless the ''No Smoking'' passenger information signs are lighted during the entire flight, or one or more ''No Smoking'' placards meeting the requirements of § 25.1541 of this chapter are posted during the entire flight. If both the lighted signs and the placards are used, the signs must remain lighted during the entire flight segment.

(b) No person may smoke while a ''No Smoking'' sign is lighted or while ''No Smoking'' placards are posted, except as follows:

(1) *On-demand operations.* The pilot in command of an aircraft engaged in an on-demand operation may authorize smoking on the flight deck (if it is physically separated from any passenger compartment), except in any of the following situations:

(i) During aircraft movement on the surface or during takeoff or landing;

(ii) During scheduled passenger-carrying public charter operations conducted under part 380 of this title;

(iii) During on-demand operations conducted interstate that meet paragraph (2) of the definition ''On-demand operation'' in § 119.3 of this chapter, unless permitted under paragraph (b)(2) of this section; or

(iv) During any operation where smoking is prohibited by part 252 of this title or by international agreement.

(2) *Certain intrastate commuter operations and certain intrastate on-demand operations.* Except during aircraft movement on the surface or during takeoff or landing, a pilot in command of an aircraft engaged in a commuter operation or an on-demand operation that meets paragraph (2) of the definition of ''On-demand operation'' in § 119.3 of this chapter may authorize smoking on the flight deck (if it is physically separated from the passenger compartment, if any) if—

(i) Smoking on the flight deck is not otherwise prohibited by part 252 of this title;

(ii) The flight is conducted entirely within the same State of the United States (a flight from one place in Hawaii to another place in Hawaii through the airspace over a place outside Hawaii is not entirely within the same State); and

(iii) The aircraft is either not turbojet-powered or the aircraft is not capable of carrying at least 30 passengers.

(c) No person may smoke in any aircraft lavatory.

(d) No person may operate an aircraft with a lavatory equipped with a smoke detector unless there is in that lavatory a sign or placard which reads: ''Federal law provides for a penalty of up to $2,000 for tampering with the smoke detector installed in this lavatory.''

(e) No person may tamper with, disable, or destroy any smoke detector installed in any aircraft lavatory.

(f) On flight segments other than those described in paragraph (a) of this section, the ''No Smoking'' sign required by § 135.177(a)(3) of this part must be turned on during any movement of the aircraft on the surface, for each takeoff or landing, and at any other time considered necessary by the pilot in command.

(g) The passenger information requirements prescribed in § 91.517 (b) and (d) of this chapter are in addition to the requirements prescribed in this section.

(h) Each passenger shall comply with instructions given him or her by crewmembers regarding compliance with paragraphs (b), (c), and (e) of this section.

[Doc. No. 25590, 55 FR 8367, Mar. 7, 1990, as amended by Amdt. 135–35, 55 FR 20135, May 15, 1990; Amdt. 135–44, 57 FR 42675, Sept. 15, 1992; Amdt. 135–60, 61 FR 2616, Jan. 26, 1996; Amdt. 135–76, 65 FR 36780, June 9, 2000]

§ 135.128 Use of safety belts and child restraint systems.

(a) Except as provided in this paragraph, each person on board an aircraft operated under this part shall occupy an approved seat or berth with a separate safety belt properly secured about him or her during movement on the surface, takeoff, and landing. For seaplane and float equipped rotorcraft operations during movement on the surface, the person pushing off the seaplane or rotorcraft from the dock and

the person mooring the seaplane or rotorcraft at the dock are excepted from the preceding seating and safety belt requirements. A safety belt provided for the occupant of a seat may not be used by more than one person who has reached his or her second birthday. Notwithstanding the preceding requirements, a child may:

(1) Be held by an adult who is occupying an approved seat or berth, provided the child has not reached his or her second birthday and the child does not occupy or use any restraining device; or

(2) Notwithstanding any other requirement of this chapter, occupy an approved child restraint system furnished by the certificate holder or one of the persons described in paragraph (a)(2)(i) of this section, provided:

(i) The child is accompanied by a parent, guardian, or attendant designated by the child's parent or guardian to attend to the safety of the child during the flight;

(ii) Except as provided in paragraph (a)(2)(ii)(D) of this section, the approved child restraint system bears one or more labels as follows:

(A) Seats manufactured to U.S. standards between January 1, 1981, and February 25, 1985, must bear the label: ''This child restraint system conforms to all applicable Federal motor vehicle safety standards'';

(B) Seats manufactured to U.S. standards on or after February 26, 1985, must bear two labels:

(*1*) ''This child restraint system conforms to all applicable Federal motor vehicle safety standards''; and

(*2*) ''THIS RESTRAINT IS CERTIFIED FOR USE IN MOTOR VEHICLES AND AIRCRAFT'' in red lettering;

(C) Seats that do not qualify under paragraphs (a)(2)(ii)(A) and (a)(2)(ii)(B) of this section must bear a label or markings showing:

(*1*) That the seat was approved by a foreign government;

(*2*) That the seat was manufactured under the standards of the United Nations;

(*3*) That the seat or child restraint device furnished by the certificate holder was approved by the FAA through Type Certificate or Supplemental Type Certificate.

(*4*) That the seat or child restraint device furnished by the certificate holder, or one of the persons described in paragraph (b)(2)(i) of this section, was approved by the FAA in accordance with §21.305(d) or Technical Standard Order C–100b, or a later version.

(D) Except as provided in §135.128(a)(2)(ii)(C)(*3*) and §135.128(a)(2)(ii)(C)(*4*), booster-type child restraint systems (as defined in Federal Motor Vehicle Safety Standard No. 213 (49 CFR 571.213)), vest- and harness-type child restraint systems, and lap held child restraints are not approved for use in aircraft; and

(iii) The certificate holder complies with the following requirements:

(A) The restraint system must be properly secured to an approved forward-facing seat or berth;

(B) The child must be properly secured in the restraint system and must not exceed the specified weight limit for the restraint system; and

(C) The restraint system must bear the appropriate label(s).

(b) Except as provided in paragraph (b)(3) of this section, the following prohibitions apply to certificate holders:

(1) Except as provided in §135.128(a)(2)(ii)(C)(*3*) and §135.128(a)(2)(ii)(C)(*4*), no certificate holder may permit a child, in an aircraft, to occupy a booster-type child restraint system, a vest-type child restraint system, a harness-type child restraint system, or a lap held child restraint system during take off, landing, and movement on the surface.

(2) Except as required in paragraph (b)(1) of this section, no certificate holder may prohibit a child, if requested by the child's parent, guardian, or designated attendant, from occupying a child restraint system furnished by the child's parent, guardian, or designated attendant provided:

(i) The child holds a ticket for an approved seat or berth or such seat or berth is otherwise made available by the certificate holder for the child's use;

(ii) The requirements of paragraph (a)(2)(i) of this section are met;

(iii) The requirements of paragraph (a)(2)(iii) of this section are met; and

(iv) The child restraint system has one or more of the labels described in paragraphs (a)(2)(ii)(A) through (a)(2)(ii)(C) of this section.

(3) This section does not prohibit the certificate holder from providing child restraint systems authorized by this or, consistent with safe operating practices, determining the most appropriate passenger seat location for the child restraint system.

[Doc. No. 26142, 57 FR 42676, Sept. 15, 1992, as amended by Amdt. 135–62, 61 FR 28422, June 4, 1996; Amdt. 135–100, 70 FR 50907, Aug. 26, 2005; Amdt. 135–106, 71 FR 40010, July 14, 2006; 71 FR 59374, Oct. 10, 2006]

§ 135.129 Exit seating.

(a)(1) *Applicability*. This section applies to all certificate holders operating under this part, except for on-demand operations with aircraft having 19 or fewer passenger seats and commuter operations with aircraft having 9 or fewer passenger seats.

(2) *Duty to make determination of suitability*. Each certificate holder shall determine, to the extent necessary to perform the applicable functions of paragraph (d) of this section, the suitability of each person it permits to occupy an exit seat. For the purpose of this section—

(i) *Exit seat* means—

(A) Each seat having direct access to an exit; and

(B) Each seat in a row of seats through which passengers would have to pass to gain access to an exit, from the first seat inboard of the exit to the first aisle inboard of the exit.

(ii) A passenger seat having *direct access* means a seat from which a passenger can proceed directly to the exit without entering an aisle or passing around an obstruction.

(3) *Persons designated to make determination*. Each certificate holder shall make the passenger exit seating determinations required by this paragraph in a non-discriminatory manner consistent with the requirements of this section, by persons designated in the certificate holder's required operations manual.

(4) *Submission of designation for approval*. Each certificate holder shall designate the exit seats for each passenger seating configuration in its fleet in accordance with the definitions in this paragraph and submit those designations for approval as part of the procedures required to be submitted for approval under paragraphs (n) and (p) of this section.

(b) No certificate holder may seat a person in a seat affected by this section if the certificate holder determines that it is likely that the person would be unable to perform one or more of the applicable functions listed in paragraph (d) of this section because—

(1) The person lacks sufficient mobility, strength, or dexterity in both arms and hands, and both legs:

(i) To reach upward, sideways, and downward to the location of emergency exit and exit-slide operating mechanisms;

(ii) To grasp and push, pull, turn, or otherwise manipulate those mechanisms;

(iii) To push, shove, pull, or otherwise open emergency exits;

(iv) To lift out, hold, deposit on nearby seats, or maneuver over the seatbacks to the next row objects the size and weight of over-wing window exit doors;

(v) To remove obstructions of size and weight similar over-wing exit doors;

(vi) To reach the emergency exit expeditiously;

(vii) To maintain balance while removing obstructions;

(viii) To exit expeditiously;

(ix) To stabilize an escape slide after deployment; or

(x) To assist others in getting off an escape slide;

(2) The person is less than 15 years of age or lacks the capacity to perform one or more of the applicable functions listed in paragraph (d) of this section without the assistance of an adult companion, parent, or other relative;

(3) The person lacks the ability to read and understand instructions required by this section and related to emergency evacuation provided by the certificate holder in printed or graphic form or the ability to understand oral crew commands.

(4) The person lacks sufficient visual capacity to perform one or more of the

applicable functions in paragraph (d) of this section without the assistance of visual aids beyond contact lenses or eyeglasses;

(5) The person lacks sufficient aural capacity to hear and understand instructions shouted by flight attendants, without assistance beyond a hearing aid;

(6) The person lacks the ability adequately to impart information orally to other passengers; or,

(7) The person has:

(i) A condition or responsibilities, such as caring for small children, that might prevent the person from performing one or more of the applicable functions listed in paragraph (d) of this section; or

(ii) A condition that might cause the person harm if he or she performs one or more of the applicable functions listed in paragraph (d) of this section.

(c) Each passenger shall comply with instructions given by a crewmember or other authorized employee of the certificate holder implementing exit seating restrictions established in accordance with this section.

(d) Each certificate holder shall include on passenger information cards, presented in the language in which briefings and oral commands are given by the crew, at each exit seat affected by this section, information that, in the event of an emergency in which a crewmember is not available to assist, a passenger occupying an exit seat may use if called upon to perform the following functions:

(1) Locate the emergency exit;

(2) Recognize the emergency exit opening mechanism;

(3) Comprehend the instructions for operating the emergency exit;

(4) Operate the emergency exit;

(5) Assess whether opening the emergency exit will increase the hazards to which passengers may be exposed;

(6) Follow oral directions and hand signals given by a crewmember;

(7) Stow or secure the emergency exit door so that it will not impede use of the exit;

(8) Assess the condition of an escape slide, activate the slide, and stabilize the slide after deployment to assist others in getting off the slide;

(9) Pass expeditiously through the emergency exit; and

(10) Assess, select, and follow a safe path away from the emergency exit.

(e) Each certificate holder shall include on passenger information cards, at each exit seat—

(1) In the primary language in which emergency commands are given by the crew, the selection criteria set forth in paragraph (b) of this section, and a request that a passenger identify himself or herself to allow reseating if he or she—

(i) Cannot meet the selection criteria set forth in paragraph (b) of this section;

(ii) Has a nondiscernible condition that will prevent him or her from performing the applicable functions listed in paragraph (d) of this section;

(iii) May suffer bodily harm as the result of performing one or more of those functions; or

(iv) Does not wish to perform those functions; and,

(2) In each language used by the certificate holder for passenger information cards, a request that a passenger identify himself or herself to allow reseating if he or she lacks the ability to read, speak, or understand the language or the graphic form in which instructions required by this section and related to emergency evacuation are provided by the certificate holder, or the ability to understand the specified language in which crew commands will be given in an emergency;

(3) May suffer bodily harm as the result of performing one or more of those functions; or,

(4) Does not wish to perform those functions.

A certificate holder shall not require the passenger to disclose his or her reason for needing reseating.

(f) Each certificate holder shall make available for inspection by the public at all passenger loading gates and ticket counters at each airport where it conducts passenger operations, written procedures established for making determinations in regard to exit row seating.

(g) No certificate holder may allow taxi or pushback unless at least one required crewmember has verified that no exit seat is occupied by a person the

crewmember determines is likely to be unable to perform the applicable functions listed in paragraph (d) of this section.

(h) Each certificate holder shall include in its passenger briefings a reference to the passenger information cards, required by paragraphs (d) and (e), the selection criteria set forth in paragraph (b), and the functions to be performed, set forth in paragraph (d) of this section.

(i) Each certificate holder shall include in its passenger briefings a request that a passenger identify himself or herself to allow reseating if he or she—

(1) Cannot meet the selection criteria set forth in paragraph (b) of this section;

(2) Has a nondiscernible condition that will prevent him or her from performing the applicable functions listed in paragraph (d) of this section;

(3) May suffer bodily harm as the result of performing one or more of those functions; or,

(4) Does not wish to perform those functions.

A certificate holder shall not require the passenger to disclose his or her reason for needing reseating.

(j) [Reserved]

(k) In the event a certificate holder determines in accordance with this section that it is likely that a passenger assigned to an exit seat would be unable to perform the functions listed in paragraph (d) of this section or a passenger requests a non-exit seat, the certificate holder shall expeditiously relocate the passenger to a non-exit seat.

(l) In the event of full booking in the non-exit seats and if necessary to accommodate a passenger being relocated from an exit seat, the certificate holder shall move a passenger who is willing and able to assume the evacuation functions that may be required, to an exit seat.

(m) A certificate holder may deny transportation to any passenger under this section only because—

(1) The passenger refuses to comply with instructions given by a crewmember or other authorized employee of the certificate holder implementing exit seating restrictions established in accordance with this section, or

(2) The only seat that will physically accommodate the person's handicap is an exit seat.

(n) In order to comply with this section certificate holders shall—

(1) Establish procedures that address:

(i) The criteria listed in paragraph (b) of this section;

(ii) The functions listed in paragraph (d) of this section;

(iii) The requirements for airport information, passenger information cards, crewmember verification of appropriate seating in exit seats, passenger briefings, seat assignments, and denial of transportation as set forth in this section;

(iv) How to resolve disputes arising from implementation of this section, including identification of the certificate holder employee on the airport to whom complaints should be addressed for resolution; and,

(2) Submit their procedures for preliminary review and approval to the principal operations inspectors assigned to them at the certificate-holding district office.

(o) Certificate holders shall assign seats prior to boarding consistent with the criteria listed in paragraph (b) and the functions listed in paragraph (d) of this section, to the maximum extent feasible.

(p) The procedures required by paragraph (n) of this section will not become effective until final approval is granted by the Director, Flight Standards Service, Washington, DC. Approval will be based solely upon the safety aspects of the certificate holder's procedures.

[Doc. No. 25821, 55 FR 8073, Mar. 6, 1990, as amended by Amdt. 135–45, 57 FR 48664, Oct. 27, 1992; Amdt. 135–50, 59 FR 33603, June 29, 1994; Amdt. 135–60, 61 FR 2616, Jan. 26, 1996]

Subpart C—Aircraft and Equipment

§ 135.141 Applicability.

This subpart prescribes aircraft and equipment requirements for operations under this part. The requirements of this subpart are in addition to the aircraft and equipment requirements of part 91 of this chapter. However, this

part does not require the duplication of any equipment required by this chapter.

§ 135.143 General requirements.

(a) No person may operate an aircraft under this part unless that aircraft and its equipment meet the applicable regulations of this chapter.

(b) Except as provided in § 135.179, no person may operate an aircraft under this part unless the required instruments and equipment in it have been approved and are in an operable condition.

(c) ATC transponder equipment installed within the time periods indicated below must meet the performance and environmental requirements of the following TSO's:

(1) *Through January 1, 1992:* (i) Any class of TSO-C74b or any class of TSO-C74c as appropriate, provided that the equipment was manufactured before January 1, 1990; or

(ii) The appropriate class of TSO-C112 (Mode S).

(2) *After January 1, 1992:* The appropriate class of TSO-C112 (Mode S). For purposes of paragraph (c)(2) of this section, ''installation'' does not include—

(i) Temporary installation of TSO-C74b or TSO-C74c substitute equipment, as appropriate, during maintenance of the permanent equipment;

(ii) Reinstallation of equipment after temporary removal for maintenance; or

(iii) For fleet operations, installation of equipment in a fleet aircraft after removal of the equipment for maintenance from another aircraft in the same operator's fleet.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–22, 52 FR 3392, Feb. 3, 1987]

§ 135.144 Portable electronic devices.

(a) Except as provided in paragraph (b) of this section, no person may operate, nor may any operator or pilot in command of an aircraft allow the operation of, any portable electronic device on any of the following U.S.-registered civil aircraft operating under this part.

(b) Paragraph (a) of this section does not apply to—

(1) Portable voice recorders;

(2) Hearing aids;

(3) Heart pacemakers;

(4) Electric shavers; or

(5) Any other portable electronic device that the part 119 certificate holder has determined will not cause interference with the navigation or communication system of the aircraft on which it is to be used.

(c). The determination required by paragraph (b)(5) of this section shall be made by that part 119 certificate holder operating the aircraft on which the particular device is to be used.

[Doc. No. FAA–1998–4954, 64 FR 1080, Jan. 7, 1999]

§ 135.145 Aircraft proving and validation tests.

(a) No certificate holder may operate an aircraft, other than a turbojet aircraft, for which two pilots are required by this chapter for operations under VFR, if it has not previously proved such an aircraft in operations under this part in at least 25 hours of proving tests acceptable to the Administrator including—

(1) Five hours of night time, if night flights are to be authorized;

(2) Five instrument approach procedures under simulated or actual conditions, if IFR flights are to be authorized; and

(3) Entry into a representative number of en route airports as determined by the Administrator.

(b) No certificate holder may operate a turbojet airplane if it has not previously proved a turbojet airplane in operations under this part in at least 25 hours of proving tests acceptable to the Administrator including—

(1) Five hours of night time, if night flights are to be authorized;

(2) Five instrument approach procedures under simulated or actual conditions, if IFR flights are to be authorized; and

(3) Entry into a representative number of en route airports as determined by the Administrator.

(c) No certificate holder may carry passengers in an aircraft during proving tests, except those needed to make the tests and those designated by the Administrator to observe the tests. However, pilot flight training may be conducted during the proving tests.

(d) Validation testing is required to determine that a certificate holder is

capable of conducting operations safely and in compliance with applicable regulatory standards. Validation tests are required for the following authorizations:

(1) The addition of an aircraft for which two pilots are required for operations under VFR or a turbojet airplane, if that aircraft or an aircraft of the same make or similar design has not been previously proved or validated in operations under this part.

(2) Operations outside U.S. airspace.

(3) Class II navigation authorizations.

(4) Special performance or operational authorizations.

(e) Validation tests must be accomplished by test methods acceptable to the Administrator. Actual flights may not be required when an applicant can demonstrate competence and compliance with appropriate regulations without conducting a flight.

(f) Proving tests and validation tests may be conducted simultaneously when appropriate.

(g) The Administrator may authorize deviations from this section if the Administrator finds that special circumstances make full compliance with this section unnecessary.

[Doc. No. FAA–2001–10047, 68 FR 54586, Sept. 17, 2003]

§ 135.147 Dual controls required.

No person may operate an aircraft in operations requiring two pilots unless it is equipped with functioning dual controls. However, if the aircraft type certification operating limitations do not require two pilots, a throwover control wheel may be used in place of two control wheels.

§ 135.149 Equipment requirements: General.

No person may operate an aircraft unless it is equipped with—

(a) A sensitive altimeter that is adjustable for barometric pressure;

(b) Heating or deicing equipment for each carburetor or, for a pressure carburetor, an alternate air source;

(c) For turbojet airplanes, in addition to two gyroscopic bank-and-pitch indicators (artificial horizons) for use at the pilot stations, a third indicator that is installed in accordance with the instrument requirements prescribed in §121.305(j) of this chapter.

(d) [Reserved]

(e) For turbine powered aircraft, any other equipment as the Administrator may require.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended at Amdt. 135–1, 44 FR 26737, May 7, 1979; Amdt. 135–34, 54 FR 43926, Oct. 27, 1989; Amdt. 135–38, 55 FR 43310, Oct. 26, 1990]

§ 135.150 Public address and crewmember interphone systems.

No person may operate an aircraft having a passenger seating configuration, excluding any pilot seat, of more than 19 unless it is equipped with—

(a) A public address system which—

(1) Is capable of operation independent of the crewmember interphone system required by paragraph (b) of this section, except for handsets, headsets, microphones, selector switches, and signaling devices;

(2) Is approved in accordance with §21.305 of this chapter;

(3) Is accessible for immediate use from each of two flight crewmember stations in the pilot compartment;

(4) For each required floor-level passenger emergency exit which has an adjacent flight attendant seat, has a microphone which is readily accessible to the seated flight attendant, except that one microphone may serve more than one exit, provided the proximity of the exits allows unassisted verbal communication between seated flight attendants;

(5) Is capable of operation within 10 seconds by a flight attendant at each of those stations in the passenger compartment from which its use is accessible;

(6) Is audible at all passenger seats, lavatories, and flight attendant seats and work stations; and

(7) For transport category airplanes manufactured on or after November 27, 1990, meets the requirements of §25.1423 of this chapter.

(b) A crewmember interphone system which—

(1) Is capable of operation independent of the public address system required by paragraph (a) of this section, except for handsets, headsets, microphones, selector switches, and signaling devices;

(2) Is approved in accordance with § 21.305 of this chapter;

(3) Provides a means of two-way communication between the pilot compartment and—

(i) Each passenger compartment; and

(ii) Each galley located on other than the main passenger deck level;

(4) Is accessible for immediate use from each of two flight crewmember stations in the pilot compartment;

(5) Is accessible for use from at least one normal flight attendant station in each passenger compartment;

(6) Is capable of operation within 10 seconds by a flight attendant at each of those stations in each passenger compartment from which its use is accessible; and

(7) For large turbojet-powered airplanes—

(i) Is accessible for use at enough flight attendant stations so that all floor-level emergency exits (or entryways to those exits in the case of exits located within galleys) in each passenger compartment are observable from one or more of those stations so equipped;

(ii) Has an alerting system incorporating aural or visual signals for use by flight crewmembers to alert flight attendants and for use by flight attendants to alert flight crewmembers;

(iii) For the alerting system required by paragraph (b)(7)(ii) of this section, has a means for the recipient of a call to determine whether it is a normal call or an emergency call; and

(iv) When the airplane is on the ground, provides a means of two-way communication between ground personnel and either of at least two flight crewmembers in the pilot compartment. The interphone system station for use by ground personnel must be so located that personnel using the system may avoid visible detection from within the airplane.

[Doc. No. 24995, 54 FR 43926, Oct. 27, 1989]

§ 135.151 Cockpit voice recorders.

(a) No person may operate a multiengine, turbine-powered airplane or rotorcraft having a passenger seating configuration of six or more and for which two pilots are required by certification or operating rules unless it is equipped with an approved cockpit voice recorder that:

(1) Is installed in compliance with § 23.1457(a) (1) and (2), (b), (c), (d), (e), (f), and (g); § 25.1457(a) (1) and (2), (b), (c), (d), (e), (f), and (g); § 27.1457(a) (1) and (2), (b), (c), (d), (e), (f), and (g); or § 29.1457(a) (1) and (2), (b), (c), (d), (e), (f), and (g) of this chapter, as applicable; and

(2) Is operated continuously from the use of the check list before the flight to completion of the final check list at the end of the flight.

(b) No person may operate a multiengine, turbine-powered airplane or rotorcraft having a passenger seating configuration of 20 or more seats unless it is equipped with an approved cockpit voice recorder that—

(1) Is installed in compliance with § 23.1457, § 25.1457, § 27.1457 or § 29.1457 of this chapter, as applicable; and

(2) Is operated continuously from the use of the check list before the flight to completion of the final check list at the end of the flight.

(c) In the event of an accident, or occurrence requiring immediate notification of the National Transportation Safety Board which results in termination of the flight, the certificate holder shall keep the recorded information for at least 60 days or, if requested by the Administrator or the Board, for a longer period. Information obtained from the record may be used to assist in determining the cause of accidents or occurrences in connection with investigations. The Administrator does not use the record in any civil penalty or certificate action.

(d) For those aircraft equipped to record the uninterrupted audio signals received by a boom or a mask microphone the flight crewmembers are required to use the boom microphone below 18,000 feet mean sea level. No person may operate a large turbine engine powered airplane manufactured after October 11, 1991, or on which a cockpit voice recorder has been installed after October 11, 1991, unless it is equipped to record the uninterrupted audio signal received by a boom or mask microphone in accordance with § 25.1457(c)(5) of this chapter.

(e) In complying with this section, an approved cockpit voice recorder having

an erasure feature may be used, so that during the operation of the recorder, information:

(1) Recorded in accordance with paragraph (a) of this section and recorded more than 15 minutes earlier; or

(2) Recorded in accordance with paragraph (b) of this section and recorded more than 30 minutes earlier; may be erased or otherwise obliterated.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–23, 52 FR 9637, Mar. 25, 1987; Amdt. 135–26, 53 FR 26151, July 11, 1988; Amdt. 135–60, 61 FR 2616, Jan. 26, 1996]

§ 135.152 Flight recorders.

(a) Except as provided in paragraph (k) of this section, no person may operate under this part a multi-engine, turbine-engine powered airplane or rotorcraft having a passenger seating configuration, excluding any required crewmember seat, of 10 to 19 seats, that was either brought onto the U.S. register after, or was registered outside the United States and added to the operator's U.S. operations specifications after, October 11, 1991, unless it is equipped with one or more approved flight recorders that use a digital method of recording and storing data and a method of readily retrieving that data from the storage medium. The parameters specified in either Appendix B or C of this part, as applicable must be recorded within the range, accuracy, resolution, and recording intervals as specified. The recorder shall retain no less than 25 hours of aircraft operation.

(b) After October 11, 1991, no person may operate a multiengine, turbine-powered airplane having a passenger seating configuration of 20 to 30 seats or a multiengine, turbine-powered rotorcraft having a passenger seating configuration of 20 or more seats unless it is equipped with one or more approved flight recorders that utilize a digital method of recording and storing data, and a method of readily retrieving that data from the storage medium. The parameters in appendix D or E of this part, as applicable, that are set forth below, must be recorded within the ranges, accuracies, resolutions, and sampling intervals as specified.

(1) Except as provided in paragraph (b)(3) of this section for aircraft type certificated before October 1, 1969, the following parameters must be recorded:

(i) Time;

(ii) Altitude;

(iii) Airspeed;

(iv) Vertical acceleration;

(v) Heading;

(vi) Time of each radio transmission to or from air traffic control;

(vii) Pitch attitude;

(viii) Roll attitude;

(ix) Longitudinal acceleration;

(x) Control column or pitch control surface position; and

(xi) Thrust of each engine.

(2) Except as provided in paragraph (b)(3) of this section for aircraft type certificated after September 30, 1969, the following parameters must be recorded:

(i) Time;

(ii) Altitude;

(iii) Airspeed;

(iv) Vertical acceleration;

(v) Heading;

(vi) Time of each radio transmission either to or from air traffic control;

(vii) Pitch attitude;

(viii) Roll attitude;

(ix) Longitudinal acceleration;

(x) Pitch trim position;

(xi) Control column or pitch control surface position;

(xii) Control wheel or lateral control surface position;

(xiii) Rudder pedal or yaw control surface position;

(xiv) Thrust of each engine;

(xv) Position of each thrust reverser;

(xvi) Trailing edge flap or cockpit flap control position; and

(xvii) Leading edge flap or cockpit flap control position.

(3) For aircraft manufactured after October 11, 1991, all of the parameters listed in appendix D or E of this part, as applicable, must be recorded.

(c) Whenever a flight recorder required by this section is installed, it must be operated continuously from the instant the airplane begins the takeoff roll or the rotorcraft begins the lift-off until the airplane has completed the landing roll or the rotorcraft has landed at its destination.

(d) Except as provided in paragraph (c) of this section, and except for recorded data erased as authorized in this paragraph, each certificate holder

shall keep the recorded data prescribed in paragraph (a) of this section until the aircraft has been operating for at least 25 hours of the operating time specified in paragraph (c) of this section. In addition, each certificate holder shall keep the recorded data prescribed in paragraph (b) of this section for an airplane until the airplane has been operating for at least 25 hours, and for a rotorcraft until the rotorcraft has been operating for at least 10 hours, of the operating time specified in paragraph (c) of this section. A total of 1 hour of recorded data may be erased for the purpose of testing the flight recorder or the flight recorder system. Any erasure made in accordance with this paragraph must be of the oldest recorded data accumulated at the time of testing. Except as provided in paragraph (c) of this section, no record need be kept more than 60 days.

(e) In the event of an accident or occurrence that requires the immediate notification of the National Transportation Safety Board under 49 CFR part 830 of its regulations and that results in termination of the flight, the certificate holder shall remove the recording media from the aircraft and keep the recorded data required by paragraphs (a) and (b) of this section for at least 60 days or for a longer period upon request of the Board or the Administrator.

(f)(1) For airplanes manufactured on or before August 18, 2000, and all other aircraft, each flight recorder required by this section must be installed in accordance with the requirements of §23.1459, 25.1459, 27.1459, or 29.1459, as appropriate, of this chapter. The correlation required by paragraph (c) of §23.1459, 25.1459, 27.1459, or 29.1459, as appropriate, of this chapter need be established only on one aircraft of a group of aircraft:

(i) That are of the same type;

(ii) On which the flight recorder models and their installations are the same; and

(iii) On which there are no differences in the type designs with respect to the installation of the first pilot's instruments associated with the flight recorder. The most recent instrument calibration, including the recording medium from which this calibration is derived, and the recorder correlation must be retained by the certificate holder.

(f)(2) For airplanes manufactured after August 18, 2000, each flight data recorder system required by this section must be installed in accordance with the requirements of §23.1459 (a), (b), (d) and (e) of this chapter, or §25.1459 (a), (b), (d), and (e) of this chapter. A correlation must be established between the values recorded by the flight data recorder and the corresponding values being measured. The correlation must contain a sufficient number of correlation points to accurately establish the conversion from the recorded values to engineering units or discrete state over the full operating range of the parameter. Except for airplanes having separate altitude and airspeed sensors that are an integral part of the flight data recorder system, a single correlation may be established for any group of airplanes—

(i) That are of the same type;

(ii) On which the flight recorder system and its installation are the same; and

(iii) On which there is no difference in the type design with respect to the installation of those sensors associated with the flight data recorder system. Documentation sufficient to convert recorded data into the engineering units and discrete values specified in the applicable appendix must be maintained by the certificate holder.

(g) Each flight recorder required by this section that records the data specified in paragraphs (a) and (b) of this section must have an approved device to assist in locating that recorder under water.

(h) The operational parameters required to be recorded by digital flight data recorders required by paragraphs (i) and (j) of this section are as follows, the phrase ''when an information source is installed'' following a parameter indicates that recording of that parameter is not intended to require a change in installed equipment.

(1) Time;

(2) Pressure altitude;

(3) Indicated airspeed;

(4) Heading—primary flight crew reference (if selectable, record discrete, true or magnetic);
(5) Normal acceleration (Vertical);
(6) Pitch attitude;
(7) Roll attitude;
(8) Manual radio transmitter keying, or CVR/DFDR synchronization reference;
(9) Thrust/power of each engine—primary flight crew reference;
(10) Autopilot engagement status;
(11) Longitudinal acceleration;
(12) Pitch control input;
(13) Lateral control input;
(14) Rudder pedal input;
(15) Primary pitch control surface position;
(16) Primary lateral control surface position;
(17) Primary yaw control surface position;
(18) Lateral acceleration;
(19) Pitch trim surface position or parameters of paragraph (h)(82) of this section if currently recorded;
(20) Trailing edge flap or cockpit flap control selection (except when parameters of paragraph (h)(85) of this section apply);
(21) Leading edge flap or cockpit flap control selection (except when parameters of paragraph (h)(86) of this section apply);
(22) Each Thrust reverser position (or equivalent for propeller airplane);
(23) Ground spoiler position or speed brake selection (except when parameters of paragraph (h)(87) of this section apply);
(24) Outside or total air temperature;
(25) Automatic Flight Control System (AFCS) modes and engagement status, including autothrottle;
(26) Radio altitude (when an information source is installed);
(27) Localizer deviation, MLS Azimuth;
(28) Glideslope deviation, MLS Elevation;
(29) Marker beacon passage;
(30) Master warning;
(31) Air/ground sensor (primary airplane system reference nose or main gear);
(32) Angle of attack (when information source is installed);
(33) Hydraulic pressure low (each system);
(34) Ground speed (when an information source is installed);
(35) Ground proximity warning system;
(36) Landing gear position or landing gear cockpit control selection;
(37) Drift angle (when an information source is installed);
(38) Wind speed and direction (when an information source is installed);
(39) Latitude and longitude (when an information source is installed);
(40) Stick shaker/pusher (when an information source is installed);
(41) Windshear (when an information source is installed);
(42) Throttle/power lever position;
(43) Additional engine parameters (as designated in appendix F of this part);
(44) Traffic alert and collision avoidance system;
(45) DME 1 and 2 distances;
(46) Nav 1 and 2 selected frequency;
(47) Selected barometric setting (when an information source is installed);
(48) Selected altitude (when an information source is installed);
(49) Selected speed (when an information source is installed);
(50) Selected mach (when an information source is installed);
(51) Selected vertical speed (when an information source is installed);
(52) Selected heading (when an information source is installed);
(53) Selected flight path (when an information source is installed);
(54) Selected decision height (when an information source is installed);
(55) EFIS display format;
(56) Multi-function/engine/alerts display format;
(57) Thrust command (when an information source is installed);
(58) Thrust target (when an information source is installed);
(59) Fuel quantity in CG trim tank (when an information source is installed);
(60) Primary Navigation System Reference;
(61) Icing (when an information source is installed);
(62) Engine warning each engine vibration (when an information source is installed);

(63) Engine warning each engine over temp. (when an information source is installed);

(64) Engine warning each engine oil pressure low (when an information source is installed);

(65) Engine warning each engine over speed (when an information source is installed;

(66) Yaw trim surface position;

(67) Roll trim surface position;

(68) Brake pressure (selected system);

(69) Brake pedal application (left and right);

(70) Yaw or sideslip angle (when an information source is installed);

(71) Engine bleed valve position (when an information source is installed);

(72) De-icing or anti-icing system selection (when an information source is installed);

(73) Computed center of gravity (when an information source is installed);

(74) AC electrical bus status;

(75) DC electrical bus status;

(76) APU bleed valve position (when an information source is installed);

(77) Hydraulic pressure (each system);

(78) Loss of cabin pressure;

(79) Computer failure;

(80) Heads-up display (when an information source is installed);

(81) Para-visual display (when an information source is installed);

(82) Cockpit trim control input position—pitch;

(83) Cockpit trim control input position—roll;

(84) Cockpit trim control input position—yaw;

(85) Trailing edge flap and cockpit flap control position;

(86) Leading edge flap and cockpit flap control position;

(87) Ground spoiler position and speed brake selection; and

(88) All cockpit flight control input forces (control wheel, control column, rudder pedal).

(i) For all turbine-engine powered airplanes with a seating configuration, excluding any required crewmember seat, of 10 to 30 passenger seats, manufactured after August 18, 2000—

(1) The parameters listed in paragraphs (h)(1) through (h)(57) of this section must be recorded within the ranges, accuracies, resolutions, and recording intervals specified in Appendix F of this part.

(2) Commensurate with the capacity of the recording system, all additional parameters for which information sources are installed and which are connected to the recording system must be recorded within the ranges, accuracies, resolutions, and sampling intervals specified in Appendix F of this part.

(j) For all turbine-engine-powered airplanes with a seating configuration, excluding any required crewmember seat, of 10 to 30 passenger seats, that are manufactured after August 19, 2002 the parameters listed in paragraph (a)(1) through (a)(88) of this section must be recorded within the ranges, accuracies, resolutions, and recording intervals specified in Appendix F of this part.

(k) For aircraft manufactured before August 18, 1997, the following aircraft types need not comply with this section: Bell 212, Bell 214ST, Bell 412, Bell 412SP, Boeing Chinook (BV–234), Boeing/Kawasaki Vertol 107 (BV/KV–107–II), deHavilland DHC–6, Eurocopter Puma 330J, Sikorsky 58, Sikorsky 61N, Sikorsky 76A.

[Doc. No. 25530, 53 FR 26151, July 11, 1988, as amended by Amdt. 135–69, 62 FR 38396, July 17, 1997; 62 FR 48135, Sept. 12, 1997; Amdt. 135–89, 68 FR 42939, July 18, 2003]

§ 135.153 Ground proximity warning system.

(a) No person may operate a turbine-powered airplane having a passenger seat configuration of 10 seats or more, excluding any pilot seat, unless it is equipped with an approved ground proximity warning system.

(b) [Reserved]

(c) For a system required by this section, the Airplane Flight Manual shall contain—

(1) Appropriate procedures for—

(i) The use of the equipment;

(ii) Proper flight crew action with respect to the equipment; and

(iii) Deactivation for planned abnormal and emergency conditions; and

(2) An outline of all input sources that must be operating.

(d) No person may deactivate a system required by this section except under procedures in the Airplane Flight Manual.

(e) Whenever a system required by this section is deactivated, an entry shall be made in the airplane maintenance record that includes the date and time of deactivation.

(f) This section expires on March 29, 2005.

[Doc. No. 26202, 57 FR 9951, Mar. 20, 1992, as amended by Amdt. 135–60, 61 FR 2616, Jan. 26, 1996; Amdt. 135–66, 62 FR 13257, Mar. 19, 1997; Amdt. 135–75, 65 FR 16755, Mar. 29, 2000]

§ 135.154 Terrain awareness and warning system.

(a) *Airplanes manufactured after March 29, 2002:*

(1) No person may operate a turbine-powered airplane configured with 10 or more passenger seats, excluding any pilot seat, unless that airplane is equipped with an approved terrain awareness and warning system that meets the requirements for Class A equipment in Technical Standard Order (TSO)–C151. The airplane must also include an approved terrain situational awareness display.

(2) No person may operate a turbine-powered airplane configured with 6 to 9 passenger seats, excluding any pilot seat, unless that airplane is equipped with an approved terrain awareness and warning system that meets as a minimum the requirements for Class B equipment in Technical Standard Order (TSO)–C151.

(b) *Airplanes manufactured on or before March 29, 2002:*

(1) No person may operate a turbine-powered airplane configured with 10 or more passenger seats, excluding any pilot seat, after March 29, 2005, unless that airplane is equipped with an approved terrain awareness and warning system that meets the requirements for Class A equipment in Technical Standard Order (TSO)–C151. The airplane must also include an approved terrain situational awareness display.

(2) No person may operate a turbine-powered airplane configured with 6 to 9 passenger seats, excluding any pilot seat, after March 29, 2005, unless that airplane is equipped with an approved terrain awareness and warning system that meets as a minimum the requirements for Class B equipment in Technical Standard Order (TSO)–C151.

(Approved by the Office of Management and Budget under control number 2120–0631)

(c) *Airplane Flight Manual.* The Airplane Flight Manual shall contain appropriate procedures for—

(1) The use of the terrain awareness and warning system; and

(2) Proper flight crew reaction in response to the terrain awareness and warning system audio and visual warnings.

[Doc. No. 29312, 65 FR 16755, Mar. 29, 2000]

§ 135.155 Fire extinguishers: Passenger-carrying aircraft.

No person may operate an aircraft carrying passengers unless it is equipped with hand fire extinguishers of an approved type for use in crew and passenger compartments as follows—

(a) The type and quantity of extinguishing agent must be suitable for the kinds of fires likely to occur;

(b) At least one hand fire extinguisher must be provided and conveniently located on the flight deck for use by the flight crew; and

(c) At least one hand fire extinguisher must be conveniently located in the passenger compartment of each aircraft having a passenger seating configuration, excluding any pilot seat, of at least 10 seats but less than 31 seats.

§ 135.157 Oxygen equipment requirements.

(a) *Unpressurized aircraft.* No person may operate an unpressurized aircraft at altitudes prescribed in this section unless it is equipped with enough oxygen dispensers and oxygen to supply the pilots under §135.89(a) and to supply, when flying—

(1) At altitudes above 10,000 feet through 15,000 feet MSL, oxygen to at least 10 percent of the occupants of the aircraft, other than the pilots, for that part of the flight at those altitudes that is of more than 30 minutes duration; and

(2) Above 15,000 feet MSL, oxygen to each occupant of the aircraft other than the pilots.

(b) *Pressurized aircraft.* No person may operate a pressurized aircraft—

(1) At altitudes above 25,000 feet MSL, unless at least a 10-minute supply of supplemental oxygen is available for each occupant of the aircraft, other than the pilots, for use when a descent is necessary due to loss of cabin pressurization; and

(2) Unless it is equipped with enough oxygen dispensers and oxygen to comply with paragraph (a) of this section whenever the cabin pressure altitude exceeds 10,000 feet MSL and, if the cabin pressurization fails, to comply with §135.89 (a) or to provide a 2-hour supply for each pilot, whichever is greater, and to supply when flying—

(i) At altitudes above 10,000 feet through 15,000 feet MSL, oxygen to at least 10 percent of the occupants of the aircraft, other than the pilots, for that part of the flight at those altitudes that is of more than 30 minutes duration; and

(ii) Above 15,000 feet MSL, oxygen to each occupant of the aircraft, other than the pilots, for one hour unless, at all times during flight above that altitude, the aircraft can safely descend to 15,000 feet MSL within four minutes, in which case only a 30-minute supply is required.

(c) The equipment required by this section must have a means—

(1) To enable the pilots to readily determine, in flight, the amount of oxygen available in each source of supply and whether the oxygen is being delivered to the dispensing units; or

(2) In the case of individual dispensing units, to enable each user to make those determinations with respect to that person's oxygen supply and delivery; and

(3) To allow the pilots to use undiluted oxygen at their discretion at altitudes above 25,000 feet MSL.

§135.158 Pitot heat indication systems.

(a) Except as provided in paragraph (b) of this section, after April 12, 1981, no person may operate a transport category airplane equipped with a flight instrument pitot heating system unless the airplane is also equipped with an operable pitot heat indication system that complies with §25.1326 of this chapter in effect on April 12, 1978.

(b) A certificate holder may obtain an extension of the April 12, 1981, compliance date specified in paragraph (a) of this section, but not beyond April 12, 1983, from the Director, Flight Standards Service if the certificate holder—

(1) Shows that due to circumstances beyond its control it cannot comply by the specified compliance date; and

(2) Submits by the specified compliance date a schedule for compliance, acceptable to the Director, indicating that compliance will be achieved at the earliest practicable date.

[Doc. No. 18094, Amdt. 135–17, 46 FR 48306, Aug. 31, 1981, as amended by Amdt. 135–33, 54 FR 39294, Sept. 25, 1989]

§135.159 Equipment requirements: Carrying passengers under VFR at night or under VFR over-the-top conditions.

No person may operate an aircraft carrying passengers under VFR at night or under VFR over-the-top, unless it is equipped with—

(a) A gyroscopic rate-of-turn indicator except on the following aircraft:

(1) Airplanes with a third attitude instrument system usable through flight attitudes of 360 degrees of pitch-and-roll and installed in accordance with the instrument requirements prescribed in §121.305(j) of this chapter.

(2) Helicopters with a third attitude instrument system usable through flight attitudes of ±80 degrees of pitch and ±120 degrees of roll and installed in accordance with §29.1303(g) of this chapter.

(3) Helicopters with a maximum certificated takeoff weight of 6,000 pounds or less.

(b) A slip skid indicator.

(c) A gyroscopic bank-and-pitch indicator.

(d) A gyroscopic direction indicator.

(e) A generator or generators able to supply all probable combinations of continuous in-flight electrical loads for required equipment and for recharging the battery.

(f) For night flights—

(1) An anticollision light system;

(2) Instrument lights to make all instruments, switches, and gauges easily readable, the direct rays of which are shielded from the pilots' eyes; and

(3) A flashlight having at least two size ''D'' cells or equivalent.

(g) For the purpose of paragraph (e) of this section, a continuous in-flight electrical load includes one that draws current continuously during flight, such as radio equipment and electrically driven instruments and lights, but does not include occasional intermittent loads.

(h) Notwithstanding provisions of paragraphs (b), (c), and (d), helicopters having a maximum certificated takeoff weight of 6,000 pounds or less may be operated until January 6, 1988, under visual flight rules at night without a slip skid indicator, a gyroscopic bank-and-pitch indicator, or a gyroscopic direction indicator.

[Doc. No. 24550, 51 FR 40709, Nov. 7, 1986, as amended by Amdt. 135–38, 55 FR 43310, Oct. 26, 1990]

§ 135.161 Communication and navigation equipment for aircraft operations under VFR over routes navigated by pilotage.

(a) No person may operate an aircraft under VFR over routes that can be navigated by pilotage unless the aircraft is equipped with the two-way radio communication equipment necessary under normal operating conditions to fulfill the following:

(1) Communicate with at least one appropriate station from any point on the route;

(2) Communicate with appropriate air traffic control facilities from any point within Class B, Class C, or Class D airspace, or within a Class E surface area designated for an airport in which flights are intended; and

(3) Receive meteorological information from any point en route.

(b) No person may operate an aircraft at night under VFR over routes that can be navigated by pilotage unless that aircraft is equipped with—

(1) Two-way radio communication equipment necessary under normal operating conditions to fulfill the functions specified in paragraph (a) of this section; and

(2) Navigation equipment suitable for the route to be flown.

[Doc. No. FAA–2002–14002, 72 FR 31684, June 7, 2007]

§ 135.163 Equipment requirements: Aircraft carrying passengers under IFR.

No person may operate an aircraft under IFR, carrying passengers, unless it has—

(a) A vertical speed indicator;

(b) A free-air temperature indicator;

(c) A heated pitot tube for each airspeed indicator;

(d) A power failure warning device or vacuum indicator to show the power available for gyroscopic instruments from each power source;

(e) An alternate source of static pressure for the altimeter and the airspeed and vertical speed indicators;

(f) For a single-engine aircraft:

(1) Two independent electrical power generating sources each of which is able to supply all probable combinations of continuous inflight electrical loads for required instruments and equipment; or

(2) In addition to the primary electrical power generating source, a standby battery or an alternate source of electric power that is capable of supplying 150% of the electrical loads of all required instruments and equipment necessary for safe emergency operation of the aircraft for at least one hour;

(g) For multi-engine aircraft, at least two generators or alternators each of which is on a separate engine, of which any combination of one-half of the total number are rated sufficiently to supply the electrical loads of all required instruments and equipment necessary for safe emergency operation of the aircraft except that for multi-engine helicopters, the two required generators may be mounted on the main rotor drive train; and

(h) Two independent sources of energy (with means of selecting either) of which at least one is an engine-driven pump or generator, each of which is able to drive all required gyroscopic instruments powered by, or to be powered by, that particular source and installed so that failure of one instrument or source, does not interfere with the energy supply to the remaining instruments or the other energy source unless, for single-engine aircraft in all cargo operations only, the rate of turn

indicator has a source of energy separate from the bank and pitch and direction indicators. For the purpose of this paragraph, for multi-engine aircraft, each engine-driven source of energy must be on a different engine.

(i) For the purpose of paragraph (f) of this section, a continuous inflight electrical load includes one that draws current continuously during flight, such as radio equipment, electrically driven instruments, and lights, but does not include occasional intermittent loads.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–70, 62 FR 42374, Aug. 6, 1997; Amdt. 135–72, 63 FR 25573, May 8, 1998]

§ 135.165 Communication and navigation equipment: Extended over-water or IFR operations.

(a) *Aircraft navigation equipment requirements—General.* Except as provided in paragraph (g) of this section, no person may conduct operations under IFR or extended over-water unless—

(1) The en route navigation aids necessary for navigating the aircraft along the route (e.g., ATS routes, arrival and departure routes, and instrument approach procedures, including missed approach procedures if a missed approach routing is specified in the procedure) are available and suitable for use by the navigation systems required by this section:

(2) The aircraft used in extended over-water operations is equipped with at least two-approved independent navigation systems suitable for navigating the aircraft along the route to be flown within the degree of accuracy required for ATC.

(3) The aircraft used for IFR operations is equipped with at least—

(i) One marker beacon receiver providing visual and aural signals; and

(ii) One ILS receiver.

(4) Any RNAV system used to meet the navigation equipment requirements of this section is authorized in the certificate holder's operations specifications.

(b) *Use of a single independent navigation system for IFR operations.* The aircraft may be equipped with a single independent navigation system suitable for navigating the aircraft along the route to be flown within the degree of accuracy required for ATC if:

(1) It can be shown that the aircraft is equipped with at least one other independent navigation system suitable, in the event of loss of the navigation capability of the single independent navigation system permitted by this paragraph at any point along the route, for proceeding safely to a suitable airport and completing an instrument approach; and

(2) The aircraft has sufficient fuel so that the flight may proceed safely to a suitable airport by use of the remaining navigation system, and complete an instrument approach and land.

(c) *VOR navigation equipment.* Whenever VOR navigation equipment is required by paragraph (a) or (b) of this section, no person may operate an aircraft unless it is equipped with at least one approved DME or suitable RNAV system.

(d) *Airplane communication equipment requirements.* Except as permitted in paragraph (e) of this section, no person may operate a turbojet airplane having a passenger seat configuration, excluding any pilot seat, of 10 seats or more, or a multiengine airplane in a commuter operation, as defined in part 119 of this chapter, under IFR or in extended over-water operations unless the airplane is equipped with—

(1) At least two independent communication systems necessary under normal operating conditions to fulfill the functions specified in §121.347(a) of this chapter; and

(2) At least one of the communication systems required by paragraph (d)(1) of this section must have two-way voice communication capability.

(e) *IFR or extended over-water communications equipment requirements.* A person may operate an aircraft other than that specified in paragraph (d) of this section under IFR or in extended over-water operations if it meets all of the requirements of this section, with the exception that only one communication system transmitter is required for operations other than extended over-water operations.

(f) *Additional aircraft communication equipment requirements.* In addition to the requirements in paragraphs (d) and

(e) of this section, no person may operate an aircraft under IFR or in extended over-water operations unless it is equipped with at least:

(1) Two microphones; and

(2) Two headsets or one headset and one speaker.

(g) *Extended over-water exceptions.* Notwithstanding the requirements of paragraphs (a), (d), and (e) of this section, installation and use of a single long-range navigation system and a single long-range communication system for extended over-water operations in certain geographic areas may be authorized by the Administrator and approved in the certificate holder's operations specifications. The following are among the operational factors the Administrator may consider in granting an authorization:

(1) The ability of the flight crew to navigate the airplane along the route within the degree of accuracy required for ATC;

(2) The length of the route being flown; and

(3) The duration of the very high frequency communications gap.

[Doc. No. FAA–2002–14002, 72 FR 31684, June 7, 2007]

§ 135.167 Emergency equipment: Extended overwater operations.

(a) Except where the Administrator, by amending the operations specifications of the certificate holder, requires the carriage of all or any specific items of the equipment listed below for any overwater operation, or, upon application of the certificate holder, the Administrator allows deviation for a particular extended overwater operation, no person may operate an aircraft in extended overwater operations unless it carries, installed in conspicuously marked locations easily accessible to the occupants if a ditching occurs, the following equipment:

(1) An approved life preserver equipped with an approved survivor locator light for each occupant of the aircraft. The life preserver must be easily accessible to each seated occupant.

(2) Enough approved liferafts of a rated capacity and buoyancy to accommodate the occupants of the aircraft.

(b) Each liferaft required by paragraph (a) of this section must be equipped with or contain at least the following:

(1) One approved survivor locator light.

(2) One approved pyrotechnic signaling device.

(3) Either—

(i) One survival kit, appropriately equipped for the route to be flown; or

(ii) One canopy (for sail, sunshade, or rain catcher);

(iii) One radar reflector;

(iv) One liferaft repair kit;

(v) One bailing bucket;

(vi) One signaling mirror;

(vii) One police whistle;

(viii) One raft knife;

(ix) One CO_2 bottle for emergency inflation;

(x) One inflation pump;

(xi) Two oars;

(xii) One 75-foot retaining line;

(xiii) One magnetic compass;

(xiv) One dye marker;

(xv) One flashlight having at least two size ''D'' cells or equivalent;

(xvi) A 2-day supply of emergency food rations supplying at least 1,000 calories per day for each person;

(xvii) For each two persons the raft is rated to carry, two pints of water or one sea water desalting kit;

(xviii) One fishing kit; and

(xix) One book on survival appropriate for the area in which the aircraft is operated.

(c) No person may operate an airplane in extended overwater operations unless there is attached to one of the life rafts required by paragraph (a) of this section, an approved survival type emergency locator transmitter. Batteries used in this transmitter must be replaced (or recharged, if the batteries are rechargeable) when the transmitter has been in use for more than 1 cumulative hour, or, when 50 percent of their useful life (or for rechargeable batteries, 50 percent of their useful life of charge) has expired, as established by the transmitter manufacturer under its approval. The new expiration date for replacing (or recharging) the battery must be legibly marked on the outside of the transmitter. The battery useful life (or useful life of charge) requirements of this paragraph do not apply to batteries (such as water-activated

batteries) that are essentially unaffected during probable storage intervals.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–4, 45 FR 38348, June 30, 1980; Amdt. 135–20, 51 FR 40710, Nov. 7, 1986; Amdt. 135–49, 59 FR 32058, June 21, 1994; Amdt. 135–91, 68 FR 54586, Sept. 17, 2003]

§ 135.168 [Reserved]

§ 135.169 Additional airworthiness requirements.

(a) Except for commuter category airplanes, no person may operate a large airplane unless it meets the additional airworthiness requirements of §§ 121.213 through 121.283 and 121.307 of this chapter.

(b) No person may operate a reciprocating-engine or turbopropeller-powered small airplane that has a passenger seating configuration, excluding pilot seats, of 10 seats or more unless it is type certificated—

(1) In the transport category;

(2) Before July 1, 1970, in the normal category and meets special conditions issued by the Administrator for airplanes intended for use in operations under this part;

(3) Before July 19, 1970, in the normal category and meets the additional airworthiness standards in Special Federal Aviation Regulation No. 23;

(4) In the normal category and meets the additional airworthiness standards in appendix A;

(5) In the normal category and complies with section 1.(a) of Special Federal Aviation Regulation No. 41;

(6) In the normal category and complies with section 1.(b) of Special Federal Aviation Regulation No. 41; or

(7) In the commuter category.

(c) No person may operate a small airplane with a passenger seating configuration, excluding any pilot seat, of 10 seats or more, with a seating configuration greater than the maximum seating configuration used in that type airplane in operations under this part before August 19, 1977. This paragraph does not apply to—

(1) An airplane that is type certificated in the transport category; or

(2) An airplane that complies with—

(i) Appendix A of this part provided that its passenger seating configuration, excluding pilot seats, does not exceed 19 seats; or

(ii) Special Federal Aviation Regulation No. 41.

(d) Cargo or baggage compartments:

(1) After March 20, 1991, each Class C or D compartment, as defined in § 25.857 of part 25 of this chapter, greater than 200 cubic feet in volume in a transport category airplane type certificated after January 1, 1958, must have ceiling and sidewall panels which are constructed of:

(i) Glass fiber reinforced resin;

(ii) Materials which meet the test requirements of part 25, appendix F, part III of this chapter; or

(iii) In the case of liner installations approved prior to March 20, 1989, aluminum.

(2) For compliance with this paragraph, the term ''liner'' includes any design feature, such as a joint or fastener, which would affect the capability of the liner to safely contain a fire.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–2, 44 FR 53731, Sept. 17, 1979; Amdt. 135–21, 52 FR 1836, Jan. 15, 1987; 52 FR 34745, Sept. 14, 1987; Amdt. 135–31, 54 FR 7389, Feb. 17, 1989; Amdt. 135–55, 60 FR 6628, Feb. 2, 1995]

§ 135.170 Materials for compartment interiors.

(a) No person may operate an airplane that conforms to an amended or supplemental type certificate issued in accordance with SFAR No. 41 for a maximum certificated takeoff weight in excess of 12,500 pounds unless within one year after issuance of the initial airworthiness certificate under that SFAR, the airplane meets the compartment interior requirements set forth in § 25.853(a) in effect March 6, 1995 (formerly § 25.853 (a), (b), (b–1), (b–2), and (b–3) of this chapter in effect on September 26, 1978).

(b) Except for commuter category airplanes and airplanes certificated under Special Federal Aviation Regulation No. 41, no person may operate a large airplane unless it meets the following additional airworthiness requirements:

(1) Except for those materials covered by paragraph (b)(2) of this section, all materials in each compartment

used by the crewmembers or passengers must meet the requirements of §25.853 of this chapter in effect as follows or later amendment thereto:

(i) Except as provided in paragraph (b)(1)(iv) of this section, each airplane with a passenger capacity of 20 or more and manufactured after August 19, 1988, but prior to August 20, 1990, must comply with the heat release rate testing provisions of §25.853(d) in effect March 6, 1995 (formerly §25.853(a–1) in effect on August 20, 1986), except that the total heat release over the first 2 minutes of sample exposure rate must not exceed 100 kilowatt minutes per square meter and the peak heat release rate must not exceed 100 kilowatts per square meter.

(ii) Each airplane with a passenger capacity of 20 or more and manufactured after August 19, 1990, must comply with the heat release rate and smoke testing provisions of §25.853(d) in effect March 6, 1995 (formerly §25.83(a–1) in effect on September 26, 1988).

(iii) Except as provided in paragraph (b)(1) (v) or (vi) of this section, each airplane for which the application for type certificate was filed prior to May 1, 1972, must comply with the provisions of §25.853 in effect on April 30, 1972, regardless of the passenger capacity, if there is a substantially complete replacement of the cabin interior after April 30, 1972.

(iv) Except as provided in paragraph (b)(1) (v) or (vi) of this section, each airplane for which the application for type certificate was filed after May 1, 1972, must comply with the material requirements under which the airplane was type certificated regardless of the passenger capacity if there is a substantially complete replacement of the cabin interior after that date.

(v) Except as provided in paragraph (b)(1)(vi) of this section, each airplane that was type certificated after January 1, 1958, must comply with the heat release testing provisions of §25.853(d) in effect March 6, 1995 (formerly §25.853(a–1) in effect on August 20, 1986), if there is a substantially complete replacement of the cabin interior components identified in that paragraph on or after that date, except that the total heat release over the first 2 minutes of sample exposure shall not exceed 100 kilowatt-minutes per square meter and the peak heat release rate shall not exceed 100 kilowatts per square meter.

(vi) Each airplane that was type certificated after January 1, 1958, must comply with the heat release rate and smoke testing provisions of §25.853(d) in effect March 6, 1995 (formerly §25.853(a–1) in effect on August 20, 1986), if there is a substantially complete replacement of the cabin interior components identified in that paragraph after August 19, 1990.

(vii) Contrary provisions of this section notwithstanding, the Manager of the Transport Airplane Directorate, Aircraft Certification Service, Federal Aviation Administration, may authorize deviation from the requirements of paragraph (b)(1)(i), (b)(1)(ii), (b)(1)(v), or (b)(1)(vi) of this section for specific components of the cabin interior that do not meet applicable flammability and smoke emission requirements, if the determination is made that special circumstances exist that make compliance impractical. Such grants of deviation will be limited to those airplanes manufactured within 1 year after the applicable date specified in this section and those airplanes in which the interior is replaced within 1 year of that date. A request for such grant of deviation must include a thorough and accurate analysis of each component subject to §25.853(d) in effect March 6, 1995 (formerly §25.853(a–1) in effect on August 20, 1986), the steps being taken to achieve compliance, and, for the few components for which timely compliance will not be achieved, credible reasons for such noncompliance.

(viii) Contrary provisions of this section notwithstanding, galley carts and standard galley containers that do not meet the flammability and smoke emission requirements of §25.853(d) in effect March 6, 1995 (formerly §25.853(a–1) in effect on August 20, 1986), may be used in airplanes that must meet the requirements of paragraph (b)(1)(i), (b)(1)(ii), (b)(1)(iv) or (b)(1)(vi) of this section provided the galley carts or standard containers were manufactured prior to March 6, 1995.

(2) For airplanes type certificated after January 1, 1958, seat cushions, except those on flight crewmember seats,

in any compartment occupied by crew or passengers must comply with the requirements pertaining to fire protection of seat cushions in § 25.853(c) effective November 26, 1984.

(c) Thermal/acoustic insulation materials. For transport category airplanes type certificated after January 1, 1958:

(1) For airplanes manufactured before September 2, 2005, when thermal/acoustic insulation is installed in the fuselage as replacements after September 2, 2005, the insulation must meet the flame propagation requirements of § 25.856 of this chapter, effective September 2, 2003, if it is:

(i) Of a blanket construction, or

(ii) Installed around air ducting.

(2) For airplanes manufactured after September 2, 2005, thermal/acoustic insulation materials installed in the fuselage must meet the flame propagation requirements of § 25.856 of this chapter, effective September 2, 2003.

[Doc. No. 26192, 60 FR 6628, Feb. 2, 1995; Amdt. 135–55, 60 FR 11194, Mar. 1, 1995; Amdt. 135–56, 60 FR 13011, Mar. 9, 1995; Amdt. 135–90, 68 FR 45084, July 31, 2003; Amdt. 135–103, 70 FR 77752, Dec. 30, 2005]

§ 135.171 Shoulder harness installation at flight crewmember stations.

(a) No person may operate a turbojet aircraft or an aircraft having a passenger seating configuration, excluding any pilot seat, of 10 seats or more unless it is equipped with an approved shoulder harness installed for each flight crewmember station.

(b) Each flight crewmember occupying a station equipped with a shoulder harness must fasten the shoulder harness during takeoff and landing, except that the shoulder harness may be unfastened if the crewmember cannot perform the required duties with the shoulder harness fastened.

§ 135.173 Airborne thunderstorm detection equipment requirements.

(a) No person may operate an aircraft that has a passenger seating configuration, excluding any pilot seat, of 10 seats or more in passenger-carrying operations, except a helicopter operating under day VFR conditions, unless the aircraft is equipped with either approved thunderstorm detection equipment or approved airborne weather radar equipment.

(b) No person may operate a helicopter that has a passenger seating configuration, excluding any pilot seat, of 10 seats or more in passenger-carrying operations, under night VFR when current weather reports indicate that thunderstorms or other potentially hazardous weather conditions that can be detected with airborne thunderstorm detection equipment may reasonably be expected along the route to be flown, unless the helicopter is equipped with either approved thunderstorm detection equipment or approved airborne weather radar equipment.

(c) No person may begin a flight under IFR or night VFR conditions when current weather reports indicate that thunderstorms or other potentially hazardous weather conditions that can be detected with airborne thunderstorm detection equipment, required by paragraph (a) or (b) of this section, may reasonably be expected along the route to be flown, unless the airborne thunderstorm detection equipment is in satisfactory operating condition.

(d) If the airborne thunderstorm detection equipment becomes inoperative en route, the aircraft must be operated under the instructions and procedures specified for that event in the manual required by § 135.21.

(e) This section does not apply to aircraft used solely within the State of Hawaii, within the State of Alaska, within that part of Canada west of longitude 130 degrees W, between latitude 70 degrees N, and latitude 53 degrees N, or during any training, test, or ferry flight.

(f) Without regard to any other provision of this part, an alternate electrical power supply is not required for airborne thunderstorm detection equipment.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–20, 51 FR 40710, Nov. 7, 1986; Amdt. 135–60, 61 FR 2616, Jan. 26, 1996]

§ 135.175 Airborne weather radar equipment requirements.

(a) No person may operate a large, transport category aircraft in passenger-carrying operations unless approved airborne weather radar equipment is installed in the aircraft.

(b) No person may begin a flight under IFR or night VFR conditions when current weather reports indicate that thunderstorms, or other potentially hazardous weather conditions that can be detected with airborne weather radar equipment, may reasonably be expected along the route to be flown, unless the airborne weather radar equipment required by paragraph (a) of this section is in satisfactory operating condition.

(c) If the airborne weather radar equipment becomes inoperative en route, the aircraft must be operated under the instructions and procedures specified for that event in the manual required by § 135.21.

(d) This section does not apply to aircraft used solely within the State of Hawaii, within the State of Alaska, within that part of Canada west of longitude 130 degrees W, between latitude 70 degrees N, and latitude 53 degrees N, or during any training, test, or ferry flight.

(e) Without regard to any other provision of this part, an alternate electrical power supply is not required for airborne weather radar equipment.

§ 135.177 Emergency equipment requirements for aircraft having a passenger seating configuration of more than 19 passengers.

(a) No person may operate an aircraft having a passenger seating configuration, excluding any pilot seat, of more than 19 seats unless it is equipped with the following emergency equipment:

(1) At least one approved first-aid kit for treatment of injuries likely to occur in flight or in a minor accident that must:

(i) Be readily accessible to crewmembers.

(ii) Be stored securely and kept free from dust, moisture, and damaging temperatures.

(iii) Contain at least the following appropriately maintained contents in the specified quantities:

Contents	Quantity
Adhesive bandage compresses, 1-inch	16
Antiseptic swabs	20
Ammonia inhalants	10
Bandage compresses, 4-inch	8
Triangular bandage compresses, 40-inch	5
Arm splint, noninflatable	1
Leg splint, noninflatable	1
Roller bandage, 4-inch	4
Adhesive tape, 1-inch standard roll	2
Bandage scissors	1
Protective nonpermeable gloves or equivalent	1 pair

(2) A crash axe carried so as to be accessible to the crew but inaccessible to passengers during normal operations.

(3) Signs that are visible to all occupants to notify them when smoking is prohibited and when safety belts must be fastened. The signs must be constructed so that they can be turned on during any movement of the aircraft on the surface, for each takeoff or landing, and at other times considered necessary by the pilot in command. ''No smoking'' signs shall be turned on when required by § 135.127.

(4) [Reserved]

(b) Each item of equipment must be inspected regularly under inspection periods established in the operations specifications to ensure its condition for continued serviceability and immediate readiness to perform its intended emergency purposes.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–25, 53 FR 12362, Apr. 13, 1988; Amdt. 135–43, 57 FR 19245, May 4, 1992; Amdt. 135–44, 57 FR 42676, Sept. 15, 1992; Amdt. 135–47, 59 FR 1781, Jan. 12, 1994; Amdt. 135–53, 59 FR 52643, Oct. 18, 1994; 59 FR 55208, Nov. 4, 1994; Amdt. 121–281, 66 FR 19045, Apr. 12, 2001]

§ 135.178 Additional emergency equipment.

No person may operate an airplane having a passenger seating configuration of more than 19 seats, unless it has the additional emergency equipment specified in paragraphs (a) through (l) of this section.

(a) *Means for emergency evacuation.* Each passenger-carrying landplane emergency exit (other than over-the-wing) that is more than 6 feet from the ground, with the airplane on the ground and the landing gear extended, must have an approved means to assist the occupants in descending to the ground. The assisting means for a floor-level emergency exit must meet the requirements of § 25.809(f)(1) of this chapter in effect on April 30, 1972, except that, for any airplane for which the application for the type certificate was filed after that date, it must meet the requirements under which the airplane was type certificated. An assisting means that deploys automatically must be armed during taxiing, takeoffs, and landings; however, the Administrator may grant a deviation from the requirement of automatic deployment if he finds that the design of the exit makes compliance impractical, if the assisting means automatically erects upon deployment and, with respect to required emergency exits, if an emergency evacuation demonstration is conducted in accordance with § 121.291(a) of this chapter. This paragraph does not apply to the rear window emergency exit of Douglas DC–3 airplanes operated with fewer than 36 occupants, including crewmembers, and fewer than five exits authorized for passenger use.

(b) *Interior emergency exit marking.* The following must be complied with for each passenger-carrying airplane:

(1) Each passenger emergency exit, its means of access, and its means of opening must be conspicuously marked. The identity and locating of each passenger emergency exit must be recognizable from a distance equal to the width of the cabin. The location of each passenger emergency exit must be indicated by a sign visible to occupants approaching along the main passenger aisle. There must be a locating sign—

(i) Above the aisle near each over-the-wing passenger emergency exit, or at another ceiling location if it is more practical because of low headroom;

(ii) Next to each floor level passenger emergency exit, except that one sign may serve two such exits if they both can be seen readily from that sign; and

(iii) On each bulkhead or divider that prevents fore and aft vision along the passenger cabin, to indicate emergency exits beyond and obscured by it, except that if this is not possible, the sign may be placed at another appropriate location.

(2) Each passenger emergency exit marking and each locating sign must meet the following:

(i) For an airplane for which the application for the type certificate was filed prior to May 1, 1972, each passenger emergency exit marking and each locating sign must be manufactured to meet the requirements of § 25.812(b) of this chapter in effect on April 30, 1972. On these airplanes, no sign may continue to be used if its luminescence (brightness) decreases to below 100 microlamberts. The colors may be reversed if it increases the emergency illumination of the passenger compartment. However, the Administrator may authorize deviation from the 2-inch background requirements if he finds that special circumstances exist that make compliance impractical and that the proposed deviation provides an equivalent level of safety.

(ii) For an airplane for which the application for the type certificate was filed on or after May 1, 1972, each passenger emergency exit marking and each locating sign must be manufactured to meet the interior emergency exit marking requirements under which the airplane was type certificated. On these airplanes, no sign may continue to be used if its luminescence (brightness) decreases to below 250 microlamberts.

(c) *Lighting for interior emergency exit markings.* Each passenger-carrying airplane must have an emergency lighting system, independent of the main lighting system; however, sources of general cabin illumination may be common to both the emergency and the main lighting systems if the power supply to

the emergency lighting system is independent of the power supply to the main lighting system. The emergency lighting system must—

(1) Illuminate each passenger exit marking and locating sign;

(2) Provide enough general lighting in the passenger cabin so that the average illumination when measured at 40-inch intervals at seat armrest height, on the centerline of the main passenger aisle, is at least 0.05 foot-candles; and

(3) For airplanes type certificated after January 1, 1958, include floor proximity emergency escape path marking which meets the requirements of §25.812(e) of this chapter in effect on November 26, 1984.

(d) *Emergency light operation.* Except for lights forming part of emergency lighting subsystems provided in compliance with §25.812(h) of this chapter (as prescribed in paragraph (h) of this section) that serve no more than one assist means, are independent of the airplane's main emergency lighting systems, and are automatically activated when the assist means is deployed, each light required by paragraphs (c) and (h) of this section must:

(1) Be operable manually both from the flightcrew station and from a point in the passenger compartment that is readily accessible to a normal flight attendant seat;

(2) Have a means to prevent inadvertent operation of the manual controls;

(3) When armed or turned on at either station, remain lighted or become lighted upon interruption of the airplane's normal electric power;

(4) Be armed or turned on during taxiing, takeoff, and landing. In showing compliance with this paragraph, a transverse vertical separation of the fuselage need not be considered;

(5) Provide the required level of illumination for at least 10 minutes at the critical ambient conditions after emergency landing; and

(6) Have a cockpit control device that has an ''on,'' ''off,'' and ''armed'' position.

(e) *Emergency exit operating handles.* (1) For a passenger-carrying airplane for which the application for the type certificate was filed prior to May 1, 1972, the location of each passenger emergency exit operating handle, and instructions for opening the exit, must be shown by a marking on or near the exit that is readable from a distance of 30 inches. In addition, for each Type I and Type II emergency exit with a locking mechanism released by rotary motion of the handle, the instructions for opening must be shown by—

(i) A red arrow with a shaft at least three-fourths inch wide and a head twice the width of the shaft, extending along at least 70° of arc at a radius approximately equal to three-fourths of the handle length; and

(ii) The word ''open'' in red letters 1 inch high placed horizontally near the head of the arrow.

(2) For a passenger-carrying airplane for which the application for the type certificate was filed on or after May 1, 1972, the location of each passenger emergency exit operating handle and instructions for opening the exit must be shown in accordance with the requirements under which the airplane was type certificated. On these airplanes, no operating handle or operating handle cover may continue to be used if its luminescence (brightness) decreases to below 100 microlamberts.

(f) *Emergency exit access.* Access to emergency exits must be provided as follows for each passenger-carrying airplane:

(1) Each passageway between individual passenger areas, or leading to a Type I or Type II emergency exit, must be unobstructed and at least 20 inches wide.

(2) There must be enough space next to each Type I or Type II emergency exit to allow a crewmember to assist in the evacuation of passengers without reducing the unobstructed width of the passageway below that required in paragraph (f)(1) of this section; however, the Administrator may authorize deviation from this requirement for an airplane certificated under the provisions of part 4b of the Civil Air Regulations in effect before December 20, 1951, if he finds that special circumstances exist that provide an equivalent level of safety.

(3) There must be access from the main aisle to each Type III and Type IV exit. The access from the aisle to these exits must not be obstructed by

seats, berths, or other protrusions in a manner that would reduce the effectiveness of the exit. In addition, for a transport category airplane type certificated after January 1, 1958, there must be placards installed in accordance with §25.813(c)(3) of this chapter for each Type III exit after December 3, 1992.

(4) If it is necessary to pass through a passageway between passenger compartments to reach any required emergency exit from any seat in the passenger cabin, the passageway must not be obstructed. Curtains may, however, be used if they allow free entry through the passageway.

(5) No door may be installed in any partition between passenger compartments.

(6) If it is necessary to pass through a doorway separating the passenger cabin from other areas to reach a required emergency exit from any passenger seat, the door must have a means to latch it in the open position, and the door must be latched open during each takeoff and landing. The latching means must be able to withstand the loads imposed upon it when the door is subjected to the ultimate inertia forces, relative to the surrounding structure, listed in §25.561(b) of this chapter.

(g) *Exterior exit markings.* Each passenger emergency exit and the means of opening that exit from the outside must be marked on the outside of the airplane. There must be a 2-inch colored band outlining each passenger emergency exit on the side of the fuselage. Each outside marking, including the band, must be readily distinguishable from the surrounding fuselage area by contrast in color. The markings must comply with the following:

(1) If the reflectance of the darker color is 15 percent or less, the reflectance of the lighter color must be at least 45 percent.

(2) If the reflectance of the darker color is greater than 15 percent, at least a 30 percent difference between its reflectance and the reflectance of the lighter color must be provided.

(3) Exits that are not in the side of the fuselage must have the external means of opening and applicable instructions marked conspicuously in red or, if red is inconspicuous against the background color, in bright chrome yellow and, when the opening means for such an exit is located on only one side of the fuselage, a conspicuous marking to that effect must be provided on the other side. ''Reflectance'' is the ratio of the luminous flux reflected by a body to the luminous flux it receives.

(h) *Exterior emergency lighting and escape route.* (1) Each passenger-carrying airplane must be equipped with exterior lighting that meets the following requirements:

(i) For an airplane for which the application for the type certificate was filed prior to May 1, 1972, the requirements of §25.812 (f) and (g) of this chapter in effect on April 30, 1972.

(ii) For an airplane for which the application for the type certificate was filed on or after May 1, 1972, the exterior emergency lighting requirements under which the airplane was type certificated.

(2) Each passenger-carrying airplane must be equipped with a slip-resistant escape route that meets the following requirements:

(i) For an airplane for which the application for the type certificate was filed prior to May 1, 1972, the requirements of §25.803(e) of this chapter in effect on April 30, 1972.

(ii) For an airplane for which the application for the type certificate was filed on or after May 1, 1972, the slip-resistant escape route requirements under which the airplane was type certificated.

(i) *Floor level exits.* Each floor level door or exit in the side of the fuselage (other than those leading into a cargo or baggage compartment that is not accessible from the passenger cabin) that is 44 or more inches high and 20 or more inches wide, but not wider than 46 inches, each passenger ventral exit (except the ventral exits on Martin 404 and Convair 240 airplanes), and each tail cone exit, must meet the requirements of this section for floor level emergency exits. However, the Administrator may grant a deviation from this paragraph if he finds that circumstances make full compliance impractical and that an acceptable level of safety has been achieved.

(j) *Additional emergency exits.* Approved emergency exits in the passenger compartments that are in excess of the minimum number of required emergency exits must meet all of the applicable provisions of this section, except paragraphs (f) (1), (2), and (3) of this section, and must be readily accessible.

(k) On each large passenger-carrying turbojet-powered airplane, each ventral exit and tailcone exit must be—

(1) Designed and constructed so that it cannot be opened during flight; and

(2) Marked with a placard readable from a distance of 30 inches and installed at a conspicuous location near the means of opening the exit, stating that the exit has been designed and constructed so that it cannot be opened during flight.

(l) *Portable lights.* No person may operate a passenger-carrying airplane unless it is equipped with flashlight stowage provisions accessible from each flight attendant seat.

[Doc. No. 26530, 57 FR 19245, May 4, 1992; 57 FR 29120, June 30, 1992, as amended at 57 FR 34682, Aug. 6, 1992]

§ 135.179 Inoperable instruments and equipment.

(a) No person may take off an aircraft with inoperable instruments or equipment installed unless the following conditions are met:

(1) An approved Minimum Equipment List exists for that aircraft.

(2) The certificate-holding district office has issued the certificate holder operations specifications authorizing operations in accordance with an approved Minimum Equipment List. The flight crew shall have direct access at all times prior to flight to all of the information contained in the approved Minimum Equipment List through printed or other means approved by the Administrator in the certificate holders operations specifications. An approved Minimum Equipment List, as authorized by the operations specifications, constitutes an approved change to the type design without requiring recertification.

(3) The approved Minimum Equipment List must:

(i) Be prepared in accordance with the limitations specified in paragraph (b) of this section.

(ii) Provide for the operation of the aircraft with certain instruments and equipment in an inoperable condition.

(4) Records identifying the inoperable instruments and equipment and the information required by (a)(3)(ii) of this section must be available to the pilot.

(5) The aircraft is operated under all applicable conditions and limitations contained in the Minimum Equipment List and the operations specifications authorizing use of the Minimum Equipment List.

(b) The following instruments and equipment may not be included in the Minimum Equipment List:

(1) Instruments and equipment that are either specifically or otherwise required by the airworthiness requirements under which the airplane is type certificated and which are essential for safe operations under all operating conditions.

(2) Instruments and equipment required by an airworthiness directive to be in operable condition unless the airworthiness directive provides otherwise.

(3) Instruments and equipment required for specific operations by this part.

(c) Notwithstanding paragraphs (b)(1) and (b)(3) of this section, an aircraft with inoperable instruments or equipment may be operated under a special flight permit under §§ 21.197 and 21.199 of this chapter.

[Doc. No. 25780, 56 FR 12311, Mar. 22, 1991; 56 FR 14920, Apr. 8, 1991, as amended by Amdt. 135–60, 61 FR 2616, Jan. 26, 1996; Amdt. 135–91, 68 FR 54586, Sept. 17, 2003]

§ 135.180 Traffic Alert and Collision Avoidance System.

(a) Unless otherwise authorized by the Administrator, after December 31, 1995, no person may operate a turbine powered airplane that has a passenger seat configuration, excluding any pilot seat, of 10 to 30 seats unless it is equipped with an approved traffic alert and collision avoidance system. If a TCAS II system is installed, it must be capable of coordinating with TCAS units that meet TSO C–119.

(b) The airplane flight manual required by §135.21 of this part shall contain the following information on the TCAS I system required by this section:

(1) Appropriate procedures for—

(i) The use of the equipment; and

(ii) Proper flightcrew action with respect to the equipment operation.

(2) An outline of all input sources that must be operating for the TCAS to function properly.

[Doc. No. 25355, 54 FR 951, Jan. 10, 1989, as amended by Amdt. 135–54, 59 FR 67587, Dec. 29, 1994]

§ 135.181 Performance requirements: Aircraft operated over-the-top or in IFR conditions.

(a) Except as provided in paragraphs (b) and (c) of this section, no person may—

(1) Operate a single-engine aircraft carrying passengers over-the-top; or

(2) Operate a multiengine aircraft carrying passengers over-the-top or in IFR conditions at a weight that will not allow it to climb, with the critical engine inoperative, at least 50 feet a minute when operating at the MEAs of the route to be flown or 5,000 feet MSL, whichever is higher.

(b) Notwithstanding the restrictions in paragraph (a)(2) of this section, multiengine helicopters carrying passengers offshore may conduct such operations in over-the-top or in IFR conditions at a weight that will allow the helicopter to climb at least 50 feet per minute with the critical engine inoperative when operating at the MEA of the route to be flown or 1,500 feet MSL, whichever is higher.

(c) Without regard to paragraph (a) of this section, if the latest weather reports or forecasts, or any combination of them, indicate that the weather along the planned route (including takeoff and landing) allows flight under VFR under the ceiling (if a ceiling exists) and that the weather is forecast to remain so until at least 1 hour after the estimated time of arrival at the destination, a person may operate an aircraft over-the-top.

(d) Without regard to paragraph (a) of this section, a person may operate an aircraft over-the-top under conditions allowing—

(1) For multiengine aircraft, descent or continuance of the flight under VFR if its critical engine fails; or

(2) For single-engine aircraft, descent under VFR if its engine fails.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–20, 51 FR 40710, Nov. 7, 1986; Amdt. 135–70, 62 FR 42374, Aug. 6, 1997]

§ 135.183 Performance requirements: Land aircraft operated over water.

No person may operate a land aircraft carrying passengers over water unless—

(a) It is operated at an altitude that allows it to reach land in the case of engine failure;

(b) It is necessary for takeoff or landing;

(c) It is a multiengine aircraft operated at a weight that will allow it to climb, with the critical engine inoperative, at least 50 feet a minute, at an altitude of 1,000 feet above the surface; or

(d) It is a helicopter equipped with helicopter flotation devices.

§ 135.185 Empty weight and center of gravity: Currency requirement.

(a) No person may operate a multiengine aircraft unless the current empty weight and center of gravity are calculated from values established by actual weighing of the aircraft within the preceding 36 calendar months.

(b) Paragraph (a) of this section does not apply to—

(1) Aircraft issued an original airworthiness certificate within the preceding 36 calendar months; and

(2) Aircraft operated under a weight and balance system approved in the operations specifications of the certificate holder.

Subpart D—VFR/IFR Operating Limitations and Weather Requirements

§ 135.201 Applicability.

This subpart prescribes the operating limitations for VFR/IFR flight operations and associated weather requirements for operations under this part.

§ 135.203 VFR: Minimum altitudes.

Except when necessary for takeoff and landing, no person may operate under VFR—

(a) An airplane—

(1) During the day, below 500 feet above the surface or less than 500 feet horizontally from any obstacle; or

(2) At night, at an altitude less than 1,000 feet above the highest obstacle within a horizontal distance of 5 miles from the course intended to be flown or, in designated mountainous terrain, less than 2,000 feet above the highest obstacle within a horizontal distance of 5 miles from the course intended to be flown; or

(b) A helicopter over a congested area at an altitude less than 300 feet above the surface.

§ 135.205 VFR: Visibility requirements.

(a) No person may operate an airplane under VFR in uncontrolled airspace when the ceiling is less than 1,000 feet unless flight visibility is at least 2 miles.

(b) No person may operate a helicopter under VFR in Class G airspace at an altitude of 1,200 feet or less above the surface or within the lateral boundaries of the surface areas of Class B, Class C, Class D, or Class E airspace designated for an airport unless the visibility is at least—

(1) During the day—½ mile; or

(2) At night—1 mile.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–41, 56 FR 65663, Dec. 17, 1991]

§ 135.207 VFR: Helicopter surface reference requirements.

No person may operate a helicopter under VFR unless that person has visual surface reference or, at night, visual surface light reference, sufficient to safely control the helicopter.

§ 135.209 VFR: Fuel supply.

(a) No person may begin a flight operation in an airplane under VFR unless, considering wind and forecast weather conditions, it has enough fuel to fly to the first point of intended landing and, assuming normal cruising fuel consumption—

(1) During the day, to fly after that for at least 30 minutes; or

(2) At night, to fly after that for at least 45 minutes.

(b) No person may begin a flight operation in a helicopter under VFR unless, considering wind and forecast weather conditions, it has enough fuel to fly to the first point of intended landing and, assuming normal cruising fuel consumption, to fly after that for at least 20 minutes.

§ 135.211 VFR: Over-the-top carrying passengers: Operating limitations.

Subject to any additional limitations in § 135.181, no person may operate an aircraft under VFR over-the-top carrying passengers, unless—

(a) Weather reports or forecasts, or any combination of them, indicate that the weather at the intended point of termination of over-the-top flight—

(1) Allows descent to beneath the ceiling under VFR and is forecast to remain so until at least 1 hour after the estimated time of arrival at that point; or

(2) Allows an IFR approach and landing with flight clear of the clouds until reaching the prescribed initial approach altitude over the final approach facility, unless the approach is made with the use of radar under § 91.175(f) of this chapter; or

(b) It is operated under conditions allowing—

(1) For multiengine aircraft, descent or continuation of the flight under VFR if its critical engine fails; or

(2) For single-engine aircraft, descent under VFR if its engine fails.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–32, 54 FR 34332, Aug. 18, 1989]

§ 135.213 Weather reports and forecasts.

(a) Whenever a person operating an aircraft under this part is required to use a weather report or forecast, that person shall use that of the U.S. National Weather Service, a source approved by the U.S. National Weather Service, or a source approved by the Administrator. However, for operations under VFR, the pilot in command may, if such a report is not available, use

weather information based on that pilot's own observations or on those of other persons competent to supply appropriate observations.

(b) For the purposes of paragraph (a) of this section, weather observations made and furnished to pilots to conduct IFR operations at an airport must be taken at the airport where those IFR operations are conducted, unless the Administrator issues operations specifications allowing the use of weather observations taken at a location not at the airport where the IFR operations are conducted. The Administrator issues such operations specifications when, after investigation by the U.S. National Weather Service and the certificate-holding district office, it is found that the standards of safety for that operation would allow the deviation from this paragraph for a particular operation for which an air carrier operating certificate or operating certificate has been issued.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–60, 61 FR 2616, Jan. 26, 1996]

§ 135.215 IFR: Operating limitations.

(a) Except as provided in paragraphs (b), (c) and (d) of this section, no person may operate an aircraft under IFR outside of controlled airspace or at any airport that does not have an approved standard instrument approach procedure.

(b) The Administrator may issue operations specifications to the certificate holder to allow it to operate under IFR over routes outside controlled airspace if—

(1) The certificate holder shows the Administrator that the flight crew is able to navigate, without visual reference to the ground, over an intended track without deviating more than 5 degrees or 5 miles, whichever is less, from that track; and

(2) The Administrator determines that the proposed operations can be conducted safely.

(c) A person may operate an aircraft under IFR outside of controlled airspace if the certificate holder has been approved for the operations and that operation is necessary to—

(1) Conduct an instrument approach to an airport for which there is in use a current approved standard or special instrument approach procedure; or

(2) Climb into controlled airspace during an approved missed approach procedure; or

(3) Make an IFR departure from an airport having an approved instrument approach procedure.

(d) The Administrator may issue operations specifications to the certificate holder to allow it to depart at an airport that does not have an approved standard instrument approach procedure when the Administrator determines that it is necessary to make an IFR departure from that airport and that the proposed operations can be conducted safely. The approval to operate at that airport does not include an approval to make an IFR approach to that airport.

§ 135.217 IFR: Takeoff limitations.

No person may takeoff an aircraft under IFR from an airport where weather conditions are at or above takeoff minimums but are below authorized IFR landing minimums unless there is an alternate airport within 1 hour's flying time (at normal cruising speed, in still air) of the airport of departure.

§ 135.219 IFR: Destination airport weather minimums.

No person may take off an aircraft under IFR or begin an IFR or over-the-top operation unless the latest weather reports or forecasts, or any combination of them, indicate that weather conditions at the estimated time of arrival at the next airport of intended landing will be at or above authorized IFR landing minimums.

§ 135.221 IFR: Alternate airport weather minimums.

No person may designate an alternate airport unless the weather reports or forecasts, or any combination of them, indicate that the weather conditions will be at or above authorized alternate airport landing minimums for that airport at the estimated time of arrival.

§ 135.223 IFR: Alternate airport requirements.

(a) Except as provided in paragraph (b) of this section, no person may operate an aircraft in IFR conditions unless it carries enough fuel (considering weather reports or forecasts or any combination of them) to—

(1) Complete the flight to the first airport of intended landing;

(2) Fly from that airport to the alternate airport; and

(3) Fly after that for 45 minutes at normal cruising speed or, for helicopters, fly after that for 30 minutes at normal cruising speed.

(b) Paragraph (a)(2) of this section does not apply if part 97 of this chapter prescribes a standard instrument approach procedure for the first airport of intended landing and, for at least one hour before and after the estimated time of arrival, the appropriate weather reports or forecasts, or any combination of them, indicate that—

(1) The ceiling will be at least 1,500 feet above the lowest circling approach MDA; or

(2) If a circling instrument approach is not authorized for the airport, the ceiling will be at least 1,500 feet above the lowest published minimum or 2,000 feet above the airport elevation, whichever is higher; and

(3) Visibility for that airport is forecast to be at least three miles, or two miles more than the lowest applicable visibility minimums, whichever is the greater, for the instrument approach procedure to be used at the destination airport.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–20, 51 FR 40710, Nov. 7, 1986]

§ 135.225 IFR: Takeoff, approach and landing minimums.

(a) Except to the extent permitted by paragraph (b) of this section, no pilot may begin an instrument approach procedure to an airport unless—

(1) That airport has a weather reporting facility operated by the U.S. National Weather Service, a source approved by U.S. National Weather Service, or a source approved by the Administrator; and

(2) The latest weather report issued by that weather reporting facility indicates that weather conditions are at or above the authorized IFR landing minimums for that airport.

(b) A pilot conducting an eligible on-demand operation may begin an instrument approach procedure to an airport that does not have a weather reporting facility operated by the U.S. National Weather Service, a source approved by the U.S. National Weather Service, or a source approved by the Administrator if—

(1) The alternate airport has a weather reporting facility operated by the U.S. National Weather Service, a source approved by the U.S. National Weather Service, or a source approved by the Administrator; and

(2) The latest weather report issued by the weather reporting facility includes a current local altimeter setting for the destination airport. If no local altimeter setting for the destination airport is available, the pilot may use the current altimeter setting provided by the facility designated on the approach chart for the destination airport.

(c) If a pilot has begun the final approach segment of an instrument approach to an airport under paragraph (b) of this section, and the pilot receives a later weather report indicating that conditions have worsened to below the minimum requirements, then the pilot may continue the approach only if the requirements of § 91.175(l) of this chapter, or both of the following conditions, are met—

(1) The later weather report is received when the aircraft is in one of the following approach phases:

(i) The aircraft is on an ILS final approach and has passed the final approach fix;

(ii) The aircraft is on an ASR or PAR final approach and has been turned over to the final approach controller; or

(iii) The aircraft is on a nonprecision final approach and the aircraft—

(A) Has passed the appropriate facility or final approach fix; or

(B) Where a final approach fix is not specified, has completed the procedure turn and is established inbound toward the airport on the final approach course within the distance prescribed in the procedure; and

(2) The pilot in command finds, on reaching the authorized MDA or DA/DH, that the actual weather conditions are at or above the minimums prescribed for the procedure being used.

(d) If a pilot has begun the final approach segment of an instrument approach to an airport under paragraph (c) of this section and a later weather report indicating below minimum conditions is received after the aircraft is—

(1) On an ILS final approach and has passed the final approach fix; or

(2) On an ASR or PAR final approach and has been turned over to the final approach controller; or

(3) On a final approach using a VOR, NDB, or comparable approach procedure; and the aircraft—

(i) Has passed the appropriate facility or final approach fix; or

(ii) Where a final approach fix is not specified, has completed the procedure turn and is established inbound toward the airport on the final approach course within the distance prescribed in the procedure; the approach may be continued and a landing made if the pilot finds, upon reaching the authorized MDA or DH, that actual weather conditions are at least equal to the minimums prescribed for the procedure.

(e) The MDA or DA/DH and visibility landing minimums prescribed in part 97 of this chapter or in the operator's operations specifications are increased by 100 feet and ½ mile respectively, but not to exceed the ceiling and visibility minimums for that airport when used as an alternate airport, for each pilot in command of a turbine-powered airplane who has not served at least 100 hours as pilot in command in that type of airplane.

(f) Each pilot making an IFR takeoff or approach and landing at a military or foreign airport shall comply with applicable instrument approach procedures and weather minimums prescribed by the authority having jurisdiction over that airport. In addition, no pilot may, at that airport—

(1) Take off under IFR when the visibility is less than 1 mile; or

(2) Make an instrument approach when the visibility is less than ½ mile.

(g) If takeoff minimums are specified in part 97 of this chapter for the takeoff airport, no pilot may take off an aircraft under IFR when the weather conditions reported by the facility described in paragraph (a)(1) of this section are less than the takeoff minimums specified for the takeoff airport in part 97 or in the certificate holder's operations specifications.

(h) Except as provided in paragraph (i) of this section, if takeoff minimums are not prescribed in part 97 of this chapter for the takeoff airport, no pilot may takeoff an aircraft under IFR when the weather conditions reported by the facility described in paragraph (a)(1) of this section are less than that prescribed in part 91 of this chapter or in the certificate holder's operations specifications.

(i) At airports where straight-in instrument approach procedures are authorized, a pilot may takeoff an aircraft under IFR when the weather conditions reported by the facility described in paragraph (a)(1) of this section are equal to or better than the lowest straight-in landing minimums, unless otherwise restricted, if—

(1) The wind direction and velocity at the time of takeoff are such that a straight-in instrument approach can be made to the runway served by the instrument approach;

(2) The associated ground facilities upon which the landing minimums are predicated and the related airborne equipment are in normal operation; and

(3) The certificate holder has been approved for such operations.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–91, 68 FR 54586, Sept. 17, 2003; Amdt. 135–93, 69 FR 1641, Jan. 9, 2004; Amdt. 135–110, 72 FR 31685, June 7, 2007]

§ 135.227 Icing conditions: Operating limitations.

(a) No pilot may take off an aircraft that has frost, ice, or snow adhering to any rotor blade, propeller, windshield, wing, stabilizing or control surface, to a powerplant installation, or to an airspeed, altimeter, rate of climb, or flight attitude instrument system, except under the following conditions:

(1) Takeoffs may be made with frost adhering to the wings, or stabilizing or

control surfaces, if the frost has been polished to make it smooth.

(2) Takeoffs may be made with frost under the wing in the area of the fuel tanks if authorized by the Administrator.

(b) No certificate holder may authorize an airplane to take off and no pilot may take off an airplane any time conditions are such that frost, ice, or snow may reasonably be expected to adhere to the airplane unless the pilot has completed all applicable training as required by §135.341 and unless one of the following requirements is met:

(1) A pretakeoff contamination check, that has been established by the certificate holder and approved by the Administrator for the specific airplane type, has been completed within 5 minutes prior to beginning takeoff. A pretakeoff contamination check is a check to make sure the wings and control surfaces are free of frost, ice, or snow.

(2) The certificate holder has an approved alternative procedure and under that procedure the airplane is determined to be free of frost, ice, or snow.

(3) The certificate holder has an approved deicing/anti-icing program that complies with §121.629(c) of this chapter and the takeoff complies with that program.

(c) Except for an airplane that has ice protection provisions that meet section 34 of appendix A, or those for transport category airplane type certification, no pilot may fly—

(1) Under IFR into known or forecast light or moderate icing conditions; or

(2) Under VFR into known light or moderate icing conditions; unless the aircraft has functioning deicing or anti-icing equipment protecting each rotor blade, propeller, windshield, wing, stabilizing or control surface, and each airspeed, altimeter, rate of climb, or flight attitude instrument system.

(d) No pilot may fly a helicopter under IFR into known or forecast icing conditions or under VFR into known icing conditions unless it has been type certificated and appropriately equipped for operations in icing conditions.

(e) Except for an airplane that has ice protection provisions that meet section 34 of appendix A, or those for transport category airplane type certification, no pilot may fly an aircraft into known or forecast severe icing conditions.

(f) If current weather reports and briefing information relied upon by the pilot in command indicate that the forecast icing condition that would otherwise prohibit the flight will not be encountered during the flight because of changed weather conditions since the forecast, the restrictions in paragraphs (c), (d), and (e) of this section based on forecast conditions do not apply.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 133–20, 51 FR 40710, Nov. 7, 1986; Amdt. 135–46, 58 FR 69629, Dec. 30, 1993; Amdt. 135–60, 61 FR 2616, Jan. 26, 1996]

§135.229 Airport requirements.

(a) No certificate holder may use any airport unless it is adequate for the proposed operation, considering such items as size, surface, obstructions, and lighting.

(b) No pilot of an aircraft carrying passengers at night may takeoff from, or land on, an airport unless—

(1) That pilot has determined the wind direction from an illuminated wind direction indicator or local ground communications or, in the case of takeoff, that pilot's personal observations; and

(2) The limits of the area to be used for landing or takeoff are clearly shown—

(i) For airplanes, by boundary or runway marker lights;

(ii) For helicopters, by boundary or runway marker lights or reflective material.

(c) For the purpose of paragraph (b) of this section, if the area to be used for takeoff or landing is marked by flare pots or lanterns, their use must be approved by the Administrator.

Subpart E—Flight Crewmember Requirements

§135.241 Applicability.

Except as provided in §135.3, this subpart prescribes the flight crewmember

requirements for operations under this part.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 121–250, 60 FR 65950, Dec. 20, 1995]

§ 135.243 Pilot in command qualifications.

(a) No certificate holder may use a person, nor may any person serve, as pilot in command in passenger-carrying operations—

(1) Of a turbojet airplane, of an airplane having a passenger-seat configuration, excluding each crewmember seat, of 10 seats or more, or of a multiengine airplane in a commuter operation as defined in part 119 of this chapter, unless that person holds an airline transport pilot certificate with appropriate category and class ratings and, if required, an appropriate type rating for that airplane.

(2) Of a helicopter in a scheduled interstate air transportation operation by an air carrier within the 48 contiguous states unless that person holds an airline transport pilot certificate, appropriate type ratings, and an instrument rating.

(b) Except as provided in paragraph (a) of this section, no certificate holder may use a person, nor may any person serve, as pilot in command of an aircraft under VFR unless that person—

(1) Holds at least a commercial pilot certificate with appropriate category and class ratings and, if required, an appropriate type rating for that aircraft; and

(2) Has had at least 500 hours time as a pilot, including at least 100 hours of cross-country flight time, at least 25 hours of which were at night; and

(3) For an airplane, holds an instrument rating or an airline transport pilot certificate with an airplane category rating; or

(4) For helicopter operations conducted VFR over-the-top, holds a helicopter instrument rating, or an airline transport pilot certificate with a category and class rating for that aircraft, not limited to VFR.

(c) Except as provided in paragraph (a) of this section, no certificate holder may use a person, nor may any person serve, as pilot in command of an aircraft under IFR unless that person—

(1) Holds at least a commercial pilot certificate with appropriate category and class ratings and, if required, an appropriate type rating for that aircraft; and

(2) Has had at least 1,200 hours of flight time as a pilot, including 500 hours of cross country flight time, 100 hours of night flight time, and 75 hours of actual or simulated instrument time at least 50 hours of which were in actual flight; and

(3) For an airplane, holds an instrument rating or an airline transport pilot certificate with an airplane category rating; or

(4) For a helicopter, holds a helicopter instrument rating, or an airline transport pilot certificate with a category and class rating for that aircraft, not limited to VFR.

(d) Paragraph (b)(3) of this section does not apply when—

(1) The aircraft used is a single reciprocating-engine-powered airplane;

(2) The certificate holder does not conduct any operation pursuant to a published flight schedule which specifies five or more round trips a week between two or more points and places between which the round trips are performed, and does not transport mail by air under a contract or contracts with the United States Postal Service having total amount estimated at the beginning of any semiannual reporting period (January 1–June 30; July 1–December 31) to be in excess of $20,000 over the 12 months commencing with the beginning of the reporting period;

(3) The area, as specified in the certificate holder's operations specifications, is an isolated area, as determined by the Flight Standards district office, if it is shown that—

(i) The primary means of navigation in the area is by pilotage, since radio navigational aids are largely ineffective; and

(ii) The primary means of transportation in the area is by air;

(4) Each flight is conducted under day VFR with a ceiling of not less than 1,000 feet and visibility not less than 3 statute miles;

(5) Weather reports or forecasts, or any combination of them, indicate that for the period commencing with the

planned departure and ending 30 minutes after the planned arrival at the destination the flight may be conducted under VFR with a ceiling of not less than 1,000 feet and visibility of not less than 3 statute miles, except that if weather reports and forecasts are not available, the pilot in command may use that pilot's observations or those of other persons competent to supply weather observations if those observations indicate the flight may be conducted under VFR with the ceiling and visibility required in this paragraph;

(6) The distance of each flight from the certificate holder's base of operation to destination does not exceed 250 nautical miles for a pilot who holds a commercial pilot certificate with an airplane rating without an instrument rating, provided the pilot's certificate does not contain any limitation to the contrary; and

(7) The areas to be flown are approved by the certificate-holding FAA Flight Standards district office and are listed in the certificate holder's operations specifications.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978; Amdt. 135–1, 43 FR 49975, Oct 26, 1978, as amended by Amdt. 135–15, 46 FR 30971, June 11, 1981; Amdt. 135–58, 60 FR 65939, Dec. 20, 1995]

§ 135.244 Operating experience.

(a) No certificate holder may use any person, nor may any person serve, as a pilot in command of an aircraft operated in a commuter operation, as defined in part 119 of this chapter unless that person has completed, prior to designation as pilot in command, on that make and basic model aircraft and in that crewmember position, the following operating experience in each make and basic model of aircraft to be flown:

(1) Aircraft, single engine—10 hours.

(2) Aircraft multiengine, reciprocating engine-powered—15 hours.

(3) Aircraft multiengine, turbine engine-powered—20 hours.

(4) Airplane, turbojet-powered—25 hours.

(b) In acquiring the operating experience, each person must comply with the following:

(1) The operating experience must be acquired after satisfactory completion of the appropriate ground and flight training for the aircraft and crewmember position. Approved provisions for the operating experience must be included in the certificate holder's training program.

(2) The experience must be acquired in flight during commuter passenger-carrying operations under this part. However, in the case of an aircraft not previously used by the certificate holder in operations under this part, operating experience acquired in the aircraft during proving flights or ferry flights may be used to meet this requirement.

(3) Each person must acquire the operating experience while performing the duties of a pilot in command under the supervision of a qualified check pilot.

(4) The hours of operating experience may be reduced to not less than 50 percent of the hours required by this section by the substitution of one additional takeoff and landing for each hour of flight.

[Doc. No. 20011, 45 FR 7541, Feb. 4, 1980, as amended by Amdt. 135–9, 45 FR 80461, Dec. 14, 1980; Amdt. 135–58, 60 FR 65940, Dec. 20, 1995]

§ 135.245 Second in command qualifications.

(a) Except as provided in paragraph (b), no certificate holder may use any person, nor may any person serve, as second in command of an aircraft unless that person holds at least a commercial pilot certificate with appropriate category and class ratings and an instrument rating. For flight under IFR, that person must meet the recent instrument experience requirements of part 61 of this chapter.

(b) A second in command of a helicopter operated under VFR, other than over-the-top, must have at least a commercial pilot certificate with an appropriate aircraft category and class rating.

[44 FR 26738, May 7, 1979]

§ 135.247 Pilot qualifications: Recent experience.

(a) No certificate holder may use any person, nor may any person serve, as pilot in command of an aircraft carrying passengers unless, within the preceding 90 days, that person has—

(1) Made three takeoffs and three landings as the sole manipulator of the flight controls in an aircraft of the same category and class and, if a type rating is required, of the same type in which that person is to serve; or

(2) For operation during the period beginning 1 hour after sunset and ending 1 hour before sunrise (as published in the Air Almanac), made three takeoffs and three landings during that period as the sole manipulator of the flight controls in an aircraft of the same category and class and, if a type rating is required, of the same type in which that person is to serve.

A person who complies with paragraph (a)(2) of this section need not comply with paragraph (a)(1) of this section.

(3) Paragraph (a)(2) of this section does not apply to a pilot in command of a turbine-powered airplane that is type certificated for more than one pilot crewmember, provided that pilot has complied with the requirements of paragraph (a)(3)(i) or (ii) of this section:

(i) The pilot in command must hold at least a commercial pilot certificate with the appropriate category, class, and type rating for each airplane that is type certificated for more than one pilot crewmember that the pilot seeks to operate under this alternative, and:

(A) That pilot must have logged at least 1,500 hours of aeronautical experience as a pilot;

(B) In each airplane that is type certificated for more than one pilot crewmember that the pilot seeks to operate under this alternative, that pilot must have accomplished and logged the daytime takeoff and landing recent flight experience of paragraph (a) of this section, as the sole manipulator of the flight controls;

(C) Within the preceding 90 days prior to the operation of that airplane that is type certificated for more than one pilot crewmember, the pilot must have accomplished and logged at least 15 hours of flight time in the type of airplane that the pilot seeks to operate under this alternative; and

(D) That pilot has accomplished and logged at least 3 takeoffs and 3 landings to a full stop, as the sole manipulator of the flight controls, in a turbine-powered airplane that requires more than one pilot crewmember. The pilot must have performed the takeoffs and landings during the period beginning 1 hour after sunset and ending 1 hour before sunrise within the preceding 6 months prior to the month of the flight.

(ii) The pilot in command must hold at least a commercial pilot certificate with the appropriate category, class, and type rating for each airplane that is type certificated for more than one pilot crewmember that the pilot seeks to operate under this alternative, and:

(A) That pilot must have logged at least 1,500 hours of aeronautical experience as a pilot;

(B) In each airplane that is type certificated for more than one pilot crewmember that the pilot seeks to operate under this alternative, that pilot must have accomplished and logged the daytime takeoff and landing recent flight experience of paragraph (a) of this section, as the sole manipulator of the flight controls;

(C) Within the preceding 90 days prior to the operation of that airplane that is type certificated for more than one pilot crewmember, the pilot must have accomplished and logged at least 15 hours of flight time in the type of airplane that the pilot seeks to operate under this alternative; and

(D) Within the preceding 12 months prior to the month of the flight, the pilot must have completed a training program that is approved under part 142 of this chapter. The approved training program must have required and the pilot must have performed, at least 6 takeoffs and 6 landings to a full stop as the sole manipulator of the controls in a flight simulator that is representative of a turbine-powered airplane that requires more than one pilot crewmember. The flight simulator's visual system must have been adjusted to represent the period beginning 1 hour after sunset and ending 1 hour before sunrise.

(b) For the purpose of paragraph (a) of this section, if the aircraft is a tailwheel airplane, each takeoff must be made in a tailwheel airplane and each

landing must be made to a full stop in a tailwheel airplane.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–91, 68 FR 54587, Sept. 17, 2003]

§ 135.249 Use of prohibited drugs.

(a) This section applies to persons who perform a function listed in appendix I to part 121 of this chapter for a certificate holder or an operator. For the purpose of this section, a person who performs such a function pursuant to a contract with the certificate holder or the operator is considered to be performing that function for the certificate holder or the operator.

(b) No certificate holder or operator may knowingly use any person to perform, nor may any person perform for a certificate holder or an operator, either directly or by contract, any function listed in appendix I to part 121 of this chapter while that person has a prohibited drug, as defined in that appendix, in his or her system.

(c) No certificate holder or operator shall knowingly use any person to perform, nor shall any person perform for a certificate holder or operator, either directly or by contract, any safety-sensitive function if the person has a verified positive drug test result on or has refused to submit to a drug test required by appendix I to part 121 of this chapter and the person has not met the requirements of appendix I to part 121 of this chapter for returning to the performance of safety-sensitive duties.

[Doc. No. 25148, 53 FR 47061, Nov. 21, 1988, as amended by Amdt. 135–51, 59 FR 42933, Aug. 19, 1994]

§ 135.251 Testing for prohibited drugs.

(a) Each certificate holder or operator shall test each of its employees who performs a function listed in appendix I to part 121 of this chapter in accordance with that appendix.

(b) Except as provided in paragraph (c) of this section, no certificate holder or operator may use any contractor to perform a function listed in appendix I part 121 of this chapter unless that contractor tests each employee performing such a function for the certificate holder or operator in accordance with that appendix.

(c) If a certificate holder conducts an on-demand operation into an airport at which no maintenance providers are available that are subject to the requirements of appendix I to part 121 and emergency maintenance is required, the certificate holder may use persons not meeting the requirements of paragraph (b) of this section to provide such emergency maintenance under both of the following conditions:

(1) The certificate holder must give written notification of the emergency maintenance to the Drug Abatement Program Division, AAM–800, 800 Independence Avenue, Washington, DC, 20591, within 10 days after being provided same in accordance with this paragraph. A certificate holder must retain copies of all such written notifications for two years.

(2) The aircraft must be reinspected by maintenance personnel who meet the requirements of paragraph (b) of this section when the aircraft is next at an airport where such maintenance personnel are available.

(d) For purposes of this section, emergency maintenance means maintenance that—

(1) Is not scheduled and

(2) Is made necessary by an aircraft condition not discovered prior to the departure for that location.

[Doc. No. 25148, 53 FR 47061, Nov. 21, 1988, as amended by Amdt. 135–91, 68 FR 54587, Sept. 17, 2003]

§ 135.253 Misuse of alcohol.

(a) This section applies to employees who perform a function listed in appendix J to part 121 of this chapter for a certificate holder or operator (*covered employees*). For the purpose of this section, a person who meets the definition of covered employee in appendix J is considered to be performing the function for the certificate holder or operator.

(b) *Alcohol concentration.* No covered employee shall report for duty or remain on duty requiring the performance of safety-sensitive functions while having an alcohol concentration of 0.04 or greater. No certificate holder or operator having actual knowledge that an employee has an alcohol concentration of 0.04 or greater shall permit the

employee to perform or continue to perform safety-sensitive functions.

(c) *On-duty use.* No covered employee shall use alcohol while performing safety-sensitive functions. No certificate holder or operator having actual knowledge that a covered employee is using alcohol while performing safety-sensitive functions shall permit the employee to perform or continue to perform safety-sensitive functions.

(d) *Pre-duty use.* (1) No covered employee shall perform flight crewmember or flight attendant duties within 8 hours after using alcohol. No certificate holder or operator having actual knowledge that such an employee has used alcohol within 8 hours shall permit the employee to perform or continue to perform the specified duties.

(2) No covered employee shall perform safety-sensitive duties other than those specified in paragraph (d)(1) of this section within 4 hours after using alcohol. No certificate holder or operator having actual knowledge that such an employee has used alcohol within 4 hours shall permit the employee to perform or continue to perform safety-sensitive functions.

(e) *Use following an accident.* No covered employee who has actual knowledge of an accident involving an aircraft for which he or she performed a safety-sensitive function at or near the time of the accident shall use alcohol for 8 hours following the accident, unless he or she has been given a post-accident test under appendix J of part 121 of this chapter, or the employer has determined that the employee's performance could not have contributed to the accident.

(f) *Refusal to submit to a required alcohol test.* A covered employee may not refuse to submit to any alcohol test required under appendix J to part 121 of this chapter. An operator or certificate holder may not permit an employee who refuses to submit to such a test to perform or continue to perform safety-sensitive functions.

[Amdt. 135–48, 59 FR 7396, Feb. 15, 1994, as amended by Amdt. 135–105, 71 FR 35765, June 21, 2006]

§ 135.255 Testing for alcohol.

(a) Each certificate holder and operator must establish an alcohol misuse prevention program in accordance with the provisions of appendix J to part 121 of this chapter.

(b) Except as provided in paragraph (c) of this section, no certificate holder or operator may use any person who meets the definition of ''covered employee'' in appendix J to part 121 of this chapter to perform a safety-sensitive function listed in that appendix unless such person is subject to testing for alcohol misuse in accordance with the provisions of appendix J.

(c) If a certificate holder conducts an on-demand operation into an airport at which no maintenance providers are available that are subject to the requirements of appendix J to part 121 of this chapter and emergency maintenance is required, the certificate holder may use persons not meeting the requirements of paragraph (b) of this section to provide such emergency maintenance under both of the following conditions:

(1) The certificate holder must give written notification of the emergency maintenance to the Drug Abatement Program Division, AAM–800, 800 Independence Avenue, Washington, DC, 20591, within 10 days after being provided same in accordance with this paragraph. A certificate holder must retain copies of all such written notifications for two years.

(2) The aircraft must be reinspected by maintenance personnel who meet the requirements of paragraph (b) of this section when the aircraft is next at an airport where such maintenance personnel are available.

(d) For purposes of this section, emergency maintenance means maintenance that—

(1) Is not scheduled, and

(2) Is made necessary by an aircraft condition not discovered prior to the departure for that location.

[Amdt. 135–48, 59 FR 7397, Feb. 15, 1994, as amended by Amdt. 135–91, 68 FR 54587, Sept. 17, 2003]

Subpart F—Crewmember Flight Time and Duty Period Limitations and Rest Requirements

SOURCE: Docket No. 23634, 50 FR 29320, July 18, 1985, unless otherwise noted.

§ 135.261 Applicability.

Sections 135.263 through 135.273 of this part prescribe flight time limitations, duty period limitations, and rest requirements for operations conducted under this part as follows:

(a) Section 135.263 applies to all operations under this subpart.

(b) Section 135.265 applies to:

(1) Scheduled passenger-carrying operations except those conducted solely within the state of Alaska. ''Scheduled passenger-carrying operations'' means passenger-carrying operations that are conducted in accordance with a published schedule which covers at least five round trips per week on at least one route between two or more points, includes dates or times (or both), and is openly advertised or otherwise made readily available to the general public, and

(2) Any other operation under this part, if the operator elects to comply with §135.265 and obtains an appropriate operations specification amendment.

(c) Sections 135.267 and 135.269 apply to any operation that is not a scheduled passenger-carrying operation and to any operation conducted solely within the State of Alaska, unless the operator elects to comply with §135.265 as authorized under paragraph (b)(2) of this section.

(d) Section 135.271 contains special daily flight time limits for operations conducted under the helicopter emergency medical evacuation service (HEMES).

(e) Section 135.273 prescribes duty period limitations and rest requirements for flight attendants in all operations conducted under this part.

[Doc. No. 23634, 50 FR 29320, July 18, 1985, as amended by Amdt. 135–52, 59 FR 42993, Aug. 19, 1994]

§ 135.263 Flight time limitations and rest requirements: All certificate holders.

(a) A certificate holder may assign a flight crewmember and a flight crewmember may accept an assignment for flight time only when the applicable requirements of §§135.263 through 135.271 are met.

(b) No certificate holder may assign any flight crewmember to any duty with the certificate holder during any required rest period.

(c) Time spent in transportation, not local in character, that a certificate holder requires of a flight crewmember and provides to transport the crewmember to an airport at which he is to serve on a flight as a crewmember, or from an airport at which he was relieved from duty to return to his home station, is not considered part of a rest period.

(d) A flight crewmember is not considered to be assigned flight time in excess of flight time limitations if the flights to which he is assigned normally terminate within the limitations, but due to circumstances beyond the control of the certificate holder or flight crewmember (such as adverse weather conditions), are not at the time of departure expected to reach their destination within the planned flight time.

§ 135.265 Flight time limitations and rest requirements: Scheduled operations.

(a) No certificate holder may schedule any flight crewmember, and no flight crewmember may accept an assignment, for flight time in scheduled operations or in other commercial flying if that crewmember's total flight time in all commercial flying will exceed—

(1) 1,200 hours in any calendar year.

(2) 120 hours in any calendar month.

(3) 34 hours in any 7 consecutive days.

(4) 8 hours during any 24 consecutive hours for a flight crew consisting of one pilot.

(5) 8 hours between required rest periods for a flight crew consisting of two pilots qualified under this part for the operation being conducted.

(b) Except as provided in paragraph (c) of this section, no certificate holder

may schedule a flight crewmember, and no flight crewmember may accept an assignment, for flight time during the 24 consecutive hours preceding the scheduled completion of any flight segment without a scheduled rest period during that 24 hours of at least the following:

(1) 9 consecutive hours of rest for less than 8 hours of scheduled flight time.

(2) 10 consecutive hours of rest for 8 or more but less than 9 hours of scheduled flight time.

(3) 11 consecutive hours of rest for 9 or more hours of scheduled flight time.

(c) A certificate holder may schedule a flight crewmember for less than the rest required in paragraph (b) of this section or may reduce a scheduled rest under the following conditions:

(1) A rest required under paragraph (b)(1) of this section may be scheduled for or reduced to a minimum of 8 hours if the flight crewmember is given a rest period of at least 10 hours that must begin no later than 24 hours after the commencement of the reduced rest period.

(2) A rest required under paragraph (b)(2) of this section may be scheduled for or reduced to a minimum of 8 hours if the flight crewmember is given a rest period of at least 11 hours that must begin no later than 24 hours after the commencement of the reduced rest period.

(3) A rest required under paragraph (b)(3) of this section may be scheduled for or reduced to a minimum of 9 hours if the flight crewmember is given a rest period of at least 12 hours that must begin no later than 24 hours after the commencement of the reduced rest period.

(d) Each certificate holder shall relieve each flight crewmember engaged in scheduled air transportation from all further duty for at least 24 consecutive hours during any 7 consecutive days.

§ 135.267 Flight time limitations and rest requirements: Unscheduled one- and two-pilot crews.

(a) No certificate holder may assign any flight crewmember, and no flight crewmember may accept an assignment, for flight time as a member of a one- or two-pilot crew if that crewmember's total flight time in all commercial flying will exceed—

(1) 500 hours in any calendar quarter.

(2) 800 hours in any two consecutive calendar quarters.

(3) 1,400 hours in any calendar year.

(b) Except as provided in paragraph (c) of this section, during any 24 consecutive hours the total flight time of the assigned flight when added to any other commercial flying by that flight crewmember may not exceed—

(1) 8 hours for a flight crew consisting of one pilot; or

(2) 10 hours for a flight crew consisting of two pilots qualified under this part for the operation being conducted.

(c) A flight crewmember's flight time may exceed the flight time limits of paragraph (b) of this section if the assigned flight time occurs during a regularly assigned duty period of no more than 14 hours and—

(1) If this duty period is immediately preceded by and followed by a required rest period of at least 10 consecutive hours of rest;

(2) If flight time is assigned during this period, that total flight time when added to any other commercial flying by the flight crewmember may not exceed—

(i) 8 hours for a flight crew consisting of one pilot; or

(ii) 10 hours for a flight crew consisting of two pilots; and

(3) If the combined duty and rest periods equal 24 hours.

(d) Each assignment under paragraph (b) of this section must provide for at least 10 consecutive hours of rest during the 24-hour period that precedes the planned completion time of the assignment.

(e) When a flight crewmember has exceeded the daily flight time limitations in this section, because of circumstances beyond the control of the certificate holder or flight crewmember (such as adverse weather conditions), that flight crewmember must have a rest period before being assigned or accepting an assignment for flight time of at least—

(1) 11 consecutive hours of rest if the flight time limitation is exceeded by not more than 30 minutes;

(2) 12 consecutive hours of rest if the flight time limitation is exceeded by more than 30 minutes, but not more than 60 minutes; and

(3) 16 consecutive hours of rest if the flight time limitation is exceeded by more than 60 minutes.

(f) The certificate holder must provide each flight crewmember at least 13 rest periods of at least 24 consecutive hours each in each calendar quarter.

[Doc. No. 23634, 50 FR 29320, July 18, 1985, as amended by Amdt. 135–33, 54 FR 39294, Sept. 25, 1989; Amdt. 135–60, 61 FR 2616, Jan. 26, 1996]

§ 135.269 Flight time limitations and rest requirements: Unscheduled three- and four-pilot crews.

(a) No certificate holder may assign any flight crewmember, and no flight crewmember may accept an assignment, for flight time as a member of a three- or four-pilot crew if that crewmember's total flight time in all commercial flying will exceed—

(1) 500 hours in any calendar quarter.

(2) 800 hours in any two consecutive calendar quarters.

(3) 1,400 hours in any calendar year.

(b) No certificate holder may assign any pilot to a crew of three or four pilots, unless that assignment provides—

(1) At least 10 consecutive hours of rest immediately preceding the assignment;

(2) No more than 8 hours of flight deck duty in any 24 consecutive hours;

(3) No more than 18 duty hours for a three-pilot crew or 20 duty hours for a four-pilot crew in any 24 consecutive hours;

(4) No more than 12 hours aloft for a three-pilot crew or 16 hours aloft for a four-pilot crew during the maximum duty hours specified in paragraph (b)(3) of this section;

(5) Adequate sleeping facilities on the aircraft for the relief pilot;

(6) Upon completion of the assignment, a rest period of at least 12 hours;

(7) For a three-pilot crew, a crew which consists of at least the following:

(i) A pilot in command (PIC) who meets the applicable flight crewmember requirements of subpart E of part 135;

(ii) A PIC who meets the applicable flight crewmember requirements of subpart E of part 135, except those prescribed in §§ 135.244 and 135.247; and

(iii) A second in command (SIC) who meets the SIC qualifications of § 135.245.

(8) For a four-pilot crew, at least three pilots who meet the conditions of paragraph (b)(7) of this section, plus a fourth pilot who meets the SIC qualifications of § 135.245.

(c) When a flight crewmember has exceeded the daily flight deck duty limitation in this section by more than 60 minutes, because of circumstances beyond the control of the certificate holder or flight crewmember, that flight crewmember must have a rest period before the next duty period of at least 16 consecutive hours.

(d) A certificate holder must provide each flight crewmember at least 13 rest periods of at least 24 consecutive hours each in each calendar quarter.

§ 135.271 Helicopter hospital emergency medical evacuation service (HEMES).

(a) No certificate holder may assign any flight crewmember, and no flight crewmember may accept an assignment for flight time if that crewmember's total flight time in all commercial flight will exceed—

(1) 500 hours in any calendar quarter.

(2) 800 hours in any two consecutive calendar quarters.

(3) 1,400 hours in any calendar year.

(b) No certificate holder may assign a helicopter flight crewmember, and no flight crewmember may accept an assignment, for hospital emergency medical evacuation service helicopter operations unless that assignment provides for at least 10 consecutive hours of rest immediately preceding reporting to the hospital for availability for flight time.

(c) No flight crewmember may accrue more than 8 hours of flight time during any 24-consecutive hour period of a HEMES assignment, unless an emergency medical evacuation operation is prolonged. Each flight crewmember who exceeds the daily 8 hour flight time limitation in this paragraph must be relieved of the HEMES assignment immediately upon the completion of

that emergency medical evacuation operation and must be given a rest period in compliance with paragraph (h) of this section.

(d) Each flight crewmember must receive at least 8 consecutive hours of rest during any 24 consecutive hour period of a HEMES assignment. A flight crewmember must be relieved of the HEMES assignment if he or she has not or cannot receive at least 8 consecutive hours of rest during any 24 consecutive hour period of a HEMES assignment.

(e) A HEMES assignment may not exceed 72 consecutive hours at the hospital.

(f) An adequate place of rest must be provided at, or in close proximity to, the hospital at which the HEMES assignment is being performed.

(g) No certificate holder may assign any other duties to a flight crewmember during a HEMES assignment.

(h) Each pilot must be given a rest period upon completion of the HEMES assignment and prior to being assigned any further duty with the certificate holder of—

(1) At least 12 consecutive hours for an assignment of less than 48 hours.

(2) At least 16 consecutive hours for an assignment of more than 48 hours.

(i) The certificate holder must provide each flight crewmember at least 13 rest periods of at least 24 consecutive hours each in each calendar quarter.

§ 135.273 Duty period limitations and rest time requirements.

(a) For purposes of this section—

Calendar day means the period of elapsed time, using Coordinated Universal Time or local time, that begins at midnight and ends 24 hours later at the next midnight.

Duty period means the period of elapsed time between reporting for an assignment involving flight time and release from that assignment by the certificate holder. The time is calculated using either Coordinated Universal Time or local time to reflect the total elapsed time.

Flight attendant means an individual, other than a flight crewmember, who is assigned by the certificate holder, in accordance with the required minimum crew complement under the certificate holder's operations specifications or in addition to that minimum complement, to duty in an aircraft during flight time and whose duties include but are not necessarily limited to cabin-safety-related responsibilities.

Rest period means the period free of all responsibility for work or duty should the occasion arise.

(b) Except as provided in paragraph (c) of this section, a certificate holder may assign a duty period to a flight attendant only when the applicable duty period limitations and rest requirements of this paragraph are met.

(1) Except as provided in paragraphs (b)(4), (b)(5), and (b)(6) of this section, no certificate holder may assign a flight attendant to a scheduled duty period of more than 14 hours.

(2) Except as provided in paragraph (b)(3) of this section, a flight attendant scheduled to a duty period of 14 hours or less as provided under paragraph (b)(1) of this section must be given a scheduled rest period of at least 9 consecutive hours. This rest period must occur between the completion of the scheduled duty period and the commencement of the subsequent duty period.

(3) The rest period required under paragraph (b)(2) of this section may be scheduled or reduced to 8 consecutive hours if the flight attendant is provided a subsequent rest period of at least 10 consecutive hours; this subsequent rest period must be scheduled to begin no later than 24 hours after the beginning of the reduced rest period and must occur between the completion of the scheduled duty period and the commencement of the subsequent duty period.

(4) A certificate holder may assign a flight attendant to a scheduled duty period of more than 14 hours, but no more than 16 hours, if the certificate holder has assigned to the flight or flights in that duty period at least one flight attendant in addition to the minimum flight attendant complement required for the flight or flights in that duty period under the certificate holder's operations specifications.

(5) A certificate holder may assign a flight attendant to a scheduled duty period of more than 16 hours, but no more than 18 hours, if the certificate holder has assigned to the flight or

flights in that duty period at least two flight attendants in addition to the minimum flight attendant complement required for the flight or flights in that duty period under the certificate holder's operations specifications.

(6) A certificate holder may assign a flight attendant to a scheduled duty period of more than 18 hours, but no more than 20 hours, if the scheduled duty period includes one or more flights that land or take off outside the 48 contiguous states and the District of Columbia, and if the certificate holder has assigned to the flight or flights in that duty period at least three flight attendants in addition to the minimum flight attendant complement required for the flight or flights in that duty period under the certificate holder's operations specifications.

(7) Except as provided in paragraph (b)(8) of this section, a flight attendant scheduled to a duty period of more than 14 hours but no more than 20 hours, as provided in paragraphs (b)(4), (b)(5), and (b)(6) of this section, must be given a scheduled rest period of at least 12 consecutive hours. This rest period must occur between the completion of the scheduled duty period and the commencement of the subsequent duty period.

(8) The rest period required under paragraph (b)(7) of this section may be scheduled or reduced to 10 consecutive hours if the flight attendant is provided a subsequent rest period of at least 14 consecutive hours; this subsequent rest period must be scheduled to begin no later than 24 hours after the beginning of the reduced rest period and must occur between the completion of the scheduled duty period and the commencement of the subsequent duty period.

(9) Notwithstanding paragraphs (b)(4), (b)(5), and (b)(6) of this section, if a certificate holder elects to reduce the rest period to 10 hours as authorized by paragraph (b)(8) of this section, the certificate holder may not schedule a flight attendant for a duty period of more than 14 hours during the 24-hour period commencing after the beginning of the reduced rest period.

(10) No certificate holder may assign a flight attendant any duty period with the certificate holder unless the flight attendant has had at least the minimum rest required under this section.

(11) No certificate holder may assign a flight attendant to perform any duty with the certificate holder during any required rest period.

(12) Time spent in transportation, not local in character, that a certificate holder requires of a flight attendant and provides to transport the flight attendant to an airport at which that flight attendant is to serve on a flight as a crewmember, or from an airport at which the flight attendant was relieved from duty to return to the flight attendant's home station, is not considered part of a rest period.

(13) Each certificate holder must relieve each flight attendant engaged in air transportation from all further duty for at least 24 consecutive hours during any 7 consecutive calendar days.

(14) A flight attendant is not considered to be scheduled for duty in excess of duty period limitations if the flights to which the flight attendant is assigned are scheduled and normally terminate within the limitations but due to circumstances beyond the control of the certificate holder (such as adverse weather conditions) are not at the time of departure expected to reach their destination within the scheduled time.

(c) Notwithstanding paragraph (b) of this section, a certificate holder may apply the flight crewmember flight time and duty limitations and rest requirements of this part to flight attendants for all operations conducted under this part provided that—

(1) The certificate holder establishes written procedures that—

(i) Apply to all flight attendants used in the certificate holder's operation;

(ii) Include the flight crewmember requirements contained in subpart F of this part, as appropriate to the operation being conducted, except that rest facilities on board the aircraft are not required; and

(iii) Include provisions to add one flight attendant to the minimum flight attendant complement for each flight crewmember who is in excess of the minimum number required in the aircraft type certificate data sheet and who is assigned to the aircraft under

the provisions of subpart F of this part, as applicable.

(iv) Are approved by the Administrator and described or referenced in the certificate holder's operations specifications; and

(2) Whenever the Administrator finds that revisions are necessary for the continued adequacy of duty period limitation and rest requirement procedures that are required by paragraph (c)(1) of this section and that had been granted final approval, the certificate holder must, after notification by the Administrator, make any changes in the procedures that are found necessary by the Administrator. Within 30 days after the certificate holder receives such notice, it may file a petition to reconsider the notice with the certificate-holding district office. The filing of a petition to reconsider stays the notice, pending decision by the Administrator. However, if the Administrator finds that there is an emergency that requires immediate action in the interest of safety, the Administrator may, upon a statement of the reasons, require a change effective without stay.

[Amdt. 135–52, 59 FR 42993, Aug. 19, 1994, as amended by Amdt. 135–60, 61 FR 2616, Jan. 26, 1996]

Subpart G—Crewmember Testing Requirements

§ 135.291 Applicability.

Except as provided in § 135.3, this subpart—

(a) Prescribes the tests and checks required for pilot and flight attendant crewmembers and for the approval of check pilots in operations under this part; and

(b) Permits training center personnel authorized under part 142 of this chapter who meet the requirements of §§ 135.337 and 135.339 to conduct training, testing, and checking under contract or other arrangement to those persons subject to the requirements of this subpart.

[Doc. No. 26933, 61 FR 34561, July 2, 1996, as amended by Amdt. 135–91, 68 FR 54587, Sept. 17, 2003]

§ 135.293 Initial and recurrent pilot testing requirements.

(a) No certificate holder may use a pilot, nor may any person serve as a pilot, unless, since the beginning of the 12th calendar month before that service, that pilot has passed a written or oral test, given by the Administrator or an authorized check pilot, on that pilot's knowledge in the following areas—

(1) The appropriate provisions of parts 61, 91, and 135 of this chapter and the operations specifications and the manual of the certificate holder;

(2) For each type of aircraft to be flown by the pilot, the aircraft powerplant, major components and systems, major appliances, performance and operating limitations, standard and emergency operating procedures, and the contents of the approved Aircraft Flight Manual or equivalent, as applicable;

(3) For each type of aircraft to be flown by the pilot, the method of determining compliance with weight and balance limitations for takeoff, landing and en route operations;

(4) Navigation and use of air navigation aids appropriate to the operation or pilot authorization, including, when applicable, instrument approach facilities and procedures;

(5) Air traffic control procedures, including IFR procedures when applicable;

(6) Meteorology in general, including the principles of frontal systems, icing, fog, thunderstorms, and windshear, and, if appropriate for the operation of the certificate holder, high altitude weather;

(7) Procedures for—

(i) Recognizing and avoiding severe weather situations;

(ii) Escaping from severe weather situations, in case of inadvertent encounters, including low-altitude windshear (except that rotorcraft pilots are not required to be tested on escaping from low-altitude windshear); and

(iii) Operating in or near thunderstorms (including best penetrating altitudes), turbulent air (including clear air turbulence), icing, hail, and other potentially hazardous meteorological conditions; and

(8) New equipment, procedures, or techniques, as appropriate.

(b) No certificate holder may use a pilot, nor may any person serve as a pilot, in any aircraft unless, since the beginning of the 12th calendar month before that service, that pilot has passed a competency check given by the Administrator or an authorized check pilot in that class of aircraft, if single-engine airplane other than turbojet, or that type of aircraft, if helicopter, multiengine airplane, or turbojet airplane, to determine the pilot's competence in practical skills and techniques in that aircraft or class of aircraft. The extent of the competency check shall be determined by the Administrator or authorized check pilot conducting the competency check. The competency check may include any of the maneuvers and procedures currently required for the original issuance of the particular pilot certificate required for the operations authorized and appropriate to the category, class and type of aircraft involved. For the purposes of this paragraph, type, as to an airplane, means any one of a group of airplanes determined by the Administrator to have a similar means of propulsion, the same manufacturer, and no significantly different handling or flight characteristics. For the purposes of this paragraph, type, as to a helicopter, means a basic make and model.

(c) The instrument proficiency check required by §135.297 may be substituted for the competency check required by this section for the type of aircraft used in the check.

(d) For the purpose of this part, competent performance of a procedure or maneuver by a person to be used as a pilot requires that the pilot be the obvious master of the aircraft, with the successful outcome of the maneuver never in doubt.

(e) The Administrator or authorized check pilot certifies the competency of each pilot who passes the knowledge or flight check in the certificate holder's pilot records.

(f) Portions of a required competency check may be given in an aircraft simulator or other appropriate training device, if approved by the Administrator.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–27, 53 FR 37697, Sept. 27, 1988]

§135.295 Initial and recurrent flight attendant crewmember testing requirements.

No certificate holder may use a flight attendant crewmember, nor may any person serve as a flight attendant crewmember unless, since the beginning of the 12th calendar month before that service, the certificate holder has determined by appropriate initial and recurrent testing that the person is knowledgeable and competent in the following areas as appropriate to assigned duties and responsibilities—

(a) Authority of the pilot in command;

(b) Passenger handling, including procedures to be followed in handling deranged persons or other persons whose conduct might jeopardize safety;

(c) Crewmember assignments, functions, and responsibilities during ditching and evacuation of persons who may need the assistance of another person to move expeditiously to an exit in an emergency;

(d) Briefing of passengers;

(e) Location and operation of portable fire extinguishers and other items of emergency equipment;

(f) Proper use of cabin equipment and controls;

(g) Location and operation of passenger oxygen equipment;

(h) Location and operation of all normal and emergency exits, including evacuation chutes and escape ropes; and

(i) Seating of persons who may need assistance of another person to move rapidly to an exit in an emergency as prescribed by the certificate holder's operations manual.

§135.297 Pilot in command: Instrument proficiency check requirements.

(a) No certificate holder may use a pilot, nor may any person serve, as a pilot in command of an aircraft under IFR unless, since the beginning of the 6th calendar month before that service, that pilot has passed an instrument

proficiency check under this section administered by the Administrator or an authorized check pilot.

(b) No pilot may use any type of precision instrument approach procedure under IFR unless, since the beginning of the 6th calendar month before that use, the pilot satisfactorily demonstrated that type of approach procedure. No pilot may use any type of nonprecision approach procedure under IFR unless, since the beginning of the 6th calendar month before that use, the pilot has satisfactorily demonstrated either that type of approach procedure or any other two different types of nonprecision approach procedures. The instrument approach procedure or procedures must include at least one straight-in approach, one circling approach, and one missed approach. Each type of approach procedure demonstrated must be conducted to published minimums for that procedure.

(c) The instrument proficiency check required by paragraph (a) of this section consists of an oral or written equipment test and a flight check under simulated or actual IFR conditions. The equipment test includes questions on emergency procedures, engine operation, fuel and lubrication systems, power settings, stall speeds, best engine-out speed, propeller and supercharger operations, and hydraulic, mechanical, and electrical systems, as appropriate. The flight check includes navigation by instruments, recovery from simulated emergencies, and standard instrument approaches involving navigational facilities which that pilot is to be authorized to use. Each pilot taking the instrument proficiency check must show that standard of competence required by §135.293(d).

(1) The instrument proficiency check must—

(i) For a pilot in command of an airplane under §135.243(a), include the procedures and maneuvers for an airline transport pilot certificate in the particular type of airplane, if appropriate; and

(ii) For a pilot in command of an airplane or helicopter under §135.243(c), include the procedures and maneuvers for a commercial pilot certificate with an instrument rating and, if required, for the appropriate type rating.

(2) The instrument proficiency check must be given by an authorized check airman or by the Administrator.

(d) If the pilot in command is assigned to pilot only one type of aircraft, that pilot must take the instrument proficiency check required by paragraph (a) of this section in that type of aircraft.

(e) If the pilot in command is assigned to pilot more than one type of aircraft, that pilot must take the instrument proficiency check required by paragraph (a) of this section in each type of aircraft to which that pilot is assigned, in rotation, but not more than one flight check during each period described in paragraph (a) of this section.

(f) If the pilot in command is assigned to pilot both single-engine and multiengine aircraft, that pilot must initially take the instrument proficiency check required by paragraph (a) of this section in a multiengine aircraft, and each succeeding check alternately in single-engine and multiengine aircraft, but not more than one flight check during each period described in paragraph (a) of this section. Portions of a required flight check may be given in an aircraft simulator or other appropriate training device, if approved by the Administrator.

(g) If the pilot in command is authorized to use an autopilot system in place of a second in command, that pilot must show, during the required instrument proficiency check, that the pilot is able (without a second in command) both with and without using the autopilot to—

(1) Conduct instrument operations competently; and

(2) Properly conduct air-ground communications and comply with complex air traffic control instructions.

(3) Each pilot taking the autopilot check must show that, while using the autopilot, the airplane can be operated as proficiently as it would be if a second in command were present to handle air-ground communications and air traffic control instructions. The autopilot check need only be demonstrated once every 12 calendar months during

the instrument proficiency check required under paragraph (a) of this section.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–15, 46 FR 30971, June 11, 1981]

§ 135.299 Pilot in command: Line checks: Routes and airports.

(a) No certificate holder may use a pilot, nor may any person serve, as a pilot in command of a flight unless, since the beginning of the 12th calendar month before that service, that pilot has passed a flight check in one of the types of aircraft which that pilot is to fly. The flight check shall—

(1) Be given by an approved check pilot or by the Administrator;

(2) Consist of at least one flight over one route segment; and

(3) Include takeoffs and landings at one or more representative airports. In addition to the requirements of this paragraph, for a pilot authorized to conduct IFR operations, at least one flight shall be flown over a civil airway, an approved off-airway route, or a portion of either of them.

(b) The pilot who conducts the check shall determine whether the pilot being checked satisfactorily performs the duties and responsibilities of a pilot in command in operations under this part, and shall so certify in the pilot training record.

(c) Each certificate holder shall establish in the manual required by §135.21 a procedure which will ensure that each pilot who has not flown over a route and into an airport within the preceding 90 days will, before beginning the flight, become familiar with all available information required for the safe operation of that flight.

§ 135.301 Crewmember: Tests and checks, grace provisions, training to accepted standards.

(a) If a crewmember who is required to take a test or a flight check under this part, completes the test or flight check in the calendar month before or after the calendar month in which it is required, that crewmember is considered to have completed the test or check in the calendar month in which it is required.

(b) If a pilot being checked under this subpart fails any of the required maneuvers, the person giving the check may give additional training to the pilot during the course of the check. In addition to repeating the maneuvers failed, the person giving the check may require the pilot being checked to repeat any other maneuvers that are necessary to determine the pilot's proficiency. If the pilot being checked is unable to demonstrate satisfactory performance to the person conducting the check, the certificate holder may not use the pilot, nor may the pilot serve, as a flight crewmember in operations under this part until the pilot has satisfactorily completed the check.

Subpart H—Training

§ 135.321 Applicability and terms used.

(a) Except as provided in §135.3, this subpart prescribes the requirements applicable to—

(1) A certificate holder under this part which contracts with, or otherwise arranges to use the services of a training center certificated under part 142 to perform training, testing, and checking functions;

(2) Each certificate holder for establishing and maintaining an approved training program for crewmembers, check airmen and instructors, and other operations personnel employed or used by that certificate holder; and

(3) Each certificate holder for the qualification, approval, and use of aircraft simulators and flight training devices in the conduct of the program.

(b) For the purposes of this subpart, the following terms and definitions apply:

(1) *Initial training.* The training required for crewmembers who have not qualified and served in the same capacity on an aircraft.

(2) *Transition training.* The training required for crewmembers who have qualified and served in the same capacity on another aircraft.

(3) *Upgrade training.* The training required for crewmembers who have qualified and served as second in command on a particular aircraft type, before they serve as pilot in command on that aircraft.

(4) *Differences training.* The training required for crewmembers who have qualified and served on a particular type aircraft, when the Administrator finds differences training is necessary before a crewmember serves in the same capacity on a particular variation of that aircraft.

(5) *Recurrent training.* The training required for crewmembers to remain adequately trained and currently proficient for each aircraft, crewmember position, and type of operation in which the crewmember serves.

(6) *In flight.* The maneuvers, procedures, or functions that must be conducted in the aircraft.

(7) *Training center.* An organization governed by the applicable requirements of part 142 of this chapter that conducts training, testing, and checking under contract or other arrangement to certificate holders subject to the requirements of this part.

(8) *Requalification training.* The training required for crewmembers previously trained and qualified, but who have become unqualified due to not having met within the required period the—

(i) Recurrent pilot testing requirements of §135.293;

(ii) Instrument proficiency check requirements of §135.297; or

(iii) Line checks required by §135.299.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 121–250, 60 FR 65950, Dec. 20, 1995; Amdt. 135–63, 61 FR 34561, July 2, 1996; Amdt. 135–91, 68 FR 54588, Sept. 17, 2003]

§135.323 Training program: General.

(a) Each certificate holder required to have a training program under §135.341 shall:

(1) Establish and implement a training program that satisfies the requirements of this subpart and that ensures that each crewmember, aircraft dispatcher, flight instructor and check airman is adequately trained to perform his or her assigned duties. Prior to implementation, the certificate holder must obtain initial and final FAA approval of the training program.

(2) Provide adequate ground and flight training facilities and properly qualified ground instructors for the training required by this subpart.

(3) Provide and keep current for each aircraft type used and, if applicable, the particular variations within the aircraft type, appropriate training material, examinations, forms, instructions, and procedures for use in conducting the training and checks required by this subpart.

(4) Provide enough flight instructors, check airmen, and simulator instructors to conduct required flight training and flight checks, and simulator training courses allowed under this subpart.

(b) Whenever a crewmember who is required to take recurrent training under this subpart completes the training in the calendar month before, or the calendar month after, the month in which that training is required, the crewmember is considered to have completed it in the calendar month in which it was required.

(c) Each instructor, supervisor, or check airman who is responsible for a particular ground training subject, segment of flight training, course of training, flight check, or competence check under this part shall certify as to the proficiency and knowledge of the crewmember, flight instructor, or check airman concerned upon completion of that training or check. That certification shall be made a part of the crewmember's record. When the certification required by this paragraph is made by an entry in a computerized recordkeeping system, the certifying instructor, supervisor, or check airman, must be identified with that entry. However, the signature of the certifying instructor, supervisor, or check airman, is not required for computerized entries.

(d) Training subjects that apply to more than one aircraft or crewmember position and that have been satisfactorily completed during previous training while employed by the certificate holder for another aircraft or another crewmember position, need not be repeated during subsequent training other than recurrent training.

(e) Aircraft simulators and other training devices may be used in the certificate holder's training program if approved by the Administrator.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–101, 70 FR 58829, Oct. 7, 2005]

§ 135.324 Training program: Special rules.

(a) Other than the certificate holder, only another certificate holder certificated under this part or a training center certificated under part 142 of this chapter is eligible under this subpart to conduct training, testing, and checking under contract or other arrangement to those persons subject to the requirements of this subpart.

(b) A certificate holder may contract with, or otherwise arrange to use the services of, a training center certificated under part 142 of this chapter to conduct training, testing, and checking required by this part only if the training center—

(1) Holds applicable training specifications issued under part 142 of this chapter;

(2) Has facilities, training equipment, and courseware meeting the applicable requirements of part 142 of this chapter;

(3) Has approved curriculums, curriculum segments, and portions of curriculum segments applicable for use in training courses required by this subpart; and

(4) Has sufficient instructor and check airmen qualified under the applicable requirements of §§ 135.337 through 135.340 to provide training, testing, and checking to persons subject to the requirements of this subpart.

[Doc. No. 26933, 61 FR 34562, July 2, 1996, as amended by Amdt. 135–67, 62 FR 13791, Mar. 21, 1997; Amdt. 135–91, 68 FR 54588, Sept. 17, 2003]

§ 135.325 Training program and revision: Initial and final approval.

(a) To obtain initial and final approval of a training program, or a revision to an approved training program, each certificate holder must submit to the Administrator—

(1) An outline of the proposed or revised curriculum, that provides enough information for a preliminary evaluation of the proposed training program or revision; and

(2) Additional relevant information that may be requested by the Administrator.

(b) If the proposed training program or revision complies with this subpart, the Administrator grants initial approval in writing after which the certificate holder may conduct the training under that program. The Administrator then evaluates the effectiveness of the training program and advises the certificate holder of deficiencies, if any, that must be corrected.

(c) The Administrator grants final approval of the proposed training program or revision if the certificate holder shows that the training conducted under the initial approval in paragraph (b) of this section ensures that each person who successfully completes the training is adequately trained to perform that person's assigned duties.

(d) Whenever the Administrator finds that revisions are necessary for the continued adequacy of a training program that has been granted final approval, the certificate holder shall, after notification by the Administrator, make any changes in the program that are found necessary by the Administrator. Within 30 days after the certificate holder receives the notice, it may file a petition to reconsider the notice with the Administrator. The filing of a petition to reconsider stays the notice pending a decision by the Administrator. However, if the Administrator finds that there is an emergency that requires immediate action in the interest of safety, the Administrator may, upon a statement of the reasons, require a change effective without stay.

§ 135.327 Training program: Curriculum.

(a) Each certificate holder must prepare and keep current a written training program curriculum for each type of aircraft for each crewmember required for that type aircraft. The curriculum must include ground and flight training required by this subpart.

(b) Each training program curriculum must include the following:

(1) A list of principal ground training subjects, including emergency training subjects, that are provided.

(2) A list of all the training devices, mockups, systems trainers, procedures trainers, or other training aids that the certificate holder will use.

(3) Detailed descriptions or pictorial displays of the approved normal, abnormal, and emergency maneuvers, procedures and functions that will be performed during each flight training phase or flight check, indicating those maneuvers, procedures and functions that are to be performed during the inflight portions of flight training and flight checks.

§ 135.329 Crewmember training requirements.

(a) Each certificate holder must include in its training program the following initial and transition ground training as appropriate to the particular assignment of the crewmember:

(1) Basic indoctrination ground training for newly hired crewmembers including instruction in at least the—

(i) Duties and responsibilities of crewmembers as applicable;

(ii) Appropriate provisions of this chapter;

(iii) Contents of the certificate holder's operating certificate and operations specifications (not required for flight attendants); and

(iv) Appropriate portions of the certificate holder's operating manual.

(2) The initial and transition ground training in §§ 135.345 and 135.349, as applicable.

(3) Emergency training in § 135.331.

(b) Each training program must provide the initial and transition flight training in § 135.347, as applicable.

(c) Each training program must provide recurrent ground and flight training in § 135.351.

(d) Upgrade training in §§ 135.345 and 135.347 for a particular type aircraft may be included in the training program for crewmembers who have qualified and served as second in command on that aircraft.

(e) In addition to initial, transition, upgrade and recurrent training, each training program must provide ground and flight training, instruction, and practice necessary to ensure that each crewmember—

(1) Remains adequately trained and currently proficient for each aircraft, crewmember position, and type of operation in which the crewmember serves; and

(2) Qualifies in new equipment, facilities, procedures, and techniques, including modifications to aircraft.

§ 135.331 Crewmember emergency training.

(a) Each training program must provide emergency training under this section for each aircraft type, model, and configuration, each crewmember, and each kind of operation conducted, as appropriate for each crewmember and the certificate holder.

(b) Emergency training must provide the following:

(1) Instruction in emergency assignments and procedures, including coordination among crewmembers.

(2) Individual instruction in the location, function, and operation of emergency equipment including—

(i) Equipment used in ditching and evacuation;

(ii) First aid equipment and its proper use; and

(iii) Portable fire extinguishers, with emphasis on the type of extinguisher to be used on different classes of fires.

(3) Instruction in the handling of emergency situations including—

(i) Rapid decompression;

(ii) Fire in flight or on the surface and smoke control procedures with emphasis on electrical equipment and related circuit breakers found in cabin areas;

(iii) Ditching and evacuation;

(iv) Illness, injury, or other abnormal situations involving passengers or crewmembers; and

(v) Hijacking and other unusual situations.

(4) Review of the certificate holder's previous aircraft accidents and incidents involving actual emergency situations.

(c) Each crewmember must perform at least the following emergency drills, using the proper emergency equipment and procedures, unless the Administrator finds that, for a particular drill, the crewmember can be adequately trained by demonstration:

(1) Ditching, if applicable.

(2) Emergency evacuation.

(3) Fire extinguishing and smoke control.

(4) Operation and use of emergency exits, including deployment and use of evacuation chutes, if applicable.

(5) Use of crew and passenger oxygen.

(6) Removal of life rafts from the aircraft, inflation of the life rafts, use of life lines, and boarding of passengers and crew, if applicable.

(7) Donning and inflation of life vests and the use of other individual flotation devices, if applicable.

(d) Crewmembers who serve in operations above 25,000 feet must receive instruction in the following:

(1) Respiration.

(2) Hypoxia.

(3) Duration of consciousness without supplemental oxygen at altitude.

(4) Gas expansion.

(5) Gas bubble formation.

(6) Physical phenomena and incidents of decompression.

§ 135.335 Approval of aircraft simulators and other training devices.

(a) Training courses using aircraft simulators and other training devices may be included in the certificate holder's training program if approved by the Administrator.

(b) Each aircraft simulator and other training device that is used in a training course or in checks required under this subpart must meet the following requirements:

(1) It must be specifically approved for—

(i) The certificate holder; and

(ii) The particular maneuver, procedure, or crewmember function involved.

(2) It must maintain the performance, functional, and other characteristics that are required for approval.

(3) Additionally, for aircraft simulators, it must be—

(i) Approved for the type aircraft and, if applicable, the particular variation within type for which the training or check is being conducted; and

(ii) Modified to conform with any modification to the aircraft being simulated that changes the performance, functional, or other characteristics required for approval.

(c) A particular aircraft simulator or other training device may be used by more than one certificate holder.

(d) In granting initial and final approval of training programs or revisions to them, the Administrator considers the training devices, methods and procedures listed in the certificate holder's curriculum under § 135.327.

[Doc. No. 16907, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–1, 44 FR 26738, May 7, 1979]

§ 135.337 Qualifications: Check airmen (aircraft) and check airmen (simulator).

(a) For the purposes of this section and § 135.339:

(1) A check airman (aircraft) is a person who is qualified to conduct flight checks in an aircraft, in a flight simulator, or in a flight training device for a particular type aircraft.

(2) A check airman (simulator) is a person who is qualified to conduct flight checks, but only in a flight simulator, in a flight training device, or both, for a particular type aircraft.

(3) Check airmen (aircraft) and check airmen (simulator) are those check airmen who perform the functions described in §§ 135.321 (a) and 135.323(a)(4) and (c).

(b) No certificate holder may use a person, nor may any person serve as a check airman (aircraft) in a training program established under this subpart unless, with respect to the aircraft type involved, that person—

(1) Holds the airman certificates and ratings required to serve as a pilot in command in operations under this part;

(2) Has satisfactorily completed the training phases for the aircraft, including recurrent training, that are required to serve as a pilot in command in operations under this part;

(3) Has satisfactorily completed the proficiency or competency checks that are required to serve as a pilot in command in operations under this part;

(4) Has satisfactorily completed the applicable training requirements of § 135.339;

(5) Holds at least a Class III medical certificate unless serving as a required crewmember, in which case holds a Class I or Class II medical certificate as appropriate.

(6) Has satisfied the recency of experience requirements of § 135.247; and

(7) Has been approved by the Administrator for the check airman duties involved.

(c) No certificate holder may use a person, nor may any person serve as a check airman (simulator) in a training program established under this subpart unless, with respect to the aircraft type involved, that person meets the provisions of paragraph (b) of this section, or—

(1) Holds the applicable airman certificates and ratings, except medical certificate, required to serve as a pilot in command in operations under this part;

(2) Has satisfactorily completed the appropriate training phases for the aircraft, including recurrent training, that are required to serve as a pilot in command in operations under this part;

(3) Has satisfactorily completed the appropriate proficiency or competency checks that are required to serve as a pilot in command in operations under this part;

(4) Has satisfactorily completed the applicable training requirements of § 135.339; and

(5) Has been approved by the Administrator for the check airman (simulator) duties involved.

(d) Completion of the requirements in paragraphs (b) (2), (3), and (4) or (c) (2), (3), and (4) of this section, as applicable, shall be entered in the individual's training record maintained by the certificate holder.

(e) Check airmen who do not hold an appropriate medical certificate may function as check airmen (simulator), but may not serve as flightcrew members in operations under this part.

(f) A check airman (simulator) must accomplish the following—

(1) Fly at least two flight segments as a required crewmember for the type, class, or category aircraft involved within the 12-month preceding the performance of any check airman duty in a flight simulator; or

(2) Satisfactorily complete an approved line-observation program within the period prescribed by that program and that must precede the performance of any check airman duty in a flight simulator.

(g) The flight segments or line-observation program required in paragraph (f) of this section are considered to be completed in the month required if completed in the calendar month before or the calendar month after the month in which they are due.

[Doc. No. 28471, 61 FR 30744, June 17, 1996]

§ 135.338 Qualifications: Flight instructors (aircraft) and flight instructors (simulator).

(a) For the purposes of this section and § 135.340:

(1) A flight instructor (aircraft) is a person who is qualified to instruct in an aircraft, in a flight simulator, or in a flight training device for a particular type, class, or category aircraft.

(2) A flight instructor (simulator) is a person who is qualified to instruct in a flight simulator, in a flight training device, or in both, for a particular type, class, or category aircraft.

(3) Flight instructors (aircraft) and flight instructors (simulator) are those instructors who perform the functions described in § 135.321(a) and 135.323 (a)(4) and (c).

(b) No certificate holder may use a person, nor may any person serve as a flight instructor (aircraft) in a training program established under this subpart unless, with respect to the type, class, or category aircraft involved, that person—

(1) Holds the airman certificates and ratings required to serve as a pilot in command in operations under this part;

(2) Has satisfactorily completed the training phases for the aircraft, including recurrent training, that are required to serve as a pilot in command in operations under this part;

(3) Has satisfactorily completed the proficiency or competency checks that are required to serve as a pilot in command in operations under this part;

(4) Has satisfactorily completed the applicable training requirements of § 135.340;

(5) Holds at least a Class III medical certificate; and

(6) Has satisfied the recency of experience requirements of § 135.247.

(c) No certificate holder may use a person, nor may any person serve as a

flight instructor (simulator) in a training program established under this subpart, unless, with respect to the type, class, or category aircraft involved, that person meets the provisions of paragraph (b) of this section, or—

(1) Holds the airman certificates and ratings, except medical certificate, required to serve as a pilot in command in operations under this part except before March 19, 1997 that person need not hold a type rating for the type, class, or category of aircraft involved.

(2) Has satisfactorily completed the appropriate training phases for the aircraft, including recurrent training, that are required to serve as a pilot in command in operations under this part;

(3) Has satisfactorily completed the appropriate proficiency or competency checks that are required to serve as a pilot in command in operations under this part; and

(4) Has satisfactorily completed the applicable training requirements of §135.340.

(d) Completion of the requirements in paragraphs (b) (2), (3), and (4) or (c) (2), (3), and (4) of this section, as applicable, shall be entered in the individual's training record maintained by the certificate holder.

(e) An airman who does not hold a medical certificate may function as a flight instructor in an aircraft if functioning as a non-required crewmember, but may not serve as a flightcrew member in operations under this part.

(f) A flight instructor (simulator) must accomplish the following—

(1) Fly at least two flight segments as a required crewmember for the type, class, or category aircraft involved within the 12-month period preceding the performance of any flight instructor duty in a flight simulator; or

(2) Satisfactorily complete an approved line-observation program within the period prescribed by that program and that must precede the performance of any check airman duty in a flight simulator.

(g) The flight segments or line-observation program required in paragraph (f) of this section are considered completed in the month required if completed in the calendar month before, or in the calendar month after, the month in which they are due.

[Doc. No. 28471, 61 FR 30744, June 17, 1996; 62 FR 3739, Jan. 24, 1997]

§135.339 Initial and transition training and checking: Check airmen (aircraft), check airmen (simulator).

(a) No certificate holder may use a person nor may any person serve as a check airman unless—

(1) That person has satisfactorily completed initial or transition check airman training; and

(2) Within the preceding 24 calendar months, that person satisfactorily conducts a proficiency or competency check under the observation of an FAA inspector or an aircrew designated examiner employed by the operator. The observation check may be accomplished in part or in full in an aircraft, in a flight simulator, or in a flight training device. This paragraph applies after March 19, 1997.

(b) The observation check required by paragraph (a)(2) of this section is considered to have been completed in the month required if completed in the calendar month before or the calendar month after the month in which it is due.

(c) The initial ground training for check airmen must include the following:

(1) Check airman duties, functions, and responsibilities.

(2) The applicable Code of Federal Regulations and the certificate holder's policies and procedures.

(3) The applicable methods, procedures, and techniques for conducting the required checks.

(4) Proper evaluation of student performance including the detection of—

(i) Improper and insufficient training; and

(ii) Personal characteristics of an applicant that could adversely affect safety.

(5) The corrective action in the case of unsatisfactory checks.

(6) The approved methods, procedures, and limitations for performing the required normal, abnormal, and emergency procedures in the aircraft.

(d) The transition ground training for check airmen must include the approved methods, procedures, and limitations for performing the required normal, abnormal, and emergency procedures applicable to the aircraft to which the check airman is in transition.

(e) The initial and transition flight training for check airmen (aircraft) must include the following—

(1) The safety measures for emergency situations that are likely to develop during a check;

(2) The potential results of improper, untimely, or nonexecution of safety measures during a check;

(3) Training and practice in conducting flight checks from the left and right pilot seats in the required normal, abnormal, and emergency procedures to ensure competence to conduct the pilot flight checks required by this part; and

(4) The safety measures to be taken from either pilot seat for emergency situations that are likely to develop during checking.

(f) The requirements of paragraph (e) of this section may be accomplished in full or in part in flight, in a flight simulator, or in a flight training device, as appropriate.

(g) The initial and transition flight training for check airmen (simulator) must include the following:

(1) Training and practice in conducting flight checks in the required normal, abnormal, and emergency procedures to ensure competence to conduct the flight checks required by this part. This training and practice must be accomplished in a flight simulator or in a flight training device.

(2) Training in the operation of flight simulators, flight training devices, or both, to ensure competence to conduct the flight checks required by this part.

[Doc. No. 28471, 61 FR 30745, June 17, 1996; 62 FR 3739, Jan. 24, 1997]

§ 135.340 Initial and transition training and checking: Flight instructors (aircraft), flight instructors (simulator).

(a) No certificate holder may use a person nor may any person serve as a flight instructor unless—

(1) That person has satisfactorily completed initial or transition flight instructor training; and

(2) Within the preceding 24 calendar months, that person satisfactorily conducts instruction under the observation of an FAA inspector, an operator check airman, or an aircrew designated examiner employed by the operator. The observation check may be accomplished in part or in full in an aircraft, in a flight simulator, or in a flight training device. This paragraph applies after March 19, 1997.

(b) The observation check required by paragraph (a)(2) of this section is considered to have been completed in the month required if completed in the calendar month before, or the calendar month after, the month in which it is due.

(c) The initial ground training for flight instructors must include the following:

(1) Flight instructor duties, functions, and responsibilities.

(2) The applicable Code of Federal Regulations and the certificate holder's policies and procedures.

(3) The applicable methods, procedures, and techniques for conducting flight instruction.

(4) Proper evaluation of student performance including the detection of—

(i) Improper and insufficient training; and

(ii) Personal characteristics of an applicant that could adversely affect safety.

(5) The corrective action in the case of unsatisfactory training progress.

(6) The approved methods, procedures, and limitations for performing the required normal, abnormal, and emergency procedures in the aircraft.

(7) Except for holders of a flight instructor certificate—

(i) The fundamental principles of the teaching-learning process;

(ii) Teaching methods and procedures; and

(iii) The instructor-student relationship.

(d) The transition ground training for flight instructors must include the approved methods, procedures, and limitations for performing the required normal, abnormal, and emergency procedures applicable to the type, class, or

category aircraft to which the flight instructor is in transition.

(e) The initial and transition flight training for flight instructors (aircraft) must include the following—

(1) The safety measures for emergency situations that are likely to develop during instruction;

(2) The potential results of improper or untimely safety measures during instruction;

(3) Training and practice from the left and right pilot seats in the required normal, abnormal, and emergency maneuvers to ensure competence to conduct the flight instruction required by this part; and

(4) The safety measures to be taken from either the left or right pilot seat for emergency situations that are likely to develop during instruction.

(f) The requirements of paragraph (e) of this section may be accomplished in full or in part in flight, in a flight simulator, or in a flight training device, as appropriate.

(g) The initial and transition flight training for a flight instructor (simulator) must include the following:

(1) Training and practice in the required normal, abnormal, and emergency procedures to ensure competence to conduct the flight instruction required by this part. These maneuvers and procedures must be accomplished in full or in part in a flight simulator or in a flight training device.

(2) Training in the operation of flight simulators, flight training devices, or both, to ensure competence to conduct the flight instruction required by this part.

[Doc. No. 28471, 61 FR 30745, June 17, 1996; 61 FR 34927, July 3, 1996; 62 FR 3739, Jan. 24, 1997]

§ 135.341 Pilot and flight attendant crewmember training programs.

(a) Each certificate holder, other than one who uses only one pilot in the certificate holder's operations, shall establish and maintain an approved pilot training program, and each certificate holder who uses a flight attendant crewmember shall establish and maintain an approved flight attendant training program, that is appropriate to the operations to which each pilot and flight attend- ant is to be assigned, and will ensure that they are adequately trained to meet the applicable knowledge and practical testing requirements of §§135.293 through 135.301. However, the Administrator may authorize a deviation from this section if the Administrator finds that, because of the limited size and scope of the operation, safety will allow a deviation from these requirements.

(b) Each certificate holder required to have a training program by paragraph (a) of this section shall include in that program ground and flight training curriculums for—

(1) Initial training;

(2) Transition training;

(3) Upgrade training;

(4) Differences training; and

(5) Recurrent training.

(c) Each certificate holder required to have a training program by paragraph (a) of this section shall provide current and appropriate study materials for use by each required pilot and flight attendant.

(d) The certificate holder shall furnish copies of the pilot and flight attendant crewmember training program, and all changes and additions, to the assigned representative of the Administrator. If the certificate holder uses training facilities of other persons, a copy of those training programs or appropriate portions used for those facilities shall also be furnished. Curricula that follow FAA published curricula may be cited by reference in the copy of the training program furnished to the representative of the Administrator and need not be furnished with the program.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–18, 47 FR 33396, Aug. 2, 1982]

§ 135.343 Crewmember initial and recurrent training requirements.

No certificate holder may use a person, nor may any person serve, as a crewmember in operations under this part unless that crewmember has completed the appropriate initial or recurrent training phase of the training program appropriate to the type of operation in which the crewmember is to serve since the beginning of the 12th calendar month before that service.

This section does not apply to a certificate holder that uses only one pilot in the certificate holder's operations.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–18, 47 FR 33396, Aug. 2, 1982]

§ 135.345 Pilots: Initial, transition, and upgrade ground training.

Initial, transition, and upgrade ground training for pilots must include instruction in at least the following, as applicable to their duties:

(a) General subjects—

(1) The certificate holder's flight locating procedures;

(2) Principles and methods for determining weight and balance, and runway limitations for takeoff and landing;

(3) Enough meteorology to ensure a practical knowledge of weather phenomena, including the principles of frontal systems, icing, fog, thunderstorms, windshear and, if appropriate, high altitude weather situations;

(4) Air traffic control systems, procedures, and phraseology;

(5) Navigation and the use of navigational aids, including instrument approach procedures;

(6) Normal and emergency communication procedures;

(7) Visual cues before and during descent below DA/DH or MDA;

(8) ETOPS, if applicable;

(9) After February 15, 2008, passenger recovery plan for any passenger-carrying operation (other than intrastate operations wholly within the state of Alaska) in the North Polar area; and

(10) Other instructions necessary to ensure the pilot's competence.

(b) For each aircraft type—

(1) A general description;

(2) Performance characteristics;

(3) Engines and propellers;

(4) Major components;

(5) Major aircraft systems (i.e., flight controls, electrical, and hydraulic), other systems, as appropriate, principles of normal, abnormal, and emergency operations, appropriate procedures and limitations;

(6) Knowledge and procedures for—

(i) Recognizing and avoiding severe weather situations;

(ii) Escaping from severe weather situations, in case of inadvertent encounters, including low-altitude windshear (except that rotorcraft pilots are not required to be trained in escaping from low-altitude windshear);

(iii) Operating in or near thunderstorms (including best penetrating altitudes), turbulent air (including clear air turbulence), icing, hail, and other potentially hazardous meteorological conditions; and

(iv) Operating airplanes during ground icing conditions, (i.e., any time conditions are such that frost, ice, or snow may reasonably be expected to adhere to the airplane), if the certificate holder expects to authorize takeoffs in ground icing conditions, including:

(A) The use of holdover times when using deicing/anti-icing fluids;

(B) Airplane deicing/anti-icing procedures, including inspection and check procedures and responsibilities;

(C) Communications;

(D) Airplane surface contamination (i.e., adherence of frost, ice, or snow) and critical area identification, and knowledge of how contamination adversely affects airplane performance and flight characteristics;

(E) Types and characteristics of deicing/anti-icing fluids, if used by the certificate holder;

(F) Cold weather preflight inspection procedures;

(G) Techniques for recognizing contamination on the airplane;

(7) Operating limitations;

(8) Fuel consumption and cruise control;

(9) Flight planning;

(10) Each normal and emergency procedure; and

(11) The approved Aircraft Flight Manual, or equivalent.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–27, 53 FR 37697, Sept. 27, 1988; Amdt. 135–46, 58 FR 69630, Dec. 30, 1993; Amdt. 135–108, 72 FR 1885, Jan. 16, 2007; Amdt. 135–110, 72 FR 31685, June 7, 2007]

§ 135.347 Pilots: Initial, transition, upgrade, and differences flight training.

(a) Initial, transition, upgrade, and differences training for pilots must include flight and practice in each of the maneuvers and procedures in the approved training program curriculum.

(b) The maneuvers and procedures required by paragraph (a) of this section must be performed in flight, except to the extent that certain maneuvers and procedures may be performed in an aircraft simulator, or an appropriate training device, as allowed by this subpart.

(c) If the certificate holder's approved training program includes a course of training using an aircraft simulator or other training device, each pilot must successfully complete—

(1) Training and practice in the simulator or training device in at least the maneuvers and procedures in this subpart that are capable of being performed in the aircraft simulator or training device; and

(2) A flight check in the aircraft or a check in the simulator or training device to the level of proficiency of a pilot in command or second in command, as applicable, in at least the maneuvers and procedures that are capable of being performed in an aircraft simulator or training device.

§ 135.349 Flight attendants: Initial and transition ground training.

Initial and transition ground training for flight attendants must include instruction in at least the following—

(a) General subjects—

(1) The authority of the pilot in command; and

(2) Passenger handling, including procedures to be followed in handling deranged persons or other persons whose conduct might jeopardize safety.

(b) For each aircraft type—

(1) A general description of the aircraft emphasizing physical characteristics that may have a bearing on ditching, evacuation, and inflight emergency procedures and on other related duties;

(2) The use of both the public address system and the means of communicating with other flight crewmembers, including emergency means in the case of attempted hijacking or other unusual situations; and

(3) Proper use of electrical galley equipment and the controls for cabin heat and ventilation.

§ 135.351 Recurrent training.

(a) Each certificate holder must ensure that each crewmember receives recurrent training and is adequately trained and currently proficient for the type aircraft and crewmember position involved.

(b) Recurrent ground training for crewmembers must include at least the following:

(1) A quiz or other review to determine the crewmember's knowledge of the aircraft and crewmember position involved.

(2) Instruction as necessary in the subjects required for initial ground training by this subpart, as appropriate, including low-altitude windshear training and training on operating during ground icing conditions, as prescribed in §135.341 and described in §135.345, and emergency training.

(c) Recurrent flight training for pilots must include, at least, flight training in the maneuvers or procedures in this subpart, except that satisfactory completion of the check required by §135.293 within the preceding 12 calendar months may be substituted for recurrent flight training.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–27, 53 FR 37698, Sept. 27, 1988; Amdt. 135–46, 58 FR 69630, Dec. 30, 1993]

§ 135.353 Prohibited drugs.

(a) Each certificate holder or operator shall provide each employee performing a function listed in appendix I to part 121 of this chapter and his or her supervisor with the training specified in that appendix.

(b) No certificate holder or operator may use any contractor to perform a function specified in appendix I to part 121 of this chapter unless that contractor provides each of its employees performing that function for the certificate holder or the operator and his or her supervisor with the training specified in that appendix.

[Doc. No. 25148, 53 FR 47061, Nov. 21, 1988]

Subpart I—Airplane Performance Operating Limitations

§ 135.361 Applicability.

(a) This subpart prescribes airplane performance operating limitations applicable to the operation of the categories of airplanes listed in § 135.363 when operated under this part.

(b) For the purpose of this subpart, *effective length of the runway*, for landing means the distance from the point at which the obstruction clearance plane associated with the approach end of the runway intersects the centerline of the runway to the far end of the runway.

(c) For the purpose of this subpart, *obstruction clearance plane* means a plane sloping upward from the runway at a slope of 1:20 to the horizontal, and tangent to or clearing all obstructions within a specified area surrounding the runway as shown in a profile view of that area. In the plan view, the centerline of the specified area coincides with the centerline of the runway, beginning at the point where the obstruction clearance plane intersects the centerline of the runway and proceeding to a point at least 1,500 feet from the beginning point. After that the centerline coincides with the takeoff path over the ground for the runway (in the case of takeoffs) or with the instrument approach counterpart (for landings), or, where the applicable one of these paths has not been established, it proceeds consistent with turns of at least 4,000-foot radius until a point is reached beyond which the obstruction clearance plane clears all obstructions. This area extends laterally 200 feet on each side of the centerline at the point where the obstruction clearance plane intersects the runway and continues at this width to the end of the runway; then it increases uniformly to 500 feet on each side of the centerline at a point 1,500 feet from the intersection of the obstruction clearance plane with the runway; after that it extends laterally 500 feet on each side of the centerline.

§ 135.363 General.

(a) Each certificate holder operating a reciprocating engine powered large transport category airplane shall comply with §§ 135.365 through 135.377.

(b) Each certificate holder operating a turbine engine powered large transport category airplane shall comply with §§ 135.379 through 135.387, except that when it operates a turbopropeller-powered large transport category airplane certificated after August 29, 1959, but previously type certificated with the same number of reciprocating engines, it may comply with §§ 135.365 through 135.377.

(c) Each certificate holder operating a large nontransport category airplane shall comply with §§ 135.389 through 135.395 and any determination of compliance must be based only on approved performance data. For the purpose of this subpart, a large nontrans- port category airplane is an airplane that was type certificated before July 1, 1942.

(d) Each certificate holder operating a small transport category airplane shall comply with § 135.397.

(e) Each certificate holder operating a small nontransport category airplane shall comply with § 135.399.

(f) The performance data in the Airplane Flight Manual applies in determining compliance with §§ 135.365 through 135.387. Where conditions are different from those on which the performance data is based, compliance is determined by interpolation or by computing the effects of change in the specific variables, if the results of the interpolation or computations are substantially as accurate as the results of direct tests.

(g) No person may take off a reciprocating engine powered large transport category airplane at a weight that is more than the allowable weight for the runway being used (determined under the runway takeoff limitations of the transport category operating rules of this subpart) after taking into account the temperature operating correction factors in section 4a.749a-T or section 4b.117 of the Civil Air Regulations in effect on January 31, 1965, and in the applicable Airplane Flight Manual.

(h) The Administrator may authorize in the operations specifications deviations from this subpart if special circumstances make a literal observance of a requirement unnecessary for safety.

(i) The 10-mile width specified in §§135.369 through 135.373 may be reduced to 5 miles, for not more than 20 miles, when operating under VFR or where navigation facilities furnish reliable and accurate identification of high ground and obstructions located outside of 5 miles, but within 10 miles, on each side of the intended track.

(j) Each certificate holder operating a commuter category airplane shall comply with §135.398.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–21, 52 FR 1836, Jan. 15, 1987]

§135.364 Maximum flying time outside the United States.

After February 15, 2008, no certificate holder may operate an airplane, other than an all-cargo airplane with more than two engines, on a planned route that exceeds 180 minutes flying time (at the one-engine-inoperative cruise speed under standard conditions in still air) from an Adequate Airport outside the continental United States unless the operation is approved by the FAA in accordance with Appendix G of this part, Extended Operations (ETOPS).

[Doc. No. FAA–2002–6717, 72 FR 26541, May 10, 2007]

§135.365 Large transport category airplanes: Reciprocating engine powered: Weight limitations.

(a) No person may take off a reciprocating engine powered large transport category airplane from an airport located at an elevation outside of the range for which maximum takeoff weights have been determined for that airplane.

(b) No person may take off a reciprocating engine powered large transport category airplane for an airport of intended destination that is located at an elevation outside of the range for which maximum landing weights have been determined for that airplane.

(c) No person may specify, or have specified, an alternate airport that is located at an elevation outside of the range for which maximum landing weights have been determined for the reciprocating engine powered large transport category airplane concerned.

(d) No person may take off a reciprocating engine powered large transport category airplane at a weight more than the maximum authorized takeoff weight for the elevation of the airport.

(e) No person may take off a reciprocating engine powered large transport category airplane if its weight on arrival at the airport of destination will be more than the maximum authorized landing weight for the elevation of that airport, allowing for normal consumption of fuel and oil en route.

§135.367 Large transport category airplanes: Reciprocating engine powered: Takeoff limitations.

(a) No person operating a reciprocating engine powered large transport category airplane may take off that airplane unless it is possible—

(1) To stop the airplane safely on the runway, as shown by the accelerate-stop distance data, at any time during takeoff until reaching critical-engine failure speed;

(2) If the critical engine fails at any time after the airplane reaches critical-engine failure speed V_1, to continue the takeoff and reach a height of 50 feet, as indicated by the takeoff path data, before passing over the end of the runway; and

(3) To clear all obstacles either by at least 50 feet vertically (as shown by the takeoff path data) or 200 feet horizontally within the airport boundaries and 300 feet horizontally beyond the boundaries, without banking before reaching a height of 50 feet (as shown by the takeoff path data) and after that without banking more than 15 degrees.

(b) In applying this section, corrections must be made for any runway gradient. To allow for wind effect, takeoff data based on still air may be corrected by taking into account not more than 50 percent of any reported headwind component and not less than 150 percent of any reported tailwind component.

§135.369 Large transport category airplanes: Reciprocating engine powered: En route limitations: All engines operating.

(a) No person operating a reciprocating engine powered large transport category airplane may take off that airplane at a weight, allowing for normal consumption of fuel and oil, that

does not allow a rate of climb (in feet per minute), with all engines operating, of at least 6.90 Vs_o (that is, the number of feet per minute obtained by multiplying the number of knots by 6.90) at an altitude of a least 1,000 feet above the highest ground or obstruction within ten miles of each side of the intended track.

(b) This section does not apply to large transport category airplanes certificated under part 4a of the Civil Air Regulations.

§ 135.371 Large transport category airplanes: Reciprocating engine powered: En route limitations: One engine inoperative.

(a) Except as provided in paragraph (b) of this section, no person operating a reciprocating engine powered large transport category airplane may take off that airplane at a weight, allowing for normal consumption of fuel and oil, that does not allow a rate of climb (in feet per minute), with one engine inoperative, of at least $(0.079 - 0.106/N)\ Vs_o2$ (where N is the number of engines installed and Vs_o is expressed in knots) at an altitude of least 1,000 feet above the highest ground or obstruction within 10 miles of each side of the intended track. However, for the purposes of this paragraph the rate of climb for transport category airplanes certificated under part 4a of the Civil Air Regulations is $0.026\ Vs_o2$.

(b) In place of the requirements of paragraph (a) of this section, a person may, under an approved procedure, operate a reciprocating engine powered large transport category airplane at an all-engines-operating altitude that allows the airplane to continue, after an engine failure, to an alternate airport where a landing can be made under § 135.377, allowing for normal consumption of fuel and oil. After the assumed failure, the flight path must clear the ground and any obstruction within five miles on each side of the intended track by at least 2,000 feet.

(c) If an approved procedure under paragraph (b) of this section is used, the certificate holder shall comply with the following:

(1) The rate of climb (as prescribed in the Airplane Flight Manual for the appropriate weight and altitude) used in calculating the airplane's flight path shall be diminished by an amount in feet per minute, equal to $(0.079 - 0.106/N)\ Vs_o2$ (when N is the number of engines installed and Vs_o is expressed in knots) for airplanes certificated under part 25 of this chapter and by $0.026\ Vs_o2$ for airplanes certificated under part 4a of the Civil Air Regulations.

(2) The all-engines-operating altitude shall be sufficient so that in the event the critical engine becomes inoperative at any point along the route, the flight will be able to proceed to a predetermined alternate airport by use of this procedure. In determining the takeoff weight, the airplane is assumed to pass over the critical obstruction following engine failure at a point no closer to the critical obstruction than the nearest approved navigational fix, unless the Administrator approves a procedure established on a different basis upon finding that adequate operational safeguards exist.

(3) The airplane must meet the provisions of paragraph (a) of this section at 1,000 feet above the airport used as an alternate in this procedure.

(4) The procedure must include an approved method of accounting for winds and temperatures that would otherwise adversely affect the flight path.

(5) In complying with this procedure, fuel jettisoning is allowed if the certificate holder shows that it has an adequate training program, that proper instructions are given to the flight crew, and all other precautions are taken to ensure a safe procedure.

(6) The certificate holder and the pilot in command shall jointly elect an alternate airport for which the appropriate weather reports or forecasts, or any combination of them, indicate that weather conditions will be at or above the alternate weather minimum specified in the certificate holder's operations specifications for that airport when the flight arrives.

[Docket No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–110, 72 FR 31685, June 7, 2007]

§ 135.373 Part 25 transport category airplanes with four or more engines: Reciprocating engine powered: En route limitations: Two engines inoperative.

(a) No person may operate an airplane certificated under part 25 and having four or more engines unless—

(1) There is no place along the intended track that is more than 90 minutes (with all engines operating at cruising power) from an airport that meets §135.377; or

(2) It is operated at a weight allowing the airplane, with the two critical engines inoperative, to climb at 0.013 Vs_o2 feet per minute (that is, the number of feet per minute obtained by multiplying the number of knots squared by 0.013) at an altitude of 1,000 feet above the highest ground or obstruction within 10 miles on each side of the intended track, or at an altitude of 5,000 feet, whichever is higher.

(b) For the purposes of paragraph (a)(2) of this section, it is assumed that—

(1) The two engines fail at the point that is most critical with respect to the takeoff weight;

(2) Consumption of fuel and oil is normal with all engines operating up to the point where the two engines fail with two engines operating beyond that point;

(3) Where the engines are assumed to fail at an altitude above the prescribed minimum altitude, compliance with the prescribed rate of climb at the prescribed minimum altitude need not be shown during the descent from the cruising altitude to the prescribed minimum altitude, if those requirements can be met once the prescribed minimum altitude is reached, and assuming descent to be along a net flight path and the rate of descent to be 0.013 Vs_o2 greater than the rate in the approved performance data; and

(4) If fuel jettisoning is provided, the airplane's weight at the point where the two engines fail is considered to be not less than that which would include enough fuel to proceed to an airport meeting §135.377 and to arrive at an altitude of at least 1,000 feet directly over that airport.

§ 135.375 Large transport category airplanes: Reciprocating engine powered: Landing limitations: Destination airports.

(a) Except as provided in paragraph (b) of this section, no person operating a reciprocating engine powered large transport category airplane may take off that airplane, unless its weight on arrival, allowing for normal consumption of fuel and oil in flight, would allow a full stop landing at the intended destination within 60 percent of the effective length of each runway described below from a point 50 feet directly above the intersection of the obstruction clearance plane and the runway. For the purposes of determining the allowable landing weight at the destination airport the following is assumed:

(1) The airplane is landed on the most favorable runway and in the most favorable direction in still air.

(2) The airplane is landed on the most suitable runway considering the probable wind velocity and direction (forecast for the expected time of arrival), the ground handling characteristics of the type of airplane, and other conditions such as landing aids and terrain, and allowing for the effect of the landing path and roll of not more than 50 percent of the headwind component or not less than 150 percent of the tailwind component.

(b) An airplane that would be prohibited from being taken off because it could not meet paragraph (a)(2) of this section may be taken off if an alternate airport is selected that meets all of this section except that the airplane can accomplish a full stop landing within 70 percent of the effective length of the runway.

§ 135.377 Large transport category airplanes: Reciprocating engine powered: Landing limitations: Alternate airports.

No person may list an airport as an alternate airport in a flight plan unless the airplane (at the weight anticipated at the time of arrival at the airport), based on the assumptions in §135.375(a)(1) and (2), can be brought to a full stop landing within 70 percent of the effective length of the runway.

§ 135.379 Large transport category airplanes: Turbine engine powered: Takeoff limitations.

(a) No person operating a turbine engine powered large transport category airplane may take off that airplane at a weight greater than that listed in the Airplane Flight Manual for the elevation of the airport and for the ambient temperature existing at take- off.

(b) No person operating a turbine engine powered large transport category airplane certificated after August 26, 1957, but before August 30, 1959 (SR422, 422A), may take off that airplane at a weight greater than that listed in the Airplane Flight Manual for the minumum distance required for takeoff. In the case of an airplane certificated after September 30, 1958 (SR422A, 422B), the takeoff distance may include a clearway distance but the clearway distance included may not be greater than one-half of the takeoff run.

(c) No person operating a turbine engine powered large transport category airplane certificated after August 29, 1959 (SR422B), may take off that airplane at a weight greater than that listed in the Airplane Flight Manual at which compliance with the following may be shown:

(1) The accelerate-stop distance, as defined in § 25.109 of this chapter, must not exceed the length of the runway plus the length of any stopway.

(2) The takeoff distance must not exceed the length of the runway plus the length of any clearway except that the length of any clearway included must not be greater than one-half the length of the runway.

(3) The takeoff run must not be greater than the length of the runway.

(d) No person operating a turbine engine powered large transport category airplane may take off that airplane at a weight greater than that listed in the Airplane Flight Manual—

(1) For an airplane certificated after August 26, 1957, but before October 1, 1958 (SR422), that allows a takeoff path that clears all obstacles either by at least (35+0.01 D) feet vertically (D is the distance along the intended flight path from the end of the runway in feet), or by at least 200 feet horizontally within the airport boundaries and by at least 300 feet horizontally after passing the boundaries; or

(2) For an airplane certificated after September 30, 1958 (SR422A, 422B), that allows a net takeoff flight path that clears all obstacles either by a height of at least 35 feet vertically, or by at least 200 feet horizontally within the airport boundaries and by at least 300 feet horizontally after passing the boundaries.

(e) In determining maximum weights, minimum distances, and flight paths under paragraphs (a) through (d) of this section, correction must be made for the runway to be used, the elevation of the airport, the effective runway gradient, the ambient temperature and wind component at the time of takeoff, and, if operating limitations exist for the minimum distances required for takeoff from wet runways, the runway surface condition (dry or wet). Wet runway distances associated with grooved or porous friction course runways, if provided in the Airplane Flight Manual, may be used only for runways that are grooved or treated with a porous friction course (PFC) overlay, and that the operator determines are designed, constructed, and maintained in a manner acceptable to the Administrator.

(f) For the purposes of this section, it is assumed that the airplane is not banked before reaching a height of 50 feet, as shown by the takeoff path or net takeoff flight path data (as appropriate) in the Airplane Flight Manual, and after that the maximum bank is not more than 15 degrees.

(g) For the purposes of this section, the terms, *takeoff distance*, *takeoff run*, *net takeoff flight path*, have the same meanings as set forth in the rules under which the airplane was certificated.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–71, 63 FR 8321, Feb. 18, 1998]

§ 135.381 Large transport category airplanes: Turbine engine powered: En route limitations: One engine inoperative.

(a) No person operating a turbine engine powered large transport category airplane may take off that airplane at

a weight, allowing for normal consumption of fuel and oil, that is greater than that which (under the approved, one engine inoperative, en route net flight path data in the Airplane Flight Manual for that airplane) will allow compliance with paragraph (a) (1) or (2) of this section, based on the ambient temperatures expected en route.

(1) There is a positive slope at an altitude of at least 1,000 feet above all terrain and obstructions within five statute miles on each side of the intended track, and, in addition, if that airplane was certificated after August 29, 1958 (SR422B), there is a positive slope at 1,500 feet above the airport where the airplane is assumed to land after an engine fails.

(2) The net flight path allows the airplane to continue flight from the cruising altitude to an airport where a landing can be made under §135.387 clearing all terrain and obstructions within five statute miles of the intended track by at least 2,000 feet vertically and with a positive slope at 1,000 feet above the airport where the airplane lands after an engine fails, or, if that airplane was certificated after September 30, 1958 (SR422A, 422B), with a positive slope at 1,500 feet above the airport where the airplane lands after an engine fails.

(b) For the purpose of paragraph (a)(2) of this section, it is assumed that—

(1) The engine fails at the most critical point en route;

(2) The airplane passes over the critical obstruction, after engine failure at a point that is no closer to the obstruction than the approved navigation fix, unless the Administrator authorizes a different procedure based on adequate operational safeguards;

(3) An approved method is used to allow for adverse winds;

(4) Fuel jettisoning will be allowed if the certificate holder shows that the crew is properly instructed, that the training program is adequate, and that all other precautions are taken to ensure a safe procedure;

(5) The alternate airport is selected and meets the prescribed weather minimums; and

(6) The consumption of fuel and oil after engine failure is the same as the consumption that is allowed for in the approved net flight path data in the Airplane Flight Manual.

[Docket No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–110, 72 FR 31685, June 7, 2007]

§135.383 Large transport category airplanes: Turbine engine powered: En route limitations: Two engines inoperative.

(a) Airplanes certificated after August 26, 1957, but before October 1, 1958 (SR422). No person may operate a turbine engine powered large transport category airplane along an intended route unless that person complies with either of the following:

(1) There is no place along the intended track that is more than 90 minutes (with all engines operating at cruising power) from an airport that meets §135.387.

(2) Its weight, according to the two-engine-inoperative, en route, net flight path data in the Airplane Flight Manual, allows the airplane to fly from the point where the two engines are assumed to fail simultaneously to an airport that meets §135.387, with a net flight path (considering the ambient temperature anticipated along the track) having a positive slope at an altitude of at least 1,000 feet above all terrain and obstructions within five statute miles on each side of the intended track, or at an altitude of 5,000 feet, whichever is higher.

For the purposes of paragraph (a)(2) of this section, it is assumed that the two engines fail at the most critical point en route, that if fuel jettisoning is provided, the airplane's weight at the point where the engines fail includes enough fuel to continue to the airport and to arrive at an altitude of at least 1,000 feet directly over the airport, and that the fuel and oil consumption after engine failure is the same as the consumption allowed for in the net flight path data in the Airplane Flight Manual.

(b) Airplanes certificated after September 30, 1958, but before August 30, 1959 (SR422A). No person may operate a turbine engine powered large transport category airplane along an intended route unless that person complies with either of the following:

(1) There is no place along the intended track that is more than 90 minutes (with all engines operating at cruising power) from an airport that meets § 135.387.

(2) Its weight, according to the two-engine-inoperative, en route, net flight path data in the Airplane Flight Manual allows the airplane to fly from the point where the two engines are assumed to fail simultaneously to an airport that meets § 135.387 with a net flight path (considering the ambient temperatures anticipated along the track) having a positive slope at an altitude of at least 1,000 feet above all terrain and obstructions within five statute miles on each side of the intended track, or at an altitude of 2,000 feet, whichever is higher.

For the purpose of paragraph (b)(2) of this section, it is assumed that the two engines fail at the most critical point en route, that the airplane's weight at the point where the engines fail includes enough fuel to continue to the airport, to arrive at an altitude of at least 1,500 feet directly over the airport, and after that to fly for 15 minutes at cruise power or thrust, or both, and that the consumption of fuel and oil after engine failure is the same as the consumption allowed for in the net flight path data in the Airplane Flight Manual.

(c) Aircraft certificated after August 29, 1959 (SR422B). No person may operate a turbine engine powered large transport category airplane along an intended route unless that person complies with either of the following:

(1) There is no place along the intended track that is more than 90 minutes (with all engines operating at cruising power) from an airport that meets § 135.387.

(2) Its weight, according to the two-engine-inoperative, en route, net flight path data in the Airplane Flight Manual, allows the airplane to fly from the point where the two engines are assumed to fail simultaneously to an airport that meets § 135.387, with the net flight path (considering the ambient temperatures anticipated along the track) clearing vertically by at least 2,000 feet all terrain and obstructions within five statute miles on each side of the intended track. For the purposes of this paragraph, it is assumed that—

(i) The two engines fail at the most critical point en route;

(ii) The net flight path has a positive slope at 1,500 feet above the airport where the landing is assumed to be made after the engines fail;

(iii) Fuel jettisoning will be approved if the certificate holder shows that the crew is properly instructed, that the training program is adequate, and that all other precautions are taken to ensure a safe procedure;

(iv) The airplane's weight at the point where the two engines are assumed to fail provides enough fuel to continue to the airport, to arrive at an altitude of at least 1,500 feet directly over the airport, and after that to fly for 15 minutes at cruise power or thrust, or both; and

(v) The consumption of fuel and oil after the engines fail is the same as the consumption that is allowed for in the net flight path data in the Airplane Flight Manual.

§ 135.385 Large transport category airplanes: Turbine engine powered: Landing limitations: Destination airports.

(a) No person operating a turbine engine powered large transport category airplane may take off that airplane at a weight that (allowing for normal consumption of fuel and oil in flight to the destination or alternate airport) the weight of the airplane on arrival would exceed the landing weight in the Airplane Flight Manual for the elevation of the destination or alternate airport and the ambient temperature anticipated at the time of landing.

(b) Except as provided in paragraph (c), (d), (e), or (f) of this section, no person operating a turbine engine powered large transport category airplane may take off that airplane unless its weight on arrival, allowing for normal consumption of fuel and oil in flight (in accordance with the landing distance in the Airplane Flight Manual for the elevation of the destination airport and the wind conditions expected there at the time of landing), would allow a full stop landing at the intended destination airport within 60 percent of the effective length of each runway described

below from a point 50 feet above the intersection of the obstruction clearance plane and the runway. For the purpose of determining the allowable landing weight at the destination airport the following is assumed:

(1) The airplane is landed on the most favorable runway and in the most favorable direction, in still air.

(2) The airplane is landed on the most suitable runway considering the probable wind velocity and direction and the ground handling characteristics of the airplane, and considering other conditions such as landing aids and terrain.

(c) A turbopropeller powered airplane that would be prohibited from being taken off because it could not meet paragraph (b)(2) of this section, may be taken off if an alternate airport is selected that meets all of this section except that the airplane can accomplish a full stop landing within 70 percent of the effective length of the runway.

(d) Unless, based on a showing of actual operating landing techniques on wet runways, a shorter landing distance (but never less than that required by paragraph (b) of this section) has been approved for a specific type and model airplane and included in the Airplane Flight Manual, no person may take off a turbojet airplane when the appropriate weather reports or forecasts, or any combination of them, indicate that the runways at the destination airport may be wet or slippery at the estimated time of arrival unless the effective runway length at the destination airport is at least 115 percent of the runway length required under paragraph (b) of this section.

(e) A turbojet airplane that would be prohibited from being taken off because it could not meet paragraph (b)(2) of this section may be taken off if an alternate airport is selected that meets all of paragraph (b) of this section.

(f) An eligible on-demand operator may take off a turbine engine powered large transport category airplane on an on-demand flight if all of the following conditions exist:

(1) The operation is permitted by an approved Destination Airport Analysis in that person's operations manual.

(2) The airplane's weight on arrival, allowing for normal consumption of fuel and oil in flight (in accordance with the landing distance in the Airplane Flight Manual for the elevation of the destination airport and the wind conditions expected there at the time of landing), would allow a full stop landing at the intended destination airport within 80 percent of the effective length of each runway described below from a point 50 feet above the intersection of the obstruction clearance plane and the runway. For the purpose of determining the allowable landing weight at the destination airport, the following is assumed:

(i) The airplane is landed on the most favorable runway and in the most favorable direction, in still air.

(ii) The airplane is landed on the most suitable runway considering the probable wind velocity and direction and the ground handling characteristics of the airplane, and considering other conditions such as landing aids and terrain.

(3) The operation is authorized by operations specifications.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–91, 68 FR 54588, Sept. 17, 2003]

§ 135.387 Large transport category airplanes: Turbine engine powered: Landing limitations: Alternate airports.

(a) Except as provided in paragraph (b) of this section, no person may select an airport as an alternate airport for a turbine engine powered large transport category airplane unless (based on the assumptions in §135.385(b)) that airplane, at the weight expected at the time of arrival, can be brought to a full stop landing within 70 percent of the effective length of the runway for turbo-propeller-powered airplanes and 60 percent of the effective length of the runway for turbojet airplanes, from a point 50 feet above the intersection of the obstruction clearance plane and the runway.

(b) Eligible on-demand operators may select an airport as an alternate airport for a turbine engine powered large transport category airplane if (based on the assumptions in §135.385(f)) that airplane, at the weight expected at the

time of arrival, can be brought to a full stop landing within 80 percent of the effective length of the runway from a point 50 feet above the intersection of the obstruction clearance plane and the runway.

[Doc. No. FAA–2001–10047, 68 FR 54588, Sept. 17, 2003]

§ 135.389 Large nontransport category airplanes: Takeoff limitations.

(a) No person operating a large nontransport category airplane may take off that airplane at a weight greater than the weight that would allow the airplane to be brought to a safe stop within the effective length of the runway, from any point during the takeoff before reaching 105 percent of minimum control speed (the minimum speed at which an airplane can be safely controlled in flight after an engine becomes inoperative) or 115 percent of the power off stalling speed in the takeoff configuration, whichever is greater.

(b) For the purposes of this section—

(1) It may be assumed that takeoff power is used on all engines during the acceleration;

(2) Not more than 50 percent of the reported headwind component, or not less than 150 percent of the reported tailwind component, may be taken into account;

(3) The average runway gradient (the difference between the elevations of the endpoints of the runway divided by the total length) must be considered if it is more than one-half of one percent;

(4) It is assumed that the airplane is operating in standard atmosphere; and

(5) For takeoff, *effective length of the runway* means the distance from the end of the runway at which the takeoff is started to a point at which the obstruction clearance plane associated with the other end of the runway intersects the runway centerline.

§ 135.391 Large nontransport category airplanes: En route limitations: One engine inoperative.

(a) Except as provided in paragraph (b) of this section, no person operating a large nontransport category airplane may take off that airplane at a weight that does not allow a rate of climb of at least 50 feet a minute, with the critical engine inoperative, at an altitude of at least 1,000 feet above the highest obstruction within five miles on each side of the intended track, or 5,000 feet, whichever is higher.

(b) Without regard to paragraph (a) of this section, if the Administrator finds that safe operations are not impaired, a person may operate the airplane at an altitude that allows the airplane, in case of engine failure, to clear all obstructions within five miles on each side of the intended track by 1,000 feet. If this procedure is used, the rate of descent for the appropriate weight and altitude is assumed to be 50 feet a minute greater than the rate in the approved performance data. Before approving such a procedure, the Administrator considers the following for the route, route segement, or area concerned:

(1) The reliability of wind and weather forecasting.

(2) The location and kinds of navigation aids.

(3) The prevailing weather conditions, particularly the frequency and amount of turbulence normally encountered.

(4) Terrain features.

(5) Air traffic problems.

(6) Any other operational factors that affect the operations.

(c) For the purposes of this section, it is assumed that—

(1) The critical engine is inoperative;

(2) The propeller of the inoperative engine is in the minimum drag position;

(3) The wing flaps and landing gear are in the most favorable position;

(4) The operating engines are operating at the maximum continuous power available;

(5) The airplane is operating in standard atmosphere; and

(6) The weight of the airplane is progressively reduced by the anticipated consumption of fuel and oil.

§ 135.393 Large nontransport category airplanes: Landing limitations: Destination airports.

(a) No person operating a large nontransport category airplane may take off that airplane at a weight that—

(1) Allowing for anticipated consumption of fuel and oil, is greater than the

weight that would allow a full stop landing within 60 percent of the effective length of the most suitable runway at the destination airport; and

(2) Is greater than the weight allowable if the landing is to be made on the runway—

(i) With the greatest effective length in still air; and

(ii) Required by the probable wind, taking into account not more than 50 percent of the headwind component or not less than 150 percent of the tailwind component.

(b) For the purpose of this section, it is assumed that—

(1) The airplane passes directly over the intersection of the obstruction clearance plane and the runway at a height of 50 feet in a steady gliding approach at a true indicated airspeed of at least 1.3 V_{so};

(2) The landing does not require exceptional pilot skill; and

(3) The airplane is operating in standard atmosphere.

§ 135.395 Large nontransport category airplanes: Landing limitations: Alternate airports.

No person may select an airport as an alternate airport for a large nontransport category airplane unless that airplane (at the weight anticipated at the time of arrival), based on the assumptions in §135.393(b), can be brought to a full stop landing within 70 percent of the effective length of the runway.

§ 135.397 Small transport category airplane performance operating limitations.

(a) No person may operate a reciprocating engine powered small transport category airplane unless that person complies with the weight limitations in §135.365, the takeoff limitations in §135.367 (except paragraph (a)(3)), and the landing limitations in §§135.375 and 135.377.

(b) No person may operate a turbine engine powered small transport category airplane unless that person complies with the takeoff limitations in §135.379 (except paragraphs (d) and (f)) and the landing limitations in §§135.385 and 135.387.

§ 135.398 Commuter category airplanes performance operating limitations.

(a) No person may operate a commuter category airplane unless that person complies with the takeoff weight limitations in the approved Airplane Flight Manual.

(b) No person may take off an airplane type certificated in the commuter category at a weight greater than that listed in the Airplane Flight Manual that allows a net takeoff flight path that clears all obstacles either by a height of at least 35 feet vertically, or at least 200 feet horizontally within the airport boundaries and by at least 300 feet horizontally after passing the boundaries.

(c) No person may operate a commuter category airplane unless that person complies with the landing limitations prescribed in §§135.385 and 135.387 of this part. For purposes of this paragraph, §§135.385 and 135.387 are applicable to all commuter category airplanes notwithstanding their stated applicability to turbine-engine-powered large transport category airplanes.

(d) In determining maximum weights, minimum distances and flight paths under paragraphs (a) through (c) of this section, correction must be made for the runway to be used, the elevation of the airport, the effective runway gradient, and ambient temperature, and wind component at the time of takeoff.

(e) For the purposes of this section, the assumption is that the airplane is not banked before reaching a height of 50 feet as shown by the net takeoff flight path data in the Airplane Flight Manual and thereafter the maximum bank is not more than 15 degrees.

[Doc. No. 23516, 52 FR 1836, Jan. 15, 1987]

§ 135.399 Small nontransport category airplane performance operating limitations.

(a) No person may operate a reciprocating engine or turbopropeller-powered small airplane that is certificated under §135.169(b) (2), (3), (4), (5), or (6) unless that person complies with the takeoff weight limitations in the approved Airplane Flight Manual or equivalent for operations under this part, and, if the airplane is certificated under §135.169(b) (4) or (5) with the

landing weight limitations in the Approved Airplane Flight Manual or equivalent for operations under this part.

(b) No person may operate an airplane that is certificated under §135.169(b)(6) unless that person complies with the landing limitations prescribed in §§135.385 and 135.387 of this part. For purposes of this paragraph, §§135.385 and 135.387 are applicable to reciprocating and turbopropeller-powered small airplanes notwithstanding their stated applicability to turbine engine powered large transport category airplanes.

[44 FR 53731, Sept. 17, 1979]

Subpart J—Maintenance, Preventive Maintenance, and Alterations

§ 135.411 Applicability.

(a) This subpart prescribes rules in addition to those in other parts of this chapter for the maintenance, preventive maintenance, and alterations for each certificate holder as follows:

(1) Aircraft that are type certificated for a passenger seating configuration, excluding any pilot seat, of nine seats or less, shall be maintained under parts 91 and 43 of this chapter and §§135.415, 135.417, 135.421 and 135.422. An approved aircraft inspection program may be used under §135.419.

(2) Aircraft that are type certificated for a passenger seating configuration, excluding any pilot seat, of ten seats or more, shall be maintained under a maintenance program in §§135.415, 135.417, 135.423 through 135.443.

(b) A certificate holder who is not otherwise required, may elect to maintain its aircraft under paragraph (a)(2) of this section.

(c) Single engine aircraft used in passenger-carrying IFR operations shall also be maintained in accordance with §135.421 (c), (d), and (e).

(d) A certificate holder who elects to operate in accordance with §135.364 must maintain its aircraft under paragraph (a)(2) of this section and the additional requirements of Appendix G of this part.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–70, 62 FR 42374, Aug. 6, 1997; Amdt. 135–78, 65 FR 60556, Oct. 11, 2000; Amdt. 135–92, 68 FR 69308, Dec. 12, 2003; Amdt. 135–81, 70 FR 5533, Feb. 2, 2005; Amdt. 135–108, 72 FR 1885, Jan. 16, 2007; 72 FR 53114, Sept. 18, 2007]

§ 135.413 Responsibility for airworthiness.

(a) Each certificate holder is primarily responsible for the airworthiness of its aircraft, including airframes, aircraft engines, propellers, rotors, appliances, and parts, and shall have its aircraft maintained under this chapter, and shall have defects repaired between required maintenance under part 43 of this chapter.

(b) Each certificate holder who maintains its aircraft under §135.411(a)(2) shall—

(1) Perform the maintenance, preventive maintenance, and alteration of its aircraft, including airframe, aircraft engines, propellers, rotors, appliances, emergency equipment and parts, under its manual and this chapter; or

(2) Make arrangements with another person for the performance of maintenance, preventive maintenance, or alteration. However, the certificate holder shall ensure that any maintenance, preventive maintenance, or alteration that is performed by another person is performed under the certificate holder's manual and this chapter.

§ 135.415 Service difficulty reports.

(a) Each certificate holder shall report the occurrence or detection of each failure, malfunction, or defect in an aircraft concerning—

(1) Fires during flight and whether the related fire-warning system functioned properly;

(2) Fires during flight not protected by related fire-warning system;

(3) False fire-warning during flight;

(4) An exhaust system that causes damage during flight to the engine, adjacent structure, equipment, or components;

(5) An aircraft component that causes accumulation or circulation of smoke, vapor, or toxic or noxious

fumes in the crew compartment or passenger cabin during flight;

(6) Engine shutdown during flight because of flameout;

(7) Engine shutdown during flight when external damage to the engine or aircraft structure occurs;

(8) Engine shutdown during flight due to foreign object ingestion or icing;

(9) Shutdown of more than one engine during flight;

(10) A propeller feathering system or ability of the system to control overspeed during flight;

(11) A fuel or fuel-dumping system that affects fuel flow or causes hazardous leakage during flight;

(12) An unwanted landing gear extension or retraction or opening or closing of landing gear doors during flight;

(13) Brake system components that result in loss of brake actuating force when the aircraft is in motion on the ground;

(14) Aircraft structure that requires major repair;

(15) Cracks, permanent deformation, or corrosion of aircraft structures, if more than the maximum acceptable to the manufacturer or the FAA; and

(16) Aircraft components or systems that result in taking emergency actions during flight (except action to shut-down an engine).

(b) For the purpose of this section, *during flight* means the period from the moment the aircraft leaves the surface of the earth on takeoff until it touches down on landing.

(c) In addition to the reports required by paragraph (a) of this section, each certificate holder shall report any other failure, malfunction, or defect in an aircraft that occurs or is detected at any time if, in its opinion, the failure, malfunction, or defect has endangered or may endanger the safe operation of the aircraft.

(d) Each certificate holder shall submit each report required by this section, covering each 24-hour period beginning at 0900 local time of each day and ending at 0900 local time on the next day, to the FAA offices in Oklahoma City, Oklahoma. Each report of occurrences during a 24-hour period shall be submitted to the collection point within the next 96 hours. However, a report due on Saturday or Sunday may be submitted on the following Monday, and a report due on a holiday may be submitted on the next workday.

(e) The certificate holder shall transmit the reports required by this section on a form and in a manner prescribed by the Administrator, and shall include as much of the following as is available:

(1) The type and identification number of the aircraft.

(2) The name of the operator.

(3) The date.

(4) The nature of the failure, malfunction, or defect.

(5) Identification of the part and system involved, including available information pertaining to type designation of the major component and time since last overhaul, if known.

(6) Apparent cause of the failure, malfunction or defect (e.g., wear, crack, design deficiency, or personnel error).

(7) Other pertinent information necessary for more complete identification, determination of seriousness, or corrective action.

(f) A certificate holder that is also the holder of a type certificate (including a supplemental type certificate), a Parts Manufacturer Approval, or a Technical Standard Order Authorization, or that is the licensee of a type certificate need not report a failure, malfunction, or defect under this section if the failure, malfunction, or defect has been reported by it under §21.3 or §37.17 of this chapter or under the accident reporting provisions of part 830 of the regulations of the National Transportation Safety Board.

(g) No person may withhold a report required by this section even though all information required by this section is not available.

(h) When the certificate holder gets additional information, including information from the manufacturer or other agency, concerning a report required by this section, it shall expeditiously submit it as a supplement to the first report and reference the date and place of submission of the first report.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–102, 70 FR 76979, Dec. 29, 2005]

§ 135.417 Mechanical interruption summary report.

Each certificate holder shall mail or deliver, before the end of the 10th day of the following month, a summary report of the following occurrences in multiengine aircraft for the preceding month to the certificate-holding district office:

(a) Each interruption to a flight, unscheduled change of aircraft en route, or unscheduled stop or diversion from a route, caused by known or suspected mechanical difficulties or malfunctions that are not required to be reported under § 135.415.

(b) The number of propeller featherings in flight, listed by type of propeller and engine and aircraft on which it was installed. Propeller featherings for training, demonstration, or flight check purposes need not be reported.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–60, 61 FR 2616, Jan. 26, 1996]

§ 135.419 Approved aircraft inspection program.

(a) Whenever the Administrator finds that the aircraft inspections required or allowed under part 91 of this chapter are not adequate to meet this part, or upon application by a certificate holder, the Administrator may amend the certificate holder's operations specifications under § 119.51, to require or allow an approved aircraft inspection program for any make and model aircraft of which the certificate holder has the exclusive use of at least one aircraft (as defined in § 135.25(b)).

(b) A certificate holder who applies for an amendment of its operations specifications to allow an approved aircraft inspection program must submit that program with its application for approval by the Administrator.

(c) Each certificate holder who is required by its operations specifications to have an approved aircraft inspection program shall submit a program for approval by the Administrator within 30 days of the amendment of its operations specifications or within any other period that the Administrator may prescribe in the operations specifications.

(d) The aircraft inspection program submitted for approval by the Administrator must contain the following:

(1) Instructions and procedures for the conduct of aircraft inspections (which must include necessary tests and checks), setting forth in detail the parts and areas of the airframe, engines, propellers, rotors, and appliances, including emergency equipment, that must be inspected.

(2) A schedule for the performance of the aircraft inspections under paragraph (d)(1) of this section expressed in terms of the time in service, calendar time, number of system operations, or any combination of these.

(3) Instructions and procedures for recording discrepancies found during inspections and correction or deferral of discrepancies including form and disposition of records.

(e) After approval, the certificate holder shall include the approved aircraft inspection program in the manual required by § 135.21.

(f) Whenever the Administrator finds that revisions to an approved aircraft inspection program are necessary for the continued adequacy of the program, the certificate holder shall, after notification by the Administrator, make any changes in the program found by the Administrator to be necessary. The certificate holder may petition the Administrator to reconsider the notice to make any changes in a program. The petition must be filed with the representatives of the Administrator assigned to it within 30 days after the certificate holder receives the notice. Except in the case of an emergency requiring immediate action in the interest of safety, the filing of the petition stays the notice pending a decision by the Administrator.

(g) Each certificate holder who has an approved aircraft inspection program shall have each aircraft that is subject to the program inspected in accordance with the program.

(h) The registration number of each aircraft that is subject to an approved aircraft inspection program must be included in the operations specifications of the certificate holder.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–104, 71 FR 536, Jan. 4, 2006]

§ 135.421 Additional maintenance requirements.

(a) Each certificate holder who operates an aircraft type certificated for a passenger seating configuration, excluding any pilot seat, of nine seats or less, must comply with the manufacturer's recommended maintenance programs, or a program approved by the Administrator, for each aircraft engine, propeller, rotor, and each item of emergency equipment required by this chapter.

(b) For the purpose of this section, a manufacturer's maintenance program is one which is contained in the maintenance manual or maintenance instructions set forth by the manufacturer as required by this chapter for the aircraft, aircraft engine, propeller, rotor or item of emergency equipment.

(c) For each single engine aircraft to be used in passenger-carrying IFR operations, each certificate holder must incorporate into its maintenance program either:

(1) The manufacturer's recommended engine trend monitoring program, which includes an oil analysis, if appropriate, or

(2) An FAA approved engine trend monitoring program that includes an oil analysis at each 100 hour interval or at the manufacturer's suggested interval, whichever is more frequent.

(d) For single engine aircraft to be used in passenger-carrying IFR operations, written maintenance instructions containing the methods, techniques, and practices necessary to maintain the equipment specified in §§ 135.105, and 135.163 (f) and (h) are required.

(e) No certificate holder may operate a single engine aircraft under IFR, carrying passengers, unless the certificate holder records and maintains in the engine maintenance records the results of each test, observation, and inspection required by the applicable engine trend monitoring program specified in (c) (1) and (2) of this section.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–70, 62 FR 42374, Aug. 6, 1997]

§ 135.422 Aging airplane inspections and records reviews for multiengine airplanes certificated with nine or fewer passenger seats.

(a) *Applicability*. This section applies to multiengine airplanes certificated with nine or fewer passenger seats, operated by a certificate holder in a scheduled operation under this part, except for those airplanes operated by a certificate holder in a scheduled operation between any point within the State of Alaska and any other point within the State of Alaska.

(b) *Operation after inspections and records review*. After the dates specified in this paragraph, a certificate holder may not operate a multiengine airplane in a scheduled operation under this part unless the Administrator has notified the certificate holder that the Administrator has completed the aging airplane inspection and records review required by this section. During the inspection and records review, the certificate holder must demonstrate to the Administrator that the maintenance of age-sensitive parts and components of the airplane has been adequate and timely enough to ensure the highest degree of safety.

(1) *Airplanes exceeding 24 years in service on December 8, 2003; initial and repetitive inspections and records reviews.* For an airplane that has exceeded 24 years in service on December 8, 2003, no later than December 5, 2007, and thereafter at intervals not to exceed 7 years.

(2) *Airplanes exceeding 14 years in service but not 24 years in service on December 8, 2003; initial and repetitive inspections and records reviews.* For an airplane that has exceeded 14 years in service, but not 24 years in service, on December 8, 2003, no later than December 4, 2008, and thereafter at intervals not to exceed 7 years.

(3) *Airplanes not exceeding 14 years in service on December 8, 2003; initial and repetitive inspections and records reviews.* For an airplane that has not exceeded 14 years in service on December 8, 2003, no later than 5 years after the start of the airplane's 15th year in service and thereafter at intervals not to exceed 7 years.

(c) *Unforeseen schedule conflict.* In the event of an unforeseen scheduling conflict for a specific airplane, the Administrator may approve an extension of up to 90 days beyond an interval specified in paragraph (b) of this section.

(d) *Airplane and records availability.* The certificate holder must make available to the Administrator each airplane for which an inspection and records review is required under this section, in a condition for inspection specified by the Administrator, together with the records containing the following information:

(1) Total years in service of the airplane;

(2) Total time in service of the airframe;

(3) Date of the last inspection and records review required by this section;

(4) Current status of life-limited parts of the airframe;

(5) Time since the last overhaul of all structural components required to be overhauled on a specific time basis;

(6) Current inspection status of the airplane, including the time since the last inspection required by the inspection program under which the airplane is maintained;

(7) Current status of applicable airworthiness directives, including the date and methods of compliance, and, if the airworthiness directive involves recurring action, the time and date when the next action is required;

(8) A list of major structural alterations; and

(9) A report of major structural repairs and the current inspection status for these repairs.

(e) *Notification to the Administrator.* Each certificate holder must notify the Administrator at least 60 days before the date on which the airplane and airplane records will be made available for the inspection and records review.

[Doc. No. FAA–1999–5401, 70 FR 5533, Feb. 2, 2005]

§ 135.423 Maintenance, preventive maintenance, and alteration organization.

(a) Each certificate holder that performs any of its maintenance (other than required inspections), preventive maintenance, or alterations, and each person with whom it arranges for the performance of that work, must have an organization adequate to perform the work.

(b) Each certificate holder that performs any inspections required by its manual under § 135.427(b) (2) or (3), (in this subpart referred to as *required inspections*), and each person with whom it arranges for the performance of that work, must have an organization adequate to perform that work.

(c) Each person performing required inspections in addition to other maintenance, preventive maintenance, or alterations, shall organize the performance of those functions so as to separate the required inspection functions from the other maintenance, preventive maintenance, and alteration functions. The separation shall be below the level of administrative control at which overall responsibility for the required inspection functions and other maintenance, preventive maintenance, and alteration functions is exercised.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978. Redesignated by Amdt. 135–81, 67 FR 72765, Dec. 6, 2002. Redesignated by Amdt. 135–81, 70 FR 5533, Feb. 2, 2005]

§ 135.425 Maintenance, preventive maintenance, and alteration programs.

Each certificate holder shall have an inspection program and a program covering other maintenance, preventive maintenance, and alterations, that ensures that—

(a) Maintenance, preventive maintenance, and alterations performed by it, or by other persons, are performed under the certificate holder's manual;

(b) Competent personnel and adequate facilities and equipment are provided for the proper performance of maintenance, preventive maintenance, and alterations; and

(c) Each aircraft released to service is airworthy and has been properly maintained for operation under this part.

§ 135.427 Manual requirements.

(a) Each certificate holder shall put in its manual the chart or description of the certificate holder's organization required by § 135.424 and a list of persons with whom it has arranged for the

performance of any of its required inspections, other maintenance, preventive maintenance, or alterations, including a general description of that work.

(b) Each certificate holder shall put in its manual the programs required by §135.425 that must be followed in performing maintenance, preventive maintenance, and alterations of that certificate holder's aircraft, including airframes, aircraft engines, propellers, rotors, appliances, emergency equipment, and parts, and must include at least the following:

(1) The method of performing routine and nonroutine maintenance (other than required inspections), preventive maintenance, and alterations.

(2) A designation of the items of maintenance and alteration that must be inspected (required inspections) including at least those that could result in a failure, malfunction, or defect endangering the safe operation of the aircraft, if not performed properly or if improper parts or materials are used.

(3) The method of performing required inspections and a designation by occupational title of personnel authorized to perform each required inspection.

(4) Procedures for the reinspection of work performed under previous required inspection findings (*buy-back procedures*).

(5) Procedures, standards, and limits necessary for required inspections and acceptance or rejection of the items required to be inspected and for periodic inspection and calibration of precision tools, measuring devices, and test equipment.

(6) Procedures to ensure that all required inspections are performed.

(7) Instructions to prevent any person who performs any item of work from performing any required inspection of that work.

(8) Instructions and procedures to prevent any decision of an inspector regarding any required inspection from being countermanded by persons other than supervisory personnel of the inspection unit, or a person at the level of administrative control that has overall responsibility for the management of both the required inspection functions and the other maintenance, preventive maintenance, and alterations functions.

(9) Procedures to ensure that required inspections, other maintenance, preventive maintenance, and alterations that are not completed as a result of work interruptions are properly completed before the aircraft is released to service.

(c) Each certificate holder shall put in its manual a suitable system (which may include a coded system) that provides for the retention of the following information—

(1) A description (or reference to data acceptable to the Administrator) of the work performed;

(2) The name of the person performing the work if the work is performed by a person outside the organization of the certificate holder; and

(3) The name or other positive identification of the individual approving the work.

(d) For the purposes of this part, the certificate holder must prepare that part of its manual containing maintenance information and instructions, in whole or in part, in printed form or other form, acceptable to the Administrator, that is retrievable in the English language.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–66, 62 FR 13257, Mar. 19, 1997; 69 FR 18472, Apr. 8, 2004]

§135.429 Required inspection personnel.

(a) No person may use any person to perform required inspections unless the person performing the inspection is appropriately certificated, properly trained, qualified, and authorized to do so.

(b) No person may allow any person to perform a required inspection unless, at the time, the person performing that inspection is under the supervision and control of an inspection unit.

(c) No person may perform a required inspection if that person performed the item of work required to be inspected.

(d) In the case of rotorcraft that operate in remote areas or sites, the Administrator may approve procedures for the performance of required inspection items by a pilot when no other

qualified person is available, provided—

(1) The pilot is employed by the certificate holder;

(2) It can be shown to the satisfaction of the Administrator that each pilot authorized to perform required inspections is properly trained and qualified;

(3) The required inspection is a result of a mechanical interruption and is not a part of a certificate holder's continuous airworthiness maintenance program;

(4) Each item is inspected after each flight until the item has been inspected by an appropriately certificated mechanic other than the one who originally performed the item of work; and

(5) Each item of work that is a required inspection item that is part of the flight control system shall be flight tested and reinspected before the aircraft is approved for return to service.

(e) Each certificate holder shall maintain, or shall determine that each person with whom it arranges to perform its required inspections maintains, a current listing of persons who have been trained, qualified, and authorized to conduct required inspections. The persons must be identified by name, occupational title and the inspections that they are authorized to perform. The certificate holder (or person with whom it arranges to perform its required inspections) shall give written information to each person so authorized, describing the extent of that person's responsibilities, authorities, and inspectional limitations. The list shall be made available for inspection by the Administrator upon request.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–20, 51 FR 40710, Nov. 7, 1986]

§ 135.431 Continuing analysis and surveillance.

(a) Each certificate holder shall establish and maintain a system for the continuing analysis and surveillance of the performance and effectiveness of its inspection program and the program covering other maintenance, preventive maintenance, and alterations and for the correction of any deficiency in those programs, regardless of whether those programs are carried out by the certificate holder or by another person.

(b) Whenever the Administrator finds that either or both of the programs described in paragraph (a) of this section does not contain adequate procedures and standards to meet this part, the certificate holder shall, after notification by the Administrator, make changes in those programs requested by the Administrator.

(c) A certificate holder may petition the Administrator to reconsider the notice to make a change in a program. The petition must be filed with the certificate-holding district office within 30 days after the certificate holder receives the notice. Except in the case of an emergency requiring immediate action in the interest of safety, the filing of the petition stays the notice pending a decision by the Administrator.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–60, 61 FR 2617, Jan. 26, 1996]

§ 135.433 Maintenance and preventive maintenance training program.

Each certificate holder or a person performing maintenance or preventive maintenance functions for it shall have a training program to ensure that each person (including inspection personnel) who determines the adequacy of work done is fully informed about procedures and techniques and new equipment in use and is competent to perform that person's duties.

§ 135.435 Certificate requirements.

(a) Except for maintenance, preventive maintenance, alterations, and required inspections performed by a certificated repair station that is located outside the United States, each person who is directly in charge of maintenance, preventive maintenance, or alterations, and each person performing required inspections must hold an appropriate airman certificate.

(b) For the purpose of this section, a person *directly in charge* is each person assigned to a position in which that person is responsible for the work of a shop or station that performs maintenance, preventive maintenance, alterations, or other functions affecting airworthiness. A person who is *directly in charge* need not physically observe and

direct each worker constantly but must be available for consultation and decision on matters requiring instruction or decision from higher authority than that of the person performing the work.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–82, 66 FR 41117, Aug. 6, 2001]

§ 135.437 Authority to perform and approve maintenance, preventive maintenance, and alterations.

(a) A certificate holder may perform or make arrangements with other persons to perform maintenance, preventive maintenance, and alterations as provided in its maintenance manual. In addition, a certificate holder may perform these functions for another certificate holder as provided in the maintenance manual of the other certificate holder.

(b) A certificate holder may approve any airframe, aircraft engine, propeller, rotor, or appliance for return to service after maintenance, preventive maintenance, or alterations that are performed under paragraph (a) of this section. However, in the case of a major repair or alteration, the work must have been done in accordance with technical data approved by the Administrator.

§ 135.439 Maintenance recording requirements.

(a) Each certificate holder shall keep (using the system specified in the manual required in §135.427) the following records for the periods specified in paragraph (b) of this section:

(1) All the records necessary to show that all requirements for the issuance of an airworthiness release under §135.443 have been met.

(2) Records containing the following information:

(i) The total time in service of the airframe, engine, propeller, and rotor.

(ii) The current status of life-limited parts of each airframe, engine, propeller, rotor, and appliance.

(iii) The time since last overhaul of each item installed on the aircraft which are required to be overhauled on a specified time basis.

(iv) The identification of the current inspection status of the aircraft, including the time since the last inspections required by the inspection program under which the aircraft and its appliances are maintained.

(v) The current status of applicable airworthiness directives, including the date and methods of compliance, and, if the airworthiness directive involves recurring action, the time and date when the next action is required.

(vi) A list of current major alterations and repairs to each airframe, engine, propeller, rotor, and appliance.

(b) Each certificate holder shall retain the records required to be kept by this section for the following periods:

(1) Except for the records of the last complete overhaul of each airframe, engine, propeller, rotor, and appliance the records specified in paragraph (a)(1) of this section shall be retained until the work is repeated or superseded by other work or for one year after the work is performed.

(2) The records of the last complete overhaul of each airframe, engine, propeller, rotor, and appliance shall be retained until the work is superseded by work of equivalent scope and detail.

(3) The records specified in paragraph (a)(2) of this section shall be retained and transferred with the aircraft at the time the aircraft is sold.

(c) The certificate holder shall make all maintenance records required to be kept by this section available for inspection by the Administrator or any representative of the National Transportation Safety Board.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978; 43 FR 49975, Oct. 26, 1978]

§ 135.441 Transfer of maintenance records.

Each certificate holder who sells a United States registered aircraft shall transfer to the purchaser, at the time of the sale, the following records of that aircraft, in plain language form or in coded form which provides for the preservation and retrieval of information in a manner acceptable to the Administrator:

(a) The records specified in §135.439(a)(2).

(b) The records specified in §135.439(a)(1) which are not included in the records covered by paragraph (a) of this section, except that the purchaser

may allow the seller to keep physical custody of such records. However, custody of records by the seller does not relieve the purchaser of its responsibility under §135.439(c) to make the records available for inspection by the Administrator or any representative of the National Transportation Safety Board.

§ 135.443 Airworthiness release or aircraft maintenance log entry.

(a) No certificate holder may operate an aircraft after maintenance, preventive maintenance, or alterations are performed on the aircraft unless the certificate holder prepares, or causes the person with whom the certificate holder arranges for the performance of the maintenance, preventive maintenance, or alterations, to prepare—

(1) An airworthiness release; or

(2) An appropriate entry in the aircraft maintenance log.

(b) The airworthiness release or log entry required by paragraph (a) of this section must—

(1) Be prepared in accordance with the procedure in the certificate holder's manual;

(2) Include a certification that—

(i) The work was performed in accordance with the requirements of the certificate holder's manual;

(ii) All items required to be inspected were inspected by an authorized person who determined that the work was satisfactorily completed;

(iii) No known condition exists that would make the aircraft unairworthy; and

(iv) So far as the work performed is concerned, the aircraft is in condition for safe operation; and

(3) Be signed by an authorized certificated mechanic or repairman, except that a certificated repairman may sign the release or entry only for the work for which that person is employed and for which that person is certificated.

(c) Notwithstanding paragraph (b)(3) of this section, after maintenance, preventive maintenance, or alterations performed by a repair station located outside the United States , the airworthiness release or log entry required by paragraph (a) of this section may be signed by a person authorized by that repair station.

(d) Instead of restating each of the conditions of the certification required by paragraph (b) of this section, the certificate holder may state in its manual that the signature of an authorized certificated mechanic or repairman constitutes that certification.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135–29, 53 FR 47375, Nov. 22, 1988; Amdt. 135–82, 66 FR 41117, Aug. 6, 2001]

Subpart K—Hazardous Materials Training Program

SOURCE: Doc. No. FAA–2003–15085, 70 FR 58829, Oct. 7, 2005, unless otherwise noted.

§ 135.501 Applicability and definitions.

(a) This subpart prescribes the requirements applicable to each certificate holder for training each crewmember and person performing or directly supervising any of the following job functions involving any item for transport on board an aircraft:

(1) Acceptance;

(2) Rejection;

(3) Handling;

(4) Storage incidental to transport;

(5) Packaging of company material; or

(6) Loading.

(b) *Definitions.* For purposes of this subpart, the following definitions apply:

(1) *Company material (COMAT)*—Material owned or used by a certificate holder.

(2) *Initial hazardous materials training*—The basic training required for each newly hired person, or each person changing job functions, who performs or directly supervises any of the job functions specified in paragraph (a) of this section.

(3) *Recurrent hazardous materials training*—The training required every 24 months for each person who has satisfactorily completed the certificate holder's approved initial hazardous materials training program and performs or directly supervises any of the job functions specified in paragraph (a) of this section.

§ 135.503 Hazardous materials training: General.

(a) Each certificate holder must establish and implement a hazardous materials training program that:

(1) Satisfies the requirements of Appendix O of part 121 of this part;

(2) Ensures that each person performing or directly supervising any of the job functions specified in §135.501(a) is trained to comply with all applicable parts of 49 CFR parts 171 through 180 and the requirements of this subpart; and

(3) Enables the trained person to recognize items that contain, or may contain, hazardous materials regulated by 49 CFR parts 171 through 180.

(b) Each certificate holder must provide initial hazardous materials training and recurrent hazardous materials training to each crewmember and person performing or directly supervising any of the job functions specified in §135.501(a).

(c) Each certificate holder's hazardous materials training program must be approved by the FAA prior to implementation.

§ 135.505 Hazardous materials training required.

(a) *Training requirement.* Except as provided in paragraphs (b), (c) and (f) of this section, no certificate holder may use any crewmember or person to perform any of the job functions or direct supervisory responsibilities, and no person may perform any of the job functions or direct supervisory responsibilities, specified in §135.501(a) unless that person has satisfactorily completed the certificate holder's FAA-approved initial or recurrent hazardous materials training program within the past 24 months.

(b) *New hire or new job function.* A person who is a new hire and has not yet satisfactorily completed the required initial hazardous materials training, or a person who is changing job functions and has not received initial or recurrent training for a job function involving storage incidental to transport, or loading of items for transport on an aircraft, may perform those job functions for not more than 30 days from the date of hire or a change in job function, if the person is under the direct visual supervision of a person who is authorized by the certificate holder to supervise that person and who has successfully completed the certificate holder's FAA-approved initial or recurrent training program within the past 24 months.

(c) *Persons who work for more than one certificate holder.* A certificate holder that uses or assigns a person to perform or directly supervise a job function specified in §135.501(a), when that person also performs or directly supervises the same job function for another certificate holder, need only train that person in its own policies and procedures regarding those job functions, if all of the following are met:

(1) The certificate holder using this exception receives written verification from the person designated to hold the training records representing the other certificate holder that the person has satisfactorily completed hazardous materials training for the specific job function under the other certificate holder's FAA approved hazardous material training program under appendix O of part 121 of this chapter; and

(2) The certificate holder who trained the person has the same operations specifications regarding the acceptance, handling, and transport of hazardous materials as the certificate holder using this exception.

(d) *Recurrent hazardous materials training—Completion date.* A person who satisfactorily completes recurrent hazardous materials training in the calendar month before, or the calendar month after, the month in which the recurrent training is due, is considered to have taken that training during the month in which it is due. If the person completes this training earlier than the month before it is due, the month of the completion date becomes his or her new anniversary month.

(e) *Repair stations.* A certificate holder must ensure that each repair station performing work for, or on the certificate holder's behalf is notified in writing of the certificate holder's policies and operations specification authorization permitting or prohibition against the acceptance, rejection, handling, storage incidental to transport, and transportation of hazardous materials,

including company material. This notification requirement applies only to repair stations that are regulated by 49 CFR parts 171 through 180.

(f) *Certificate holders operating at foreign locations.* This exception applies if a certificate holder operating at a foreign location where the country requires the certificate holder to use persons working in that country to load aircraft. In such a case, the certificate holder may use those persons even if they have not been trained in accordance with the certificate holder's FAA approved hazardous materials training program. Those persons, however, must be under the direct visual supervision of someone who has successfully completed the certificate holder's approved initial or recurrent hazardous materials training program in accordance with this part. This exception applies only to those persons who load aircraft.

§ 135.507 Hazardous materials training records.

(a) *General requirement.* Each certificate holder must maintain a record of all training required by this part received within the preceding three years for each person who performs or directly supervises a job function specified in §135.501(a). The record must be maintained during the time that the person performs or directly supervises any of those job functions, and for 90 days thereafter. These training records must be kept for direct employees of the certificate holder, as well as independent contractors, subcontractors, and any other person who performs or directly supervises these job functions for the certificate holder.

(b) *Location of records.* The certificate holder must retain the training records required by paragraph (a) of this section for all initial and recurrent training received within the preceding 3 years for all persons performing or directly supervising the job functions listed in Appendix O of part 121 of this chapter at a designated location. The records must be available upon request at the location where the trained person performs or directly supervises the job function specified in §135.501(a). Records may be maintained electronically and provided on location electronically. When the person ceases to perform or directly supervise a hazardous materials job function, the certificate holder must retain the hazardous materials training records for an additional 90 days and make them available upon request at the last location where the person worked.

(c) *Content of records.* Each record must contain the following:

(1) The individual's name;

(2) The most recent training completion date;

(3) A description, copy or reference to training materials used to meet the training requirement;

(4) The name and address of the organization providing the training; and

(5) A copy of the certification issued when the individual was trained, which shows that a test has been completed satisfactorily.

(d) *New hire or new job function.* Each certificate holder using a person under the exception in §135.505(b) must maintain a record for that person. The records must be available upon request at the location where the trained person performs or directly supervises the job function specified in §135.501(a). Records may be maintained electronically and provided on location electronically. The record must include the following:

(1) A signed statement from an authorized representative of the certificate holder authorizing the use of the person in accordance with the exception;

(2) The date of hire or change in job function;

(3) The person's name and assigned job function;

(4) The name of the supervisor of the job function; and

(5) The date the person is to complete hazardous materials training in accordance with Appendix O of part 121 of this chapter.

APPENDIX A TO PART 135—ADDITIONAL AIRWORTHINESS STANDARDS FOR 10 OR MORE PASSENGER AIRPLANES

Applicability

1. *Applicability.* This appendix prescribes the additional airworthiness standards required by §135.169.

2. *References*. Unless otherwise provided, references in this appendix to specific sections of part 23 of the Federal Aviation Regulations (FAR part 23) are to those sections of part 23 in effect on March 30, 1967.

Flight Requirements

3. *General*. Compliance must be shown with the applicable requirements of subpart B of FAR part 23, as supplemented or modified in §§4 through 10.

Performance

4. *General*. (a) Unless otherwise prescribed in this appendix, compliance with each applicable performance requirement in sections 4 through 7 must be shown for ambient atmospheric conditions and still air.

(b) The performance must correspond to the propulsive thrust available under the particular ambient atmospheric conditions and the particular flight condition. The available propulsive thrust must correspond to engine power or thrust, not exceeding the approved power or thrust less—

(1) Installation losses; and

(2) The power or equivalent thrust absorbed by the accessories and services appropriate to the particular ambient atmospheric conditions and the particular flight condition.

(c) Unless otherwise prescribed in this appendix, the applicant must select the takeoff, en route, and landing configurations for the airplane.

(d) The airplane configuration may vary with weight, altitude, and temperature, to the extent they are compatible with the operating procedures required by paragraph (e) of this section.

(e) Unless otherwise prescribed in this appendix, in determining the critical engine inoperative takeoff performance, the accelerate-stop distance, takeoff distance, changes in the airplane's configuration, speed, power, and thrust must be made under procedures established by the applicant for operation in service.

(f) Procedures for the execution of balked landings must be established by the applicant and included in the Airplane Flight Manual.

(g) The procedures established under paragraphs (e) and (f) of this section must—

(1) Be able to be consistently executed in service by a crew of average skill;

(2) Use methods or devices that are safe and reliable; and

(3) Include allowance for any time delays, in the execution of the procedures, that may reasonably be expected in service.

5. *Takeoff*. (a) *General*. Takeoff speeds, the accelerate-stop distance, the takeoff distance, and the one-engine-inoperative takeoff flight path data (described in paragraphs (b), (c), (d), and (f) of this section), must be determined for—

(1) Each weight, altitude, and ambient temperature within the operational limits selected by the applicant;

(2) The selected configuration for takeoff;

(3) The center of gravity in the most unfavorable position;

(4) The operating engine within approved operating limitations; and

(5) Takeoff data based on smooth, dry, hard-surface runway.

(b) *Takeoff speeds*. (1) The decision speed V_1 is the calibrated airspeed on the ground at which, as a result of engine failure or other reasons, the pilot is assumed to have made a decision to continue or discontinue the takeoff. The speed V_1 must be selected by the applicant but may not be less than—

(i) $1.10V_{S1}$;

(ii) $1.10V_{MC}$;

(iii) A speed that allows acceleration to V_1 and stop under paragraph (c) of this section; or

(iv) A speed at which the airplane can be rotated for takeoff and shown to be adequate to safely continue the takeoff, using normal piloting skill, when the critical engine is suddenly made inoperative.

(2) The initial climb out speed V_2, in terms of calibrated airspeed, must be selected by the applicant so as to allow the gradient of climb required in section 6(b)(2), but it must not be less than V_1 or less than $1.2V_{S1}$.

(3) Other essential take off speeds necessary for safe operation of the airplane.

(c) *Accelerate-stop distance*. (1) The accelerate-stop distance is the sum of the distances necessary to—

(i) Accelerate the airplane from a standing start to V_1; and

(ii) Come to a full stop from the point at which V_1 is reached assuming that in the case of engine failure, failure of the critical engine is recognized by the pilot at the speed V_1.

(2) Means other than wheel brakes may be used to determine the accelerate-stop distance if that means is available with the critical engine inoperative and—

(i) Is safe and reliable;

(ii) Is used so that consistent results can be expected under normal operating conditions; and

(iii) Is such that exceptional skill is not required to control the airplane.

(d) *All engines operating takeoff distance*. The all engine operating takeoff distance is the horizontal distance required to takeoff and climb to a height of 50 feet above the takeoff surface under the procedures in FAR 23.51(a).

(e) *One-engine-inoperative takeoff*. Determine the weight for each altitude and temperature within the operational limits established for the airplane, at which the airplane

has the capability, after failure of the critical engine at V_1 determined under paragraph (b) of this section, to take off and climb at not less than V_2, to a height 1,000 feet above the takeoff surface and attain the speed and configuration at which compliance is shown with the en route one-engine-inoperative gradient of climb specified in section 6(c).

(f) *One-engine-inoperative takeoff flight path data.* The one-engine-inoperative takeoff flight path data consist of takeoff flight paths extending from a standing start to a point in the takeoff at which the airplane reaches a height 1,000 feet above the takeoff surface under paragraph (e) of this section.

6. *Climb.* (a) *Landing climb: All-engines-operating.* The maximum weight must be determined with the airplane in the landing configuration, for each altitude, and ambient temperature within the operational limits established for the airplane, with the most unfavorable center of gravity, and out-of-ground effect in free air, at which the steady gradient of climb will not be less than 3.3 percent, with:

(1) The engines at the power that is available 8 seconds after initiation of movement of the power or thrust controls from the minimum flight idle to the takeoff position.

(2) A climb speed not greater than the approach speed established under section 7 and not less than the greater of $1.05V_{MC}$ or $1.10V_{S1}$.

(b) *Takeoff climb: one-engine-inoperative.* The maximum weight at which the airplane meets the minimum climb performance specified in paragraphs (1) and (2) of this paragraph must be determined for each altitude and ambient temperature within the operational limits established for the airplane, out of ground effect in free air, with the airplane in the takeoff configuration, with the most unfavorable center of gravity, the critical engine inoperative, the remaining engines at the maximum takeoff power or thrust, and the propeller of the inoperative engine windmilling with the propeller controls in the normal position except that, if an approved automatic feathering system is installed, the propellers may be in the feathered position:

(1) *Takeoff: landing gear extended.* The minimum steady gradient of climb must be measurably positive at the speed V_1.

(2) *Takeoff: landing gear retracted.* The minimum steady gradient of climb may not be less than 2 percent at speed V_2. For airplanes with fixed landing gear this requirement must be met with the landing gear extended.

(c) *En route climb: one-engine-inoperative.* The maximum weight must be determined for each altitude and ambient temperature within the operational limits established for the airplane, at which the steady gradient of climb is not less 1.2 percent at an altitude 1,000 feet above the takeoff surface, with the airplane in the en route configuration, the critical engine inoperative, the remaining engine at the maximum continuous power or thrust, and the most unfavorable center of gravity.

7. *Landing.* (a) The landing field length described in paragraph (b) of this section must be determined for standard atmosphere at each weight and altitude within the operational limits established by the applicant.

(b) The landing field length is equal to the landing distance determined under FAR 23.75(a) divided by a factor of 0.6 for the destination airport and 0.7 for the alternate airport. Instead of the gliding approach specified in FAR 23.75(a)(1), the landing may be preceded by a steady approach down to the 50-foot height at a gradient of descent not greater than 5.2 percent (3°) at a calibrated airspeed not less than $1.3V_{S1}$.

Trim

8. *Trim.* (a) *Lateral and directional trim.* The airplane must maintain lateral and directional trim in level flight at a speed of V_H or V_{MO}/M_{MO}, whichever is lower, with landing gear and wing flaps retracted.

(b) *Longitudinal trim.* The airplane must maintain longitudinal trim during the following conditions, except that it need not maintain trim at a speed greater than V_{MO}/M_{MO}:

(1) In the approach conditions specified in FAR 23.161(c) (3) through (5), except that instead of the speeds specified in those paragraphs, trim must be maintained with a stick force of not more than 10 pounds down to a speed used in showing compliance with section 7 or $1.4V_{S1}$ whichever is lower.

(2) In level flight at any speed from V_H or V_{MO}/M_{MO}, whichever is lower, to either V_x or $1.4V_{S1}$, with the landing gear and wing flaps retracted.

Stability

9. *Static longitudinal stability.* (a) In showing compliance with FAR 23.175(b) and with paragraph (b) of this section, the airspeed must return to within ±7½ percent of the trim speed.

(b) *Cruise stability.* The stick force curve must have a stable slope for a speed range of ±50 knots from the trim speed except that the speeds need not exceed V_{FC}/M_{FC} or be less than $1.4V_{S1}$. This speed range will be considered to begin at the outer extremes of the friction band and the stick force may not exceed 50 pounds with—

(1) Landing gear retracted;

(2) Wing flaps retracted;

(3) The maximum cruising power as selected by the applicant as an operating limitation for turbine engines or 75 percent of maximum continuous power for reciprocating engines except that the power need not exceed that required at V_{MO}/M_{MO};

(4) Maximum takeoff weight; and

(5) The airplane trimmed for level flight with the power specified in paragraph (3) of this paragraph.

V_{FC}/M_{FC} may not be less than a speed midway between V_{MO}/M_{MO} and V_{DF}/M_{DF}, except that, for altitudes where Mach number is the limiting factor, M_{FC} need not exceed the Mach number at which effective speed warning occurs.

(c) *Climb stability (turbopropeller powered airplanes only).* In showing compliance with FAR 23.175(a), an applicant must, instead of the power specified in FAR 23.175(a)(4), use the maximum power or thrust selected by the applicant as an operating limitation for use during climb at the best rate of climb speed, except that the speed need not be less than $1.4V_{S1}$.

Stalls

10. *Stall warning.* If artificial stall warning is required to comply with FAR 23.207, the warning device must give clearly distinguishable indications under expected conditions of flight. The use of a visual warning device that requires the attention of the crew within the cockpit is not acceptable by itself.

Control Systems

11. *Electric trim tabs.* The airplane must meet FAR 23.677 and in addition it must be shown that the airplane is safely controllable and that a pilot can perform all the maneuvers and operations necessary to effect a safe landing following any probable electric trim tab runaway which might be reasonably expected in service allowing for appropriate time delay after pilot recognition of the runaway. This demonstration must be conducted at the critical airplane weights and center of gravity positions.

Instruments: Installation

12. *Arrangement and visibility.* Each instrument must meet FAR 23.1321 and in addition:

(a) Each flight, navigation, and powerplant instrument for use by any pilot must be plainly visible to the pilot from the pilot's station with the minimum practicable deviation from the pilot's normal position and line of vision when the pilot is looking forward along the flight path.

(b) The flight instruments required by FAR 23.1303 and by the applicable operating rules must be grouped on the instrument panel and centered as nearly as practicable about the vertical plane of each pilot's forward vision. In addition—

(1) The instrument that most effectively indicates the attitude must be in the panel in the top center position;

(2) The instrument that most effectively indicates the airspeed must be on the panel directly to the left of the instrument in the top center position;

(3) The instrument that most effectively indicates altitude must be adjacent to and directly to the right of the instrument in the top center position; and

(4) The instrument that most effectively indicates direction of flight must be adjacent to and directly below the instrument in the top center position.

13. *Airspeed indicating system.* Each airspeed indicating system must meet FAR 23.1323 and in addition:

(a) Airspeed indicating instruments must be of an approved type and must be calibrated to indicate true airspeed at sea level in the standard atmosphere with a minimum practicable instrument calibration error when the corresponding pitot and static pressures are supplied to the instruments.

(b) The airspeed indicating system must be calibrated to determine the system error, i.e., the relation between IAS and CAS, in flight and during the accelerate-takeoff ground run. The ground run calibration must be obtained between 0.8 of the minimum value of V_1 and 1.2 times the maximum value of V_1, considering the approved ranges of altitude and weight. The ground run calibration is determined assuming an engine failure at the minimum value of V_1.

(c) The airspeed error of the installation excluding the instrument calibration error, must not exceed 3 percent or 5 knots whichever is greater, throughout the speed range from V_{MO} to $1.3V_{S1}$ with flaps retracted and from $1.3V_{SO}$ to V_{FE} with flaps in the landing position.

(d) Information showing the relationship between IAS and CAS must be shown in the Airplane Flight manual.

14. *Static air vent system.* The static air vent system must meet FAR 23.1325. The altimeter system calibration must be determined and shown in the Airplane Flight Manual.

Operating Limitations and Information

15. *Maximum operating limit speed V_{MO}/M_{MO}.* Instead of establishing operating limitations based on V_{NE} and V_{NO}, the applicant must establish a maximum operating limit speed V_{MO}/M_{MO} as follows:

(a) The maximum operating limit speed must not exceed the design cruising speed V_C and must be sufficiently below V_D/M_D or V_{DF}/M_{DF} to make it highly improbable that the latter speeds will be inadvertently exceeded in flight.

(b) The speed V_{MO} must not exceed $0.8V_D/M_D$ or $0.8V_{DF}/M_{DF}$ unless flight demonstrations involving upsets as specified by the Administrator indicates a lower speed margin will not result in speeds exceeding V_D/M_D or V_{DF}. Atmospheric variations, horizontal gusts, system and equipment errors, and airframe production variations are taken into account.

16. *Minimum flight crew*. In addition to meeting FAR 23.1523, the applicant must establish the minimum number and type of qualified flight crew personnel sufficient for safe operation of the airplane considering—

(a) Each kind of operation for which the applicant desires approval;

(b) The workload on each crewmember considering the following:

(1) Flight path control.

(2) Collision avoidance.

(3) Navigation.

(4) Communications.

(5) Operation and monitoring of all essential aircraft systems.

(6) Command decisions; and

(c) The accessibility and ease of operation of necessary controls by the appropriate crewmember during all normal and emergency operations when at the crewmember flight station.

17. *Airspeed indicator*. The airspeed indicator must meet FAR 23.1545 except that, the airspeed notations and markings in terms of V_{NO} and V_{NH} must be replaced by the V_{MO}/M_{MO} notations. The airspeed indicator markings must be easily read and understood by the pilot. A placard adjacent to the airspeed indicator is an acceptable means of showing compliance with FAR 23.1545(c).

Airplane Flight Manual

18. *General*. The Airplane Flight Manual must be prepared under FARs 23.1583 and 23.1587, and in addition the operating limitations and performance information in sections 19 and 20 must be included.

19. *Operating limitations*. The Airplane Flight Manual must include the following limitations—

(a) *Airspeed limitations*. (1) The maximum operating limit speed V_{MO}/M_{MO} and a statement that this speed limit may not be deliberately exceeded in any regime of flight (climb, cruise, or descent) unless a higher speed is authorized for flight test or pilot training;

(2) If an airspeed limitation is based upon compressibility effects, a statement to this effect and information as to any symptoms, the probable behavior of the airplane, and the recommended recovery procedures; and

(3) The airspeed limits, shown in terms of V_{MO}/M_{MO} instead of V_{NO} and V_{NE}.

(b) *Takeoff weight limitations*. The maximum takeoff weight for each airport elevation, ambient temperature, and available takeoff runway length within the range selected by the applicant may not exceed the weight at which—

(1) The all-engine-operating takeoff distance determined under section 5(b) or the accelerate-stop distance determined under section 5(c), whichever is greater, is equal to the available runway length;

(2) The airplane complies with the one-engine-inoperative takeoff requirements specified in section 5(e); and

(3) The airplane complies with the one-engine-inoperative takeoff and en route climb requirements specified in sections 6 (b) and (c).

(c) *Landing weight limitations*. The maximum landing weight for each airport elevation (standard temperature) and available landing runway length, within the range selected by the applicant. This weight may not exceed the weight at which the landing field length determined under section 7(b) is equal to the available runway length. In showing compliance with this operating limitation, it is acceptable to assume that the landing weight at the destination will be equal to the takeoff weight reduced by the normal consumption of fuel and oil en route.

20. *Performance information*. The Airplane Flight Manual must contain the performance information determined under the performance requirements of this appendix. The information must include the following:

(a) Sufficient information so that the takeoff weight limits specified in section 19(b) can be determined for all temperatures and altitudes within the operation limitations selected by the applicant.

(b) The conditions under which the performance information was obtained, including the airspeed at the 50-foot height used to determine landing distances.

(c) The performance information (determined by extrapolation and computed for the range of weights between the maximum landing and takeoff weights) for—

(1) Climb in the landing configuration; and

(2) Landing distance.

(d) Procedure established under section 4 related to the limitations and information required by this section in the form of guidance material including any relevant limitations or information.

(e) An explanation of significant or unusual flight or ground handling characteristics of the airplane.

(f) Airspeeds, as indicated airspeeds, corresponding to those determined for takeoff under section 5(b).

21. *Maximum operating altitudes*. The maximum operating altitude to which operation is allowed, as limited by flight, structural, powerplant, functional, or equipment characteristics, must be specified in the Airplane Flight Manual.

22. *Stowage provision for airplane flight manual*. Provision must be made for stowing the Airplane Flight Manual in a suitable fixed container which is readily accessible to the pilot.

23. *Operating procedures*. Procedures for restarting turbine engines in flight (including the effects of altitude) must be set forth in the Airplane Flight Manual.

Airframe Requirements

Flight Loads

24. *Engine torque.* (a) Each turbopropeller engine mount and its supporting structure must be designed for the torque effects of:

(1) The conditions in FAR 23.361(a).

(2) The limit engine torque corresponding to takeoff power and propeller speed multiplied by a factor accounting for propeller control system malfunction, including quick feathering action, simultaneously with 1*g* level flight loads. In the absence of a rational analysis, a factor of 1.6 must be used.

(b) The limit torque is obtained by multiplying the mean torque by a factor of 1.25.

25. *Turbine engine gyroscopic loads.* Each turbopropeller engine mount and its supporting structure must be designed for the gyroscopic loads that result, with the engines at maximum continuous r.p.m., under either—

(a) The conditions in FARs 23.351 and 23.423; or

(b) All possible combinations of the following:

(1) A yaw velocity of 2.5 radians per second.

(2) A pitch velocity of 1.0 radians per second.

(3) A normal load factor of 2.5.

(4) Maximum continuous thrust.

26. *Unsymmetrical loads due to engine failure.* (a) Turbopropeller powered airplanes must be designed for the unsymmet- rical loads resulting from the failure of the critical engine including the following conditions in combination with a single malfunction of the propeller drag limiting system, considering the probable pilot corrective action on the flight controls:

(1) At speeds between V_{mo} and $V_{D,}$ the loads resulting from power failure because of fuel flow interruption are considered to be limit loads.

(2) At speeds between V_{mo} and $V_{c,}$ the loads resulting from the disconnection of the engine compressor from the turbine or from loss of the turbine blades are considered to be ultimate loads.

(3) The time history of the thrust decay and drag buildup occurring as a result of the prescribed engine failures must be substantiated by test or other data applicable to the particular engine-propeller combination.

(4) The timing and magnitude of the probable pilot corrective action must be conservatively estimated, considering the characteristics of the particular engine-propeller-airplane combination.

(b) Pilot corrective action may be assumed to be initiated at the time maximum yawing velocity is reached, but not earlier than 2 seconds after the engine failure. The magnitude of the corrective action may be based on the control forces in FAR 23.397 except that lower forces may be assumed where it is shown by analysis or test that these forces can control the yaw and roll resulting from the prescribed engine failure conditions.

Ground Loads

27. *Dual wheel landing gear units.* Each dual wheel landing gear unit and its supporting structure must be shown to comply with the following:

(a) *Pivoting.* The airplane must be assumed to pivot about one side of the main gear with the brakes on that side locked. The limit vertical load factor must be 1.0 and the coefficient of friction 0.8. This condition need apply only to the main gear and its supporting structure.

(b) *Unequal tire inflation.* A 60–40 percent distribution of the loads established under FAR 23.471 through FAR 23.483 must be applied to the dual wheels.

(c) *Flat tire.* (1) Sixty percent of the loads in FAR 23.471 through FAR 23.483 must be applied to either wheel in a unit.

(2) Sixty percent of the limit drag and side loads and 100 percent of the limit vertical load established under FARs 23.493 and 23.485 must be applied to either wheel in a unit except that the vertical load need not exceed the maximum vertical load in paragraph (c)(1) of this section.

Fatigue Evaluation

28. *Fatigue evaluation of wing and associated structure.* Unless it is shown that the structure, operating stress levels, materials and expected use are comparable from a fatigue standpoint to a similar design which has had substantial satisfactory service experience, the strength, detail design, and the fabrication of those parts of the wing, wing carry-through, and attaching structure whose failure would be catastrophic must be evaluated under either—

(a) A fatigue strength investigation in which the structure is shown by analysis, tests, or both to be able to withstand the repeated loads of variable magnitude expected in service; or

(b) A fail-safe strength investigation in which it is shown by analysis, tests, or both that catastrophic failure of the structure is not probable after fatigue, or obvious partial failure, of a principal structural element, and that the remaining structure is able to withstand a static ultimate load factor of 75 percent of the critical limit load factor at $V_{C.}$ These loads must be multiplied by a factor of 1.15 unless the dynamic effects of failure under static load are otherwise considered.

Design and Construction

29. *Flutter.* For multiengine turbopropeller powered airplanes, a dynamic evaluation must be made and must include—

(a) The significant elastic, inertia, and aerodynamic forces associated with the rotations and displacements of the plane of the propeller; and

(b) Engine-propeller-nacelle stiffness and damping variations appropriate to the particular configuration.

Landing Gear

30. *Flap operated landing gear warning device.* Airplanes having retractable landing gear and wing flaps must be equipped with a warning device that functions continuously when the wing flaps are extended to a flap position that activates the warning device to give adequate warning before landing, using normal landing procedures, if the landing gear is not fully extended and locked. There may not be a manual shut off for this warning device. The flap position sensing unit may be installed at any suitable location. The system for this device may use any part of the system (including the aural warning device) provided for other landing gear warning devices.

Personnel and Cargo Accommodations

31. *Cargo and baggage compartments.* Cargo and baggage compartments must be designed to meet FAR 23.787 (a) and (b), and in addition means must be provided to protect passengers from injury by the contents of any cargo or baggage compartment when the ultimate forward inertia force is 9*g*.

32. *Doors and exits.* The airplane must meet FAR 23.783 and FAR 23.807 (a)(3), (b), and (c), and in addition:

(a) There must be a means to lock and safeguard each external door and exit against opening in flight either inadvertently by persons, or as a result of mechanical failure. Each external door must be operable from both the inside and the outside.

(b) There must be means for direct visual inspection of the locking mechanism by crewmembers to determine whether external doors and exits, for which the initial opening movement is outward, are fully locked. In addition, there must be a visual means to signal to crewmembers when normally used external doors are closed and fully locked.

(c) The passenger entrance door must qualify as a floor level emergency exit. Each additional required emergency exit except floor level exits must be located over the wing or must be provided with acceptable means to assist the occupants in descending to the ground. In addition to the passenger entrance door:

(1) For a total seating capacity of 15 or less, an emergency exit as defined in FAR 23.807(b) is required on each side of the cabin.

(2) For a total seating capacity of 16 through 23, three emergency exits as defined in FAR 23.807(b) are required with one on the same side as the door and two on the side opposite the door.

(d) An evacuation demonstration must be conducted utilizing the maximum number of occupants for which certification is desired. It must be conducted under simulated night conditions utilizing only the emergency exits on the most critical side of the aircraft. The participants must be representative of average airline passengers with no previous practice or rehearsal for the demonstration. Evacuation must be completed within 90 seconds.

(e) Each emergency exit must be marked with the word ''Exit'' by a sign which has white letters 1 inch high on a red background 2 inches high, be self-illuminated or independently internally electrically illuminated, and have a minimum luminescence (brightness) of at least 160 microlamberts. The colors may be reversed if the passenger compartment illumination is essentially the same.

(f) Access to window type emergency exits must not be obstructed by seats or seat backs.

(g) The width of the main passenger aisle at any point between seats must equal or exceed the values in the following table:

Total seating capacity	Minimum main passenger aisle width	
	Less than 25 inches from floor	25 inches and more from floor
10 through 23	9 inches	15 inches.

Miscellaneous

33. *Lightning strike protection.* Parts that are electrically insulated from the basic airframe must be connected to it through lightning arrestors unless a lightning strike on the insulated part—

(a) Is improbable because of shielding by other parts; or

(b) Is not hazardous.

34. *Ice protection.* If certification with ice protection provisions is desired, compliance with the following must be shown:

(a) The recommended procedures for the use of the ice protection equipment must be set forth in the Airplane Flight Manual.

(b) An analysis must be performed to establish, on the basis of the airplane's operational needs, the adequacy of the ice protection system for the various components of the airplane. In addition, tests of the ice protection system must be conducted to demonstrate that the airplane is capable of operating safely in continuous maximum and intermittent maximum icing conditions as described in appendix C of part 25 of this chapter.

(c) Compliance with all or portions of this section may be accomplished by reference, where applicable because of similarity of the

designs, to analysis and tests performed by the applicant for a type certificated model.

35. *Maintenance information.* The applicant must make available to the owner at the time of delivery of the airplane the information the applicant considers essential for the proper maintenance of the airplane. That information must include the following:

(a) Description of systems, including electrical, hydraulic, and fuel controls.

(b) Lubrication instructions setting forth the frequency and the lubricants and fluids which are to be used in the various systems.

(c) Pressures and electrical loads applicable to the various systems.

(d) Tolerances and adjustments necessary for proper functioning.

(e) Methods of leveling, raising, and towing.

(f) Methods of balancing control surfaces.

(g) Identification of primary and secondary structures.

(h) Frequency and extent of inspections necessary to the proper operation of the airplane.

(i) Special repair methods applicable to the airplane.

(j) Special inspection techniques, such as X-ray, ultrasonic, and magnetic particle inspection.

(k) List of special tools.

Propulsion

General

36. *Vibration characteristics.* For turbopropeller powered airplanes, the engine installation must not result in vibration characteristics of the engine exceeding those established during the type certification of the engine.

37. *In flight restarting of engine.* If the engine on turbopropeller powered airplanes cannot be restarted at the maximum cruise altitude, a determination must be made of the altitude below which restarts can be consistently accomplished. Restart information must be provided in the Airplane Flight Manual.

38. *Engines.* (a) *For turbopropeller powered airplanes.* The engine installation must comply with the following:

(1) *Engine isolation.* The powerplants must be arranged and isolated from each other to allow operation, in at least one configuration, so that the failure or malfunction of any engine, or of any system that can affect the engine, will not—

(i) Prevent the continued safe operation of the remaining engines; or

(ii) Require immediate action by any crewmember for continued safe operation.

(2) *Control of engine rotation.* There must be a means to individually stop and restart the rotation of any engine in flight except that engine rotation need not be stopped if continued rotation could not jeopardize the safety of the airplane. Each component of the stopping and restarting system on the engine side of the firewall, and that might be exposed to fire, must be at least fire resistant. If hydraulic propeller feathering systems are used for this purpose, the feathering lines must be at least fire resistant under the operating conditions that may be expected to exist during feathering.

(3) *Engine speed and gas temperature control devices.* The powerplant systems associated with engine control devices, systems, and instrumentation must provide reasonable assurance that those engine operating limitations that adversely affect turbine rotor structural integrity will not be exceeded in service.

(b) *For reciprocating engine powered airplanes.* To provide engine isolation, the powerplants must be arranged and isolated from each other to allow operation, in at least one configuration, so that the failure or malfunction of any engine, or of any system that can affect that engine, will not—

(1) Prevent the continued safe operation of the remaining engines; or

(2) Require immediate action by any crewmember for continued safe operation.

39. *Turbopropeller reversing systems.* (a) Turbopropeller reversing systems intended for ground operation must be designed so that no single failure or malfunction of the system will result in unwanted reverse thrust under any expected operating condition. Failure of structural elements need not be considered if the probability of this kind of failure is extremely remote.

(b) Turbopropeller reversing systems intended for in flight use must be designed so that no unsafe condition will result during normal operation of the system, or from any failure (or reasonably likely combination of failures) of the reversing system, under any anticipated condition of operation of the airplane. Failure of structural elements need not be considered if the probability of this kind of failure is extremely remote.

(c) Compliance with this section may be shown by failure analysis, testing, or both for propeller systems that allow propeller blades to move from the flight low-pitch position to a position that is substantially less than that at the normal flight low-pitch stop position. The analysis may include or be supported by the analysis made to show compliance with the type certification of the propeller and associated installation components. Credit will be given for pertinent analysis and testing completed by the engine and propeller manufacturers.

40. *Turbopropeller drag-limiting systems.* Turbopropeller drag-limiting systems must be designed so that no single failure or malfunction of any of the systems during normal or emergency operation results in propeller drag in excess of that for which the airplane was designed. Failure of structural elements

of the drag-limiting systems need not be considered if the probability of this kind of failure is extremely remote.

41. *Turbine engine powerplant operating characteristics.* For turbopropeller powered airplanes, the turbine engine powerplant operating characteristics must be investigated in flight to determine that no adverse characteristics (such as stall, surge, or flameout) are present to a hazardous degree, during normal and emergency operation within the range of operating limitations of the airplane and of the engine.

42. *Fuel flow.* (a) For turbopropeller powered airplanes—

(1) The fuel system must provide for continuous supply of fuel to the engines for normal operation without interruption due to depletion of fuel in any tank other than the main tank; and

(2) The fuel flow rate for turbopropeller engine fuel pump systems must not be less than 125 percent of the fuel flow required to develop the standard sea level atmospheric conditions takeoff power selected and included as an operating limitation in the Airplane Flight Manual.

(b) For reciprocating engine powered airplanes, it is acceptable for the fuel flow rate for each pump system (main and reserve supply) to be 125 percent of the takeoff fuel consumption of the engine.

Fuel System Components

43. *Fuel pumps.* For turbopropeller powered airplanes, a reliable and independent power source must be provided for each pump used with turbine engines which do not have provisions for mechanically driving the main pumps. It must be demonstrated that the pump installations provide a reliability and durability equivalent to that in FAR 23.991(a).

44. *Fuel strainer or filter.* For turbopropeller powered airplanes, the following apply:

(a) There must be a fuel strainer or filter between the tank outlet and the fuel metering device of the engine. In addition, the fuel strainer or filter must be—

(1) Between the tank outlet and the engine-driven positive displacement pump inlet, if there is an engine-driven positive displacement pump;

(2) Accessible for drainage and cleaning and, for the strainer screen, easily removable; and

(3) Mounted so that its weight is not supported by the connecting lines or by the inlet or outlet connections of the strainer or filter itself.

(b) Unless there are means in the fuel system to prevent the accumulation of ice on the filter, there must be means to automatically maintain the fuel-flow if ice-clogging of the filter occurs; and

(c) The fuel strainer or filter must be of adequate capacity (for operating limitations established to ensure proper service) and of appropriate mesh to insure proper engine operation, with the fuel contaminated to a degree (for particle size and density) that can be reasonably expected in service. The degree of fuel filtering may not be less than that established for the engine type certification.

45. *Lightning strike protection.* Protection must be provided against the ignition of flammable vapors in the fuel vent system due to lightning strikes.

Cooling

46. *Cooling test procedures for turbopropeller powered airplanes.* (a) Turbopropeller powered airplanes must be shown to comply with FAR 23.1041 during takeoff, climb, en route, and landing stages of flight that correspond to the applicable performance requirements. The cooling tests must be conducted with the airplane in the configuration, and operating under the conditions that are critical relative to cooling during each stage of flight. For the cooling tests a temperature is ''stabilized'' when its rate of change is less than 2° F. per minute.

(b) Temperatures must be stabilized under the conditions from which entry is made into each stage of flight being investigated unless the entry condition is not one during which component and engine fluid temperatures would stabilize, in which case, operation through the full entry condition must be conducted before entry into the stage of flight being investigated to allow temperatures to reach their natural levels at the time of entry. The takeoff cooling test must be preceded by a period during which the powerplant component and engine fluid temperatures are stabilized with the engines at ground idle.

(c) Cooling tests for each stage of flight must be continued until—

(1) The component and engine fluid temperatures stabilize;

(2) The stage of flight is completed; or

(3) An operating limitation is reached.

Induction System

47. *Air induction.* For turbopropeller powered airplanes—

(a) There must be means to prevent hazardous quantities of fuel leakage or overflow from drains, vents, or other components of flammable fluid systems from entering the engine intake systems; and

(b) The air inlet ducts must be located or protected so as to minimize the ingestion of foreign matter during takeoff, landing, and taxiing.

48. *Induction system icing protection.* For turbopropeller powered airplanes, each turbine engine must be able to operate throughout its flight power range without adverse effect on engine operation or serious loss of

power or thrust, under the icing conditions specified in appendix C of part 25 of this chapter. In addition, there must be means to indicate to appropriate flight crewmembers the functioning of the powerplant ice protection system.

49. *Turbine engine bleed air systems.* Turbine engine bleed air systems of turbopropeller powered airplanes must be investigated to determine—

(a) That no hazard to the airplane will result if a duct rupture occurs. This condition must consider that a failure of the duct can occur anywhere between the engine port and the airplane bleed service; and

(b) That, if the bleed air system is used for direct cabin pressurization, it is not possible for hazardous contamination of the cabin air system to occur in event of lubrication system failure.

Exhaust System

50. *Exhaust system drains.* Turbopropeller engine exhaust systems having low spots or pockets must incorporate drains at those locations. These drains must discharge clear of the airplane in normal and ground attitudes to prevent the accumulation of fuel after the failure of an attempted engine start.

Powerplant Controls and Accessories

51. *Engine controls.* If throttles or power levers for turbopropeller powered airplanes are such that any position of these controls will reduce the fuel flow to the engine(s) below that necessary for satisfactory and safe idle operation of the engine while the airplane is in flight, a means must be provided to prevent inadvertent movement of the control into this position. The means provided must incorporate a positive lock or stop at this idle position and must require a separate and distinct operation by the crew to displace the control from the normal engine operating range.

52. *Reverse thrust controls.* For turbopropeller powered airplanes, the propeller reverse thrust controls must have a means to prevent their inadvertent operation. The means must have a positive lock or stop at the idle position and must require a separate and distinct operation by the crew to displace the control from the flight regime.

53. *Engine ignition systems.* Each turbopropeller airplane ignition system must be considered an essential electrical load.

54. *Powerplant accessories.* The powerplant accessories must meet FAR 23.1163, and if the continued rotation of any accessory remotely driven by the engine is hazardous when malfunctioning occurs, there must be means to prevent rotation without interfering with the continued operation of the engine.

Powerplant Fire Protection

55. *Fire detector system.* For turbopropeller powered airplanes, the following apply:

(a) There must be a means that ensures prompt detection of fire in the engine compartment. An overtemperature switch in each engine cooling air exit is an acceptable method of meeting this requirement.

(b) Each fire detector must be constructed and installed to withstand the vibration, inertia, and other loads to which it may be subjected in operation.

(c) No fire detector may be affected by any oil, water, other fluids, or fumes that might be present.

(d) There must be means to allow the flight crew to check, in flight, the functioning of each fire detector electric circuit.

(e) Wiring and other components of each fire detector system in a fire zone must be at least fire resistant.

56. *Fire protection, cowling and nacelle skin.* For reciprocating engine powered airplanes, the engine cowling must be designed and constructed so that no fire originating in the engine compartment can enter either through openings or by burn through, any other region where it would create additional hazards.

57. *Flammable fluid fire protection.* If flammable fluids or vapors might be liberated by the leakage of fluid systems in areas other than engine compartments, there must be means to—

(a) Prevent the ignition of those fluids or vapors by any other equipment; or

(b) Control any fire resulting from that ignition.

Equipment

58. *Powerplant instruments.* (a) The following are required for turbopropeller airplanes:

(1) The instruments required by FAR 23.1305 (a) (1) through (4), (b) (2) and (4).

(2) A gas temperature indicator for each engine.

(3) Free air temperature indicator.

(4) A fuel flowmeter indicator for each engine.

(5) Oil pressure warning means for each engine.

(6) A torque indicator or adequate means for indicating power output for each engine.

(7) Fire warning indicator for each engine.

(8) A means to indicate when the propeller blade angle is below the low-pitch position corresponding to idle operation in flight.

(9) A means to indicate the functioning of the ice protection system for each engine.

(b) For turbopropeller powered airplanes, the turbopropeller blade position indicator must begin indicating when the blade has moved below the flight low-pitch position.

(c) The following instruments are required for reciprocating engine powered airplanes:

(1) The instruments required by FAR 23.1305.
(2) A cylinder head temperature indicator for each engine.
(3) A manifold pressure indicator for each engine.

Systems and Equipments

General

59. *Function and installation.* The systems and equipment of the airplane must meet FAR 23.1301, and the following:
(a) Each item of additional installed equipment must—
(1) Be of a kind and design appropriate to its intended function;
(2) Be labeled as to its identification, function, or operating limitations, or any applicable combination of these factors, unless misuse or inadvertent actuation cannot create a hazard;
(3) Be installed according to limitations specified for that equipment; and
(4) Function properly when installed.
(b) Systems and installations must be designed to safeguard against hazards to the aircraft in the event of their malfunction or failure.
(c) Where an installation, the functioning of which is necessary in showing compliance with the applicable requirements, requires a power supply, that installation must be considered an essential load on the power supply, and the power sources and the distribution system must be capable of supplying the following power loads in probable operation combinations and for probable durations:
(1) All essential loads after failure of any prime mover, power converter, or energy storage device.
(2) All essential loads after failure of any one engine on two-engine airplanes.
(3) In determining the probable operating combinations and durations of essential loads for the power failure conditions described in paragraphs (1) and (2) of this paragraph, it is permissible to assume that the power loads are reduced in accordance with a monitoring procedure which is consistent with safety in the types of operations authorized.
60. *Ventilation.* The ventilation system of the airplane must meet FAR 23.831, and in addition, for pressurized aircraft, the ventilating air in flight crew and passenger compartments must be free of harmful or hazardous concentrations of gases and vapors in normal operation and in the event of reasonably probable failures or malfunctioning of the ventilating, heating, pressurization, or other systems, and equipment. If accumulation of hazardous quantities of smoke in the cockpit area is reasonably probable, smoke evacuation must be readily accomplished.

Electrical Systems and Equipment

61. *General.* The electrical systems and equipment of the airplane must meet FAR 23.1351, and the following:
(a) *Electrical system capacity.* The required generating capacity, and number and kinds of power sources must—
(1) Be determined by an electrical load analysis; and
(2) Meet FAR 23.1301.
(b) *Generating system.* The generating system includes electrical power sources, main power busses, transmission cables, and associated control, regulation and protective devices. It must be designed so that—
(1) The system voltage and frequency (as applicable) at the terminals of all essential load equipment can be maintained within the limits for which the equipment is designed, during any probable operating conditions;
(2) System transients due to switching, fault clearing, or other causes do not make essential loads inoperative, and do not cause a smoke or fire hazard;
(3) There are means, accessible in flight to appropriate crewmembers, for the individual and collective disconnection of the electrical power sources from the system; and
(4) There are means to indicate to appropriate crewmembers the generating system quantities essential for the safe operation of the system, including the voltage and current supplied by each generator.
62. *Electrical equipment and installation.* Electrical equipment, controls, and wiring must be installed so that operation of any one unit or system of units will not adversely affect the simultaneous operation of any other electrical unit or system essential to the safe operation.
63. *Distribution system.* (a) For the purpose of complying with this section, the distribution system includes the distribution busses, their associated feeders, and each control and protective device.
(b) Each system must be designed so that essential load circuits can be supplied in the event of reasonably probable faults or open circuits, including faults in heavy current carrying cables.
(c) If two independent sources of electrical power for particular equipment or systems are required under this appendix, their electrical energy supply must be ensured by means such as duplicate electrical equipment, throwover switching, or multichannel or loop circuits separately routed.
64. *Circuit protective devices.* The circuit protective devices for the electrical circuits of the airplane must meet FAR 23.1357, and in addition circuits for loads which are essential to safe operation must have individual and exclusive circuit protection.

APPENDIX B TO PART 135—AIRPLANE FLIGHT RECORDER SPECIFICATIONS

Parameters	Range	Installed system [1] minimum accuracy (to recovered data)	Sampling interval (per second)	Resolution [4] read out
Relative time (from recorded on prior to takeoff).	25 hr minimum	±0.125% per hour	1	1 sec.
Indicated airspeed	V_{so} to V_D (KIAS)	±5% or ±10 kts., whichever is greater. Resolution 2 kts. below 175 KIAS.	1	1% [3].
Altitude	−1,000 ft. to max cert. alt. of A/C.	±100 to ±700 ft. (see Table 1, TSO C51–a).	1	25 to 150
Magnetic heading	360°	±5°	1	1°
Vertical acceleration	−3g to +6g	±0.2g in addition to ±0.3g maximum datum.	4 (or 1 per second where peaks, ref. to 1g are recorded).	0.03g.
Longitudinal acceleration	±1.0g	±1.5% max. range excluding datum error of ±5%.	2	0.01g.
Pitch attitude	100% of usable	±2°	1	0.8°
Roll attitude	±60° or 100% of usable range, whichever is greater.	±2°	1	0.8°
Stabilizer trim position	Full range	±3% unless higher uniquely required.	1	1% [3].
Or				
Pitch control position	Full range	±3% unless higher uniquely required.	1	1% [3].
Engine Power, Each Engine				
Fan or N_1 speed or EPR or cockpit indications used for aircraft certification.	Maximum range	±5%	1	1% [3].
Or				
Prop. speed and torque (sample once/sec as close together as practicable).			1 (prop speed), 1 (torque).	
Altitude rate [2] (need depends on altitude resolution).	±8,000 fpm	±10%. Resolution 250 fpm below 12,000 ft. indicated.	1	250 fpm Below 12,000
Angle of attack [2] (need depends on altitude resolution).	−20° to 40° or of usable range.	±2°	1	0.8% [3]
Radio transmitter keying (discrete).	On/off		1.	
TE flaps (discrete or analog)	Each discrete position (U, D, T/O, AAP).		1.	
	Or.			
	Analog 0–100% range	±3°	1	1% [3]
LE flaps (discrete or analog)	Each discrete position (U, D, T/O, AAP).		1.	
	Or.			
	Analog 0–100% range	±3°	1	1% [3].
Thrust reverser, each engine (Discrete).	Stowed or full reverse		1.	
Spoiler/speedbrake (discrete)	Stowed or out		1.	
Autopilot engaged (discrete)	Engaged or disengaged		1.	

[1] When data sources are aircraft instruments (except altimeters) of acceptable quality to fly the aircraft the recording system excluding these sensors (but including all other characteristics of the recording system) shall contribute no more than half of the values in this column.

[2] If data from the altitude encoding altimeter (100 ft. resolution) is used, then either one of these parameters should also be recorded. If however, altitude is recorded at a minimum resolution of 25 feet, then these two parameters can be omitted.

[3] Per cent of full range.

[4] This column applies to aircraft manufacturing after October 11, 1991.

[Doc. No. 25530, 53 FR 26152, July 11, 1988; 53 FR 30906, Aug. 16, 1988, as amended by Amdt. 135–69, 62 FR 38397, July 17, 1997]

APPENDIX C TO PART 135—HELICOPTER FLIGHT RECORDER SPECIFICATIONS

Parameters	Range	Installed system [1] minimum accuracy (to recovered data)	Sampling interval (per second)	Resolution [3] read out
Relative time (from recorded on prior to takeoff).	25 hr minimum	±0.125% per hour	1	1 sec.

Parameters	Range	Installed system [1] minimum accuracy (to recovered data)	Sampling interval (per second)	Resolution [3] read out
Indicated airspeed	V_m in to V_D (KIAS) (minimum airspeed signal attainable with installed pilot-static system).	±5% or ±10 kts., whichever is greater.	1	1 kt.
Altitude	−1,000 ft. to 20,000 ft. pressure altitude.	±100 to ±700 ft. (see Table 1, TSO C51–a).	1	25 to 150 ft.
Magnetic heading	360°	±5°	1	1°.
Vertical acceleration	−3g to +6g	±0.2g in addition to ±0.3g maximum datum.	4 (or 1 per second where peaks, ref. to 1g are recorded).	0.05g.
Longitudinal acceleration	±1.0g	±1.5% max. range excluding datum error of ±5%.	2	0.03g.
Pitch attitude	100% of usable range	±2°	1	0.8°.
Roll attitude	±60° or 100% of usable range, whichever is greater.	±2°	1	0.8°.
Altitude rate	±8,000 fpm	±10% Resolution 250 fpm below 12,000 ft. indicated.	1	250 fpm below 12,000.
Engine Power, Each Engine				
Main rotor speed	Maximum range	±5%	1	1% [2]
Free or power turbine	Maximum range	+5%	1	1% [2]
Engine torque	Maximum range	±5%	1	1% [2]
Flight Control—Hydraulic Pressure				
Primary (discrete)	High/low		1.	
Secondary—if applicable (discrete).	High/low		1.	
Radio transmitter keying (discrete).	On/off		1.	
Autopilot engaged (discrete)	Engaged or disengaged		1.	
SAS status—engaged (discrete).	Engaged/disengaged		1.	
SAS fault status (discrete)	Fault/OK		1.	
Flight Controls				
Collective	Full range	±3%	2	1% [2]
Pedal position	Full range	±3%	2	1% [2]
Lat. cyclic	Full range	±3%	2	1% [2]
Long. cyclic	Full range	±3%	2	1% [2]
Controllable stabilator position	Full range	±3%	2	1% [2]

[1] When data sources are aircraft instruments (except altimeters) of acceptable quality to fly the aircraft the recording system excluding these sensors (but including all other characteristics of the recording system) shall contribute no more than half of the values in this column.
[2] Per cent of full range.
[3] This column applies to aircraft manufactured after October 11, 1991.

[Doc. No. 25530, 53 FR 26152, July 11, 1988; 53 FR 30906, Aug. 16, 1988, as amended by Amdt. 135–69, 62 FR 38397, July 17, 1997]

Appendix D to Part 135—Airplane Flight Recorder Specification

Parameters	Range	Accuracy sensor input to DFDR readout	Sampling interval (per second)	resolution [4] read out
Time (GMT or Frame Counter) (range 0 to 4095, sampled 1 per frame).	24 Hrs	±0.125% Per Hour	0.25 (1 per 4 seconds).	1 sec.
Altitude	−1,000 ft to max certificated altitude of aircraft.	±100 to ±700 ft (See Table 1, TSO-C51a).	1	5′ to 35′ [1].
Airspeed	50 KIAS to V_{so}, and V_{so} to 1.2 V_D.	±5%, ±3%	1	1kt
Heading	360°	±2°	1	0.5°
Normal Acceleration (Vertical)	−3g to +6g	±1% of max range excluding datum error of ±5%.	8	0.01g
Pitch Attitude	±75°	±2°	1	0.5°
Roll Attitude	±180°	±2°	1	0.5°.
Radio Transmitter Keying	On-Off (Discrete)		1	
Thrust/Power on Each Engine	Full range forward	±2%	1 (per engine)	0.2% [2].

Parameters	Range	Accuracy sensor input to DFDR readout	Sampling interval (per second)	resolution [4] read out
Trailing Edge Flap or Cockpit Control Selection.	Full range or each discrete position.	±3° or as pilot's indicator	0.5	0.5% [2].
Leading Edge Flap on or Cockpit Control Selection.	Full range or each discrete position.	±3° or as pilot's indicator	0.5	0.5% [2].
Thrust Reverser Position	Stowed, in transit, and reverse (discretion).		1 (per 4 seconds per engine).	
Ground Spoiler Position/ Speed Brake Selection.	Full range or each discrete position.	±2% unless higher accuracy uniquely required.	1	0.22 [2].
Marker Beacon Passage	Discrete		1	
Autopilot Engagement	Discrete		1	
Longitudinal Acceleration	±1g	±1.5% max range excluding datum error of ±5%.	4	0.01g.
Pilot Input And/or Surface Position-Primary Controls (Pitch, Roll, Yaw) [3].	Full range	±2° unless higher accuracy uniquely required.	1	0.2% [2].
Lateral Acceleration	±1g	±1.5% max range excluding datum error of ±5%.	4	0.01g.
Pitch Trim Position	Full range	±3% unless higher accuracy uniquely required.	1	0.3%[2].
Glideslope Deviation	±400 Microamps	±3%	1	0.3% [2].
Localizer Deviation	±400 Microamps	±3%	1	0.3% [2].
AFCS Mode And Engagement Status.	Discrete		1	
Radio Altitude	−20 ft to 2,500 ft	±2 Ft or ±3% whichever is greater below 500 ft and ±5% above 500 ft.	1	1 ft + 5% [2] above 500′.
Master Warning	Discrete		1	
Main Gear Squat Switch Status.	Discrete		1	
Angle of Attack (if recorded directly).	As installed	As installed	2	0.3% [2].
Outside Air Temperature or Total Air Temperature.	−50° C to +90° c	±2° c	0.5	0.3° c
Hydraulics, Each System Low Pressure.	Discrete		0.5	or 0.5% [2].
Groundspeed	As installed	Most accurate systems installed (IMS equipped aircraft only).	1	0.2% [2].
If additional recording capacity is available, recording of the following parameters is recommended. The parameters are listed in order of significance:				
Drift Angle	When available. As installed.	As installed	4	
Wind Speed and Direction	When available. As installed.	As installed	4	
Latitude and Longitude	When available. As installed.	As installed	4	
Brake pressure/Brake pedal position.	As installed	As installed	1	
Additional engine parameters:				
EPR	As installed	As installed	1 (per engine)	
N [1]	As installed	As installed	1 (per engine)	
N [2]	As installed	As installed	1 (per engine)	
EGT	As installed	As installed	1 (per engine)	
Throttle Lever Position	As installed	As installed	1 (per engine)	
Fuel Flow	As installed	As installed	1 (per engine)	
TCAS:				
TA	As installed	As installed	1	
RA	As installed	As installed	1	
Sensitivity level (as selected by crew).	As installed	As installed	2	
GPWS (ground proximity warning system).	Discrete		1	
Landing gear or gear selector position.	Discrete		0.25 (1 per 4 seconds).	
DME 1 and 2 Distance	0–200 NM;	As installed	0.25	1mi.
Nav 1 and 2 Frequency Selection.	Full range	As installed	0.25.	

[1] When altitude rate is recorded. Altitude rate must have sufficient resolution and sampling to permit the derivation of altitude to 5 feet.
[2] Per cent of full range.

[3] For airplanes that can demonstrate the capability of deriving either the control input on control movement (one from the other) for all modes of operation and flight regimes, the ''or'' applies. For airplanes with non-mechanical control systems (fly-by-wire) the ''and'' applies. In airplanes with split surfaces, suitable combination of inputs is acceptable in lieu of recording each surface separately.

[4] This column applies to aircraft manufactured after October 11, 1991.

[Doc. No. 25530, 53 FR 26153, July 11, 1988; 53 FR 30906, Aug. 16, 1988]

APPENDIX E TO PART 135—HELICOPTER FLIGHT RECORDER SPECIFICATIONS

Parameters	Range	Accuracy sensor input to DFDR readout	Sampling interval (per second)	Resolution [2] read out
Time (GMT)	24 Hrs	±0.125% Per Hour	0.25 (1 per 4 seconds).	1 sec
Altitude	−1,000 ft to max certificated altitude of aircraft.	±100 to ±700 ft (See Table 1, TSO-C51a).	1	5′ to 30′.
Airspeed	As the installed measuring system.	±3%	1	1 kt
Heading	360°	±2°	1	0.5°.
Normal Acceleration (Vertical)	−3g to +6g	±1% of max range excluding datum error of ±5%.	8	0.01g
Pitch Attitude	±75°	±2°	2	0.5°
Roll Attitude	±180°	±2°	2	0.5°.
Radio Transmitter Keying	On-Off (Discrete)		1	0.25 sec
Power in Each Engine: Free Power Turbine Speed *and* Engine Torque.	0–130% (power Turbine Speed) Full range (Torque).	±2%	1 speed 1 torque (per engine).	0.2% [1] to 0.4% [1]
Main Rotor Speed	0–130%	±2%	2	0.3% [1]
Altitude Rate	±6,000 ft/min	As installed	2	0.2% [1]
Pilot Input—Primary Controls (Collective, Longitudinal Cyclic, Lateral Cyclic, Pedal).	Full range	±3%	2	0.5% [1]
Flight Control Hydraulic Pressure Low.	Discrete, each circuit		1	
Flight Control Hydraulic Pressure Selector Switch Position, 1st and 2nd stage.	Discrete		1	
AFCS Mode and Engagement Status.	Discrete (5 bits necessary).		1	
Stability Augmentation System Engage.	Discrete		1	
SAS Fault Status	Discrete		0.25	
Main Gearbox Temperature Low.	As installed	As installed	0.25	0.5% [1]
Main Gearbox Temperature High.	As installed	As installed	0.5	0.5% [1]
Controllable Stabilator Position.	Full Range	±3%	2	0.4% [1].
Longitudinal Acceleration	±1g	±1.5% max range excluding datum error of ±5%.	4	0.01g.
Lateral Acceleration	±1g	±1.5% max range excluding datum of ±5%.	4	0.01g.
Master Warning	Discrete		1	
Nav 1 and 2 Frequency Selection.	Full range	As installed	0.25	
Outside Air Temperature	−50° C to +90° C	±2° c	0.5	0.3° c

[1] Per cent of full range.

[2] This column applies to aircraft manufactured after October 11, 1991.

[Doc. No. 25530, 53 FR 26154, July 11, 1988; 53 FR 30906, Aug. 16, 1988]

APPENDIX F TO PART 135—AIRPLANE FLIGHT RECORDER SPECIFICATION

The recorded values must meet the designated range, resolution, and accuracy requirements during dynamic and static conditions. All data recorded must be correlated in time to within one second.

Parameters	Range	Accuracy (sensor input)	Seconds per sampling interval	Resolution	Remarks
1. Time or Relative Time Counts [1].	24 Hrs, 0 to 4095.	±0.125% Per Hour.	4	1 sec	UTC time preferred when available. Counter increments each 4 seconds of system operation.

The recorded values must meet the designated range, resolution, and accuracy requirements during dynamic and static conditions. All data recorded must be correlated in time to within one second.

Parameters	Range	Accuracy (sensor input)	Seconds per sampling interval	Resolution	Remarks
2. Pressure Altitude.	−1000 ft to max certificated altitude of aircraft. +5000 ft.	±100 to ±700 ft (see table, TSO C124a or TSO C51a).	1	5′ to 35″	Data should be obtained from the air data computer when practicable.
3. Indicated airspeed or Calibrated airspeed.	50 KIAS or minimum value to Max V_{so+} and V_{so} to 1.2 $V_{.D}$.	±5% and ±3%	1	1 kt	Data should be obtained from the air data computer when practicable.
4. Heading (Primary flight crew reference).	0−360° and Discrete ''true'' or ''mag''.	±2°	1	0.5°	When true or magnetic heading can be selected as the primary heading reference, a discrete indicating selection must be recorded.
5. Normal Acceleration (Vertical) [9].	−3g to +6g	±1% of max range excluding datum error of ±5%.	0.125	0.004g	
6. Pitch Attitude	±75%	±2°	1 or 0.25 for airplanes operated under §135.152(j).	0.5°	A sampling rate of 0.25 is recommended.
7. Roll Attitude [2]	±180°	±2°	1 or 0.5 0.5 airplanes operated under §135.152(j).	0.5°	A sampling rate of 0.5 is recommended.
8. Manual Radio Transmitter Keying or CVR/DFDR synchronization reference.	On-Off (Discrete) None		1		Preferably each crew member but one discrete acceptable for all transmission provided the CVR/FDR system complies with TSO C124a CVR synchronization requirements (paragraph 4.2.1 ED–55).
9. Thrust/Power on each engine—primary flight crew reference.	Full Range Forward.	±2%	1 (per engine)	0.3% of full range.	Sufficient parameters (e.g. EPR, N1 or Torque, NP) as appropriate to the particular engine being recorded to determine power in forward and reverse thrust, including potential overspeed condition.
10. Autopilot Engagement.	Discrete ''on'' or ''off''.		1		
11. Longitudinal Acceleration.	±1g	±1.5% max. range excluding datum error of ±5%.	0.25	0.004g.	
12a. Pitch Control(s) position (non-fly-by-wire systems).	Full Range	±2° Unless Higher Accuracy Uniquely Required.	0.5 or 0.25 for airplanes operated under §135.152(j).	0.5% of full range.	For airplanes that have a flight control break away capability that allows either pilot to operate the controls independently, record both control inputs. The control inputs may be sampled alternately once per second to produce the sampling interval of 0.5 or 0.25, as applicable.
12b. Pitch Control(s) position (fly-by-wire systems) [3].	Full Range	±2° Unless Higher Accuracy Uniquely Required.	0.5 or 0.25 for airplanes operated under §135.152(j).	0.2% of full range	

The recorded values must meet the designated range, resolution, and accuracy requirements during dynamic and static conditions. All data recorded must be correlated in time to within one second.

Parameters	Range	Accuracy (sensor input)	Seconds per sampling interval	Resolution	Remarks
13a. Lateral Control position(s) (non-fly-by-wire).	Full Range	±2° Unless Higher Accuracy Uniquely Required.	0.5 or 0.25 for airplanes operated under §135.152(j).	0.2% of full range.	For airplanes that have a flight control break away capability that allows either pilot to operate the controls independently, record both control inputs. The control inputs may be sampled alternately once per second to produce the sampling intereval of 0.5 or 0.25, as applicable.
13b. Lateral Control position(s) (fly-by-wire) [4].	Full Range	±2° Unless Higher Accuracy Uniquely Required.	0.5 or 0.25 for airplanes operated under §135.152(j).		
14a. Yaw Control position(s) (non-fly-by-wire) [5].	Full Range	±2° Unless Higher Accuracy Uniquely Required.	0.5 or 0.25 for airplanes operated under §135.152(j).	0.3% of full range	For airplanes that have a flight control break away capability that allows either pilot to operate the controls independently, record both control inputs. The control inputs may be sampled alternately once per second to produce the sampling interval of 0.5.
14b. Yaw Control position(s) (fly-by-wire).	Full Range	±2° Unless Higher Accuracy Uniquely Required.	0.5	0.2% of full range.	
15. Pitch Control Surface(s) Position [6].	Full Range	±2° Unless Higher Accuracy Uniquely Required.	0.5 or 0.25 for airplanes operated under §135.152(j).	0.3% of full range.	For airplanes fitted with multiple or split surfaces, a suitable combination of inputs is acceptable in lieu of recording each surface separately. The control surfaces may be sampled alternately to produce the sampling interval of 0.5 or 0.25.
16. Lateral Control Surface(s) Position [7].	Full Range	±2° Unless Higher Accuracy Uniquely Required.	0.5 or 0.25 for airplanes operated under §135.152(j).	0.2% of full range.	A suitable combination of surface position sensors is acceptable in lieu of recording each surface separately. The control surfaces may be sampled alternately to produce the sampling interval of 0.5 or 0.25.
17. Yaw Control Surface(s) Position [8].	Full Range	±2° Unless Higher Accuracy Uniquely Required.	0.5	0.2% of full range.	For airplanes with multiple or split surfaces, a suitable combination of surface position sensors is acceptable in lieu of recording each surface separately. The control surfaces may be sampled alternately to produce the sampling interval of 0.5.
18. Lateral Acceleration.	±1g	±1.5% max. range excluding datum error of ±5%.	0.25	0.004g.	
19. Pitch Trim Surface Position.	Full Range	±3° Unless Higher Accuracy Uniquely Required.	1	0.6% of full range	

The recorded values must meet the designated range, resolution, and accuracy requirements during dynamic and static conditions. All data recorded must be correlated in time to within one second.

Parameters	Range	Accuracy (sensor input)	Seconds per sampling interval	Resolution	Remarks
20. Trailing Edge Flap or Cockpit Control Selection [10].	Full Range or Each Position (discrete).	±3° or as Pilot's Indicator.	2	0.5% of full range.	Flap position and cockpit control may each be sampled alternately at 4 second intervals, to give a data point every 2 seconds.
21. Leading Edge Flap or Cockpit Control Selection [11].	Full Range or Each Discrete Position.	±3° or as Pilot's Indicator and sufficient to determine each discrete position.	2	0.5% of full range.	Left and right sides, of flap position and cockpit control may each be sampled at 4 second intervals, so as to give a data point to every 2 seconds.
22. Each Thrust reverser Position (or equivalent for propeller airplane).	Stowed, In Transit, and reverse (Discrete).		1 (per engine		Turbo-jet—2 discretes enable the 3 states to be determined Turbo-prop—1 discrete
23. Ground Spoiler Position or Speed Brake Selection [12].	Full Range or Each Position (discrete).	±2° Unless Higher Accuracy Uniquely Required.	1 or 0.5 for airplanes operated under § 135.152(j).	0.5% of full range	
24. Outside Air Temperature or Total Air Temperature [13].	−50 °C to +90 °C.	±2 °C	2	0.3 °C	
25. Autopilot/ Autothrottle/ AFCS Mode and Engagement Status.	A suitable combination of discretes.		1		Discretes should show which systems are engaged and which primary modes are controlling the flight path and speed of the aircraft.
26. Radio Altitude [14].	−20 ft to 2,500 ft.	±2 ft or ±3% Whichever is Greater Below 500 ft and ±5% Above 500 ft.	1	1 ft +5% above 500 ft.	For autoland/category 3 operations. Each radio altimeter should be recorded, but arranged so that at least one is recorded each second.
27. Localizer Deviation, MLS Azimuth, or GPS Lateral Deviation.	±400 Microamps or available sensor range as installed ±62°.	As installed ±3% recommended..	1	0.3% of full range.	For autoland/category 3 operations. Each system should be recorded but arranged so that at least one is recorded each second. It is not necessary to record ILS and MLS at the same time, only the approach aid in use need be recorded.
28. Glideslope Deviation, MLS Elevation, or GPS Vertical Deviation.	±400 Microamps or available sensor range as installed. 0.9 to + 30°	As installed ±3% recommended.	1	0.3% of full range.	For autoland/category 3 operations. Each system should be recorded but arranged so that at least one is recorded each second. It is not necessary to record ILS and MLS at the same time, only the approach aid in use need be recorded.
29. Marker Beacon Passage.	Discrete "on" or "off".		1		A single discrete is acceptable for all markers.
30. Master Warning.	Discrete		1		Record the master warning and record each "red" warning that cannot be determined from other parameters or from the cockpit voice recorder.
31. Air/ground sensor (primary airplane system reference nose or main gear).	Discrete "air" or "ground".		1 (0.25 recommended.).		

The recorded values must meet the designated range, resolution, and accuracy requirements during dynamic and static conditions. All data recorded must be correlated in time to within one second.

Parameters	Range	Accuracy (sensor input)	Seconds per sampling interval	Resolution	Remarks
32. Angle of Attack (If measured directly).	As installed	As installed	2 or 0.5 for airplanes operated under §135.152(j).	0.3% of full range.	If left and right sensors are available, each may be recorded at 4 or 1 second intervals, as appropriate, so as to give a data point at 2 seconds or 0.5 second, as required.
33. Hydraulic Pressure Low, Each System.	Discrete or available sensor range, ''low'' or ''normal''.	±5%	2	0.5% of full range.	
34. Groundspeed	As installed	Most Accurate Systems Installed.	1	0.2% of full range.	
35. GPWS (ground proximity warning system).	Discrete ''warning'' or ''off''.		1		A suitable combination of discretes unless recorder capacity is limited in which case a single discrete for all modes is acceptable.
36. Landing Gear Position or Landing gear cockpit control selection.	Discrete		4		A suitable combination of discretes should be recorded.
37. Drift Angle [15]	As installed	As installed	4	0.1°	
38. Wind Speed and Direction.	As installed	As installed	4	1 knot, and 1.0°.	
39. Latitude and Longitude.	As installed	As installed	4	0.002°, or as installed.	Provided by the Primary Navigation System Reference. Where capacity permits latitude/longitude resolution should be 0.0002°.
40. Stick shaker and pusher activation.	Discrete(s) ''on'' or ''off''.		1		A suitable combination of discretes to determine activation.
41. Windshear Detection.	Discrete ''warning'' or ''off''.		1.		
42. Throttle/power lever position [16].	Full Range	±2%	1 for each lever	2% of full range	For airplanes with non-mechanically linked cockpit engine controls.
43. Additional Engine Parameters.	As installed	As installed	Each engine each second.	2% of full range	Where capacity permits, the preferred priority is indicated vibration level, N2, EGT, Fuel Flow, Fuel Cutoff lever position and N3, unless engine manufacturer recommends otherwise.
44. Traffic Alert and Collision Avoidance System (TCAS).	Discretes	As installed	1		A suitable combination of discretes should be recorded to determine the status of—Combined Control, Vertical Control, Up Advisory, and down advisory. (ref. ARINC Characteristic 735 Attachment 6E, TCAS VERTICAL RA DATA OUTPUT WORD.)
45. DME 1 and 2 Distance.	0–200 NM;	As installed	4	1 NM	1 mile.
46. Nav 1 and 2 Selected Frequency.	Full range	As installed	4		Sufficient to determine selected frequency.
47. Selected barometric setting.	Full Range	±5%	(1 per 64 sec.)	0.2% of full range.	
48. Selected altitude.	Full Range	±5%	1	100 ft.	
49. Selected speed.	Full Range	±5%	1	1 knot.	

The recorded values must meet the designated range, resolution, and accuracy requirements during dynamic and static conditions. All data recorded must be correlated in time to within one second.

Parameters	Range	Accuracy (sensor input)	Seconds per sampling interval	Resolution	Remarks
50. Selected Mach.	Full Range	±5%	1	.01.	
51. Selected vertical speed.	Full Range	±5%	1	100 ft./min.	
52. Selected heading.	Full Range	±5%	1	1°.	
53. Selected flight path.	Full Range	±5%	1	1°.	
54. Selected decision height.	Full Range	±5%	64	1 ft.	
55. EFIS display format.	Discrete(s)		4		Discretes should show the display system status (e.g., off, normal, fail, composite, sector, plan, nav aids, weather radar, range, copy.
56. Multi-function/ Engine Alerts Display format.	Discrete(s)		4		Discretes should show the display system status (e.g., off, normal, fail, and the identity of display pages for emergency procedures, need not be recorded.
57. Thrust comand [17].	Full Range	±2%	2	2% of full range	
58. Thrust target	Full Range	±2%	4	2% of full range.	
59. Fuel quantity in CG trim tank.	Full Range	±5%	(1 per 64 sec.)	1% of full range.	
60. Primary Navigation System Reference.	Discrete GPS, INS, VOR/ DME, MLS, Loran C, Omega, Localizer Glidescope.		4		A suitable combination of discretes to determine the Primary Navigation System reference.
61. Ice Detection	Discrete ''ice'' or ''no ice''.		4.		
62. Engine warning each engine vibration.	Discrete		1.		
63. Engine warning each engine over temp..	Discrete		1.		
64. Engine warning each engine oil pressure low.	Discrete		1.		
65. Engine warning each engine over speed.	Discrete		1.		
66. Yaw Trim Surface Position.	Full Range	±3% Unless Higher Accuracy Uniquely Required.	2	0.3% of full range.	
67. Roll Trim Surface Position.	Full Range	±3% Unless Higher Accuracy Uniquely Required.	2	0.3% of full range.	
68. Brake Pressure (left and right).	As installed	±5%	1		To determine braking effort applied by pilots or by autobrakes.
69. Brake Pedal Application (left and right).	Discrete or Analog ''applied'' or ''off''.	±5% (Analog)	1		To determine braking applied by pilots.
70. Yaw or sideslip angle.	Full Range	±5%	1	0.5°.	
71. Engine bleed valve position.	Discrete ''open'' or ''closed''.		4.		
72. De-icing or anti-icing system selection.	Discrete ''on'' or ''off''.		4.		

The recorded values must meet the designated range, resolution, and accuracy requirements during dynamic and static conditions. All data recorded must be correlated in time to within one second.

Parameters	Range	Accuracy (sensor input)	Seconds per sampling interval	Resolution	Remarks
73. Computed center of gravity.	Full Range	±5%	(1 per 64 sec.)	1% of full range.	
74. AC electrical bus status.	Discrete ''power'' or ''off''.		4		Each bus.
75. DC electrical bus status.	Discrete ''power'' or ''off''.		4		Each bus.
76. APU bleed valve position.	Discrete ''open'' or ''closed''.		4.		
77. Hydraulic Pressure (each system).	Full range	±5%	2	100 psi.	
78. Loss of cabin pressure.	Discrete ''loss'' or ''normal''.		1.		
79. Computer failure (critical flight and engine control systems).	Discrete ''fail'' or ''normal''.		4.		
80. Heads-up display (when an information source is installed).	Discrete(s) ''on'' or ''off''.		4.		
81. Para-visual display (when an information source is installed).	Discrete(s) ''on'' or ''off''.		1.		
82. Cockpit trim control input position—pitch.	Full Range	±5%	1	0.2% of full range.	Where mechanical means for control inputs are not available, cockpit display trim positions should be recorded.
83. Cockpit trim control input position—roll.	Full Range	±5%	1	0.7% of full range.	Where mechanical means for control inputs are not available, cockpit display trim position should be recorded.
84. Cockpit trim control input position—yaw.	Full Range	±5%	1	0.3% of full range.	Where mechanical means for control input are not available, cockpit display trim positions should be recorded.
85. Trailing edge flap and cockpit flap control position.	Full Range	±5%	2	0.5% of full range.	Trailing edge flaps and cockpit flap control position may each be sampled alternately at 4 second intervals to provide a sample each 0.5 second.
86. Leading edge flap and cockpit flap control position.	Full Range or Discrete.	±5%	1	0.5% of full range.	
87. Ground spoiler position and speed brake selection.	Full Range or Discrete.	±5%	0.5	0.3% of full range	

The recorded values must meet the designated range, resolution, and accuracy requirements during dynamic and static conditions. All data recorded must be correlated in time to within one second.

Parameters	Range	Accuracy (sensor input)	Seconds per sampling interval	Resolution	Remarks
88. All cockpit flight control input forces (control wheel, control column, rudder pedal).	Full Range Control Wheel ±70 lbs Control Column ±85 lb Rudder pedal ±165 lbs.	±5%	1	0.3% of full range.	For fly-by-wire flight control systems, where control surface position is a function of the displacement of the control input device only, it is not necessary to record this parameter. For airplanes that have a flight control break away capability that allows either pilot to operate the control independently, record both control force inputs. The control force inputs may be sampled alternately once per 2 seconds to produce the sampling interval of 1.

[1] For A300 B2/B4 airplanes, resolution = 6 seconds.
[2] For A330/A340 series airplanes, resolution = 0.703°.
[3] For A318/A319/A320/A321 series airplanes, resolution = 0.275% (0.088°>0.064°). For A330/A340 series airplanes, resolution = 2.20% (0.703°>0.064°).
[4] For A318/A319/A320/A321 series airplanes, resolution = 0.22% (0.088°>0.080°). For A330/A340 series airplanes, resolution = 1.76% (0.703°>0.080°).
[5] For A330/A340 series airplanes, resolution = 1.18% (0.703°>0.120°).
[6] For A330/A340 series airplanes, resolution = 0.783% (0.352°>0.090°).
[7] For A330/A340 series airplanes, aileron resolution = 0.704% (0.352°>0.100°). For A330/A340 series airplanes, spoiler resolution = 1.406% (0.703°>0.100°).
[8] For A330/A340 series airplanes, resolution = 0.30% (0.176°>0.12°). For A330/A340 series airplanes, seconds per sampling interval = 1.
[9] For B–717 series airplanes, resolution = .005g. For Dassault F900C/F900EX airplanes, resolution = .007g.
[10] For A330/A340 series airplanes, resolution = 1.05% (0.250°>0.120°).
[11] For A330/A340 series airplanes, resolution = 1.05% (0.250°>0.120°). For A300 B2/B4 series airplanes, resolution = 0.92% (0.230°>0.125°).
[12] For A330/A340 series airplanes, spoiler resolution = 1.406% (0.703°>0.100°).
[13] For A330/A340 series airplanes, resolution = 0.5 °C.
[14] For Dassault F900C/F900EX airplanes, Radio Altitude resolution = 1.25 ft.
[15] For A330/A340 series airplanes, resolution = 0.352 degrees.
[16] For A318/A319/A320/A321 series airplanes, resolution = 4.32%. For A330/A340 series airplanes, resolution is 3.27% of full range for throttle lever angle (TLA); for reverse thrust, reverse throttle lever angle (RLA) resolution is nonlinear over the active reverse thrust range, which is 51.54 degrees to 96.14 degrees. The resolved element is 2.8 degrees uniformly over the entire active reverse thrust range, or 2.9% of the full range value of 96.14 degrees.
[17] For A318/A319/A320/A321 series airplanes, with IAE engines, resolution = 2.58%.

[Doc. No. 28109, 62 FR 38398, July 17, 1997; 62 FR 48135, Sept. 12, 1997; Amdt. 135–85, 67 FR 54323, Aug. 21, 2002; Amdt. 135–89, 68 FR 42939, July 18, 2003; 68 FR 50069, Aug. 20, 2003]

APPENDIX G TO PART 135—EXTENDED OPERATIONS (ETOPS)

G135.1 *Definitions.*

G135.1.1 *Adequate Airport* means an airport that an airplane operator may list with approval from the FAA because that airport meets the landing limitations of §135.385 or is a military airport that is active and operational.

G135.1.2 *ETOPS Alternate Airport* means an adequate airport that is designated in a dispatch or flight release for use in the event of a diversion during ETOPS. This definition applies to flight planning and does not in any way limit the authority of the pilot in command during flight.

G135.1.3 *ETOPS Entry Point* means the first point on the route of an ETOPS flight, determined using a one-engine inoperative cruise speed under standard conditions in still air, that is more than 180 minutes from an adequate airport.

G135.1.4 *ETOPS Qualified Person* means a person, performing maintenance for the certificate holder, who has satisfactorily completed the certificate holder's ETOPS training program.

G135.2 *Requirements.*

G135.2.1 *General.* After February 15, 2008, no certificate holder may operate an airplane, other than an all-cargo airplane with more than two engines, outside the continental United States more than 180 minutes flying time (at the one engine inoperative cruise speed under standard conditions in still air) from an airport described in §135.364 unless—

(a) The certificate holder receives ETOPS approval from the FAA;

(b) The operation is conducted in a multiengine transport category turbine-powered airplane;

(c) The operation is planned to be no more than 240 minutes flying time (at the one engine inoperative cruise speed under standard conditions in still air) from an airport described in §135.364; and

(d) The certificate holder meets the requirements of this appendix.

G135.2.2 *Required certificate holder experience prior to conducting ETOPS.*

Before applying for ETOPS approval, the certificate holder must have at least 12 months experience conducting international operations (excluding Canada and Mexico) with multi-engine transport category turbine-engine powered airplanes. The certificate holder may consider the following experience as international operations:

(a) Operations to or from the State of Hawaii.

(b) For certificate holders granted approval to operate under part 135 or part 121 before February 15, 2007, up to 6 months of domestic operating experience and operations in Canada and Mexico in multi-engine transport category turbojet-powered airplanes may be credited as part of the required 12 months of international experience required by paragraph G135.2.2(a) of this appendix.

(c) ETOPS experience with other aircraft types to the extent authorized by the FAA.

G135.2.3 *Airplane requirements.* No certificate holder may conduct ETOPS in an airplane that was manufactured after February 17, 2015 unless the airplane meets the standards of §25.1535.

G135.2.4 *Crew information requirements.* The certificate holder must ensure that flight crews have in-flight access to current weather and operational information needed to comply with §135.83, §135.225, and §135.229. This includes information on all ETOPS Alternate Airports, all destination alternates, and the destination airport proposed for each ETOPS flight.

G135.2.5 *Operational Requirements.*

(a) No person may allow a flight to continue beyond its ETOPS Entry Point unless—

(1) The weather conditions at each ETOPS Alternate Airport are forecast to be at or above the operating minima in the certificate holder's operations specifications for that airport when it might be used (from the earliest to the latest possible landing time), and

(3) All ETOPS Alternate Airports within the authorized ETOPS maximum diversion time are reviewed for any changes in conditions that have occurred since dispatch.

(b) In the event that an operator cannot comply with paragraph G135.2.5(a)(1) of this appendix for a specific airport, another ETOPS Alternate Airport must be substituted within the maximum ETOPS diversion time that could be authorized for that flight with weather conditions at or above operating minima.

(c) Pilots must plan and conduct ETOPS under instrument flight rules.

(d) *Time-Limited Systems.*

(1) Except as provided in paragraph G135.2.5(d)(3) of this appendix, the time required to fly the distance to each ETOPS Alternate Airport (at the all-engines-operating cruise speed, corrected for wind and temperature) may not exceed the time specified in the Airplane Flight Manual for the airplane's most limiting fire suppression system time required by regulation for any cargo or baggage compartments (if installed), minus 15 minutes.

(2) Except as provided in G135.2.5(d)(3) of this appendix, the time required to fly the distance to each ETOPS Alternate Airport (at the approved one-engine-inoperative cruise speed, corrected for wind and temperature) may not exceed the time specified in the Airplane Flight Manual for the airplane's most time limited system time (other than the airplane's most limiting fire suppression system time required by regulation for any cargo or baggage compartments), minus 15 minutes.

(3) A certificate holder operating an airplane without the Airplane Flight Manual information needed to comply with paragraphs G135.2.5(d)(1) and (d)(2) of this appendix, may continue ETOPS with that airplane until February 17, 2015.

G135.2.6 *Communications Requirements.*

(a) No person may conduct an ETOPS flight unless the following communications equipment, appropriate to the route to be flown, is installed and operational:

(1) Two independent communication transmitters, at least one of which allows voice communication.

(2) Two independent communication receivers, at least one of which allows voice communication.

(3) Two headsets, or one headset and one speaker.

(b) In areas where voice communication facilities are not available, or are of such poor quality that voice communication is not possible, communication using an alternative system must be substituted.

G135.2.7 *Fuel Requirements.* No person may dispatch or release for flight an ETOPS flight unless, considering wind and other weather conditions expected, it has the fuel otherwise required by this part and enough fuel to satisfy each of the following requirements:

(a) *Fuel to fly to an ETOPS Alternate Airport.*

(1) Fuel to account for rapid decompression and engine failure. The airplane must carry the greater of the following amounts of fuel:

(i) Fuel sufficient to fly to an ETOPS Alternate Airport assuming a rapid decompression at the most critical point followed by

descent to a safe altitude in compliance with the oxygen supply requirements of §135.157;

(ii) Fuel sufficient to fly to an ETOPS Alternate Airport (at the one-engine-inoperative cruise speed under standard conditions in still air) assuming a rapid decompression and a simultaneous engine failure at the most critical point followed by descent to a safe altitude in compliance with the oxygen requirements of §135.157; or

(iii) Fuel sufficient to fly to an ETOPS Alternate Airport (at the one-engine-inoperative cruise speed under standard conditions in still air) assuming an engine failure at the most critical point followed by descent to the one engine inoperative cruise altitude.

(2) Fuel to account for errors in wind forecasting. In calculating the amount of fuel required by paragraph G135.2.7(a)(1) of this appendix, the certificate holder must increase the actual forecast wind speed by 5% (resulting in an increase in headwind or a decrease in tailwind) to account for any potential errors in wind forecasting. If a certificate holder is not using the actual forecast wind based on a wind model accepted by the FAA, the airplane must carry additional fuel equal to 5% of the fuel required by paragraph G135.2.7(a) of this appendix, as reserve fuel to allow for errors in wind data.

(3) Fuel to account for icing. In calculating the amount of fuel required by paragraph G135.2.7(a)(1) of this appendix, (after completing the wind calculation in G135.2.7(a)(2) of this appendix), the certificate holder must ensure that the airplane carries the greater of the following amounts of fuel in anticipation of possible icing during the diversion:

(i) Fuel that would be burned as a result of airframe icing during 10 percent of the time icing is forecast (including the fuel used by engine and wing anti-ice during this period).

(ii) Fuel that would be used for engine anti-ice, and if appropriate wing anti-ice, for the entire time during which icing is forecast.

(4) Fuel to account for engine deterioration. In calculating the amount of fuel required by paragraph G135.2.7(a)(1) of this appendix (after completing the wind calculation in paragraph G135.2.7(a)(2) of this appendix), the certificate holder must ensure the airplane also carries fuel equal to 5% of the fuel specified above, to account for deterioration in cruise fuel burn performance unless the certificate holder has a program to monitor airplane in-service deterioration to cruise fuel burn performance.

(b) *Fuel to account for holding, approach, and landing.* In addition to the fuel required by paragraph G135.2.7 (a) of this appendix, the airplane must carry fuel sufficient to hold at 1500 feet above field elevation for 15 minutes upon reaching the ETOPS Alternate Airport and then conduct an instrument approach and land.

(c) *Fuel to account for APU use.* If an APU is a required power source, the certificate holder must account for its fuel consumption during the appropriate phases of flight.

G135.2.8 *Maintenance Program Requirements.* In order to conduct an ETOPS flight under §135.364, each certificate holder must develop and comply with the ETOPS maintenance program as authorized in the certificate holder's operations specifications for each two-engine airplane-engine combination used in ETOPS. This provision does not apply to operations using an airplane with more than two engines. The certificate holder must develop this ETOPS maintenance program to supplement the maintenance program currently approved for the operator. This ETOPS maintenance program must include the following elements:

(a) *ETOPS maintenance document.* The certificate holder must have an ETOPS maintenance document for use by each person involved in ETOPS. The document must—

(1) List each ETOPS Significant System,

(2) Refer to or include all of the ETOPS maintenance elements in this section,

(3) Refer to or include all supportive programs and procedures,

(4) Refer to or include all duties and responsibilities, and

(5) Clearly state where referenced material is located in the certificate holder's document system.

(b) *ETOPS pre-departure service check.* The certificate holder must develop a pre-departure check tailored to their specific operation.

(1) The certificate holder must complete a pre-departure service check immediately before each ETOPS flight.

(2) At a minimum, this check must:

(i) Verify the condition of all ETOPS Significant Systems;

(ii) Verify the overall status of the airplane by reviewing applicable maintenance records; and

(iii) Include an interior and exterior inspection to include a determination of engine and APU oil levels and consumption rates.

(3) An ETOPS qualified person must accomplish all ETOPS required items specified in the ETOPS pre-departure service check and certify by signature that the check has been completed.

(c) *Limitations on dual maintenance.* (1) Except as specified in paragraph G135.2.8(c)(2) of this appendix, the certificate holder may not perform scheduled or unscheduled dual maintenance during the same maintenance visit on the same or a substantially similar ETOPS Significant System listed in the ETOPS maintenance document, if the improper maintenance could result in the failure of an ETOPS Significant System.

(2) In the event dual maintenance as defined in paragraph G135.2.8(c)(1) of this appendix cannot be avoided, the certificate holder may perform maintenance provided:

(i) The maintenance action on each affected ETOPS Significant System is performed by a different technician, or

(ii) The maintenance action on each affected ETOPS Significant System is performed by the same technician under the direct supervision of a second qualified individual; and

(iii) For either paragraph G135.2.8(c)(2)(i) or (ii) of this appendix, a qualified individual conducts a ground verification test and any in-flight verification test required under the program developed pursuant to paragraph G135.2.8(d) of this appendix.

(d) *Verification program.* The certificate holder must develop a program for the resolution of discrepancies that will ensure the effectiveness of maintenance actions taken on ETOPS Significant Systems. The verification program must identify potential problems and verify satisfactory corrective action. The verification program must include ground verification and in-flight verification policy and procedures. The certificate holder must establish procedures to clearly indicate who is going to initiate the verification action and what action is necessary. The verification action may be performed on an ETOPS revenue flight provided the verification action is documented as satisfactorily completed upon reaching the ETOPS entry point.

(e) *Task identification.* The certificate holder must identify all ETOPS-specific tasks. An ETOPS qualified person must accomplish and certify by signature that the ETOPS-specific task has been completed.

(f) *Centralized maintenance control procedures.* The certificate holder must develop procedures for centralized maintenance control for ETOPS.

(g) *ETOPS parts control program.* The certificate holder must develop an ETOPS parts control program to ensure the proper identification of parts used to maintain the configuration of airplanes used in ETOPS.

(h) *Enhanced Continuing Analysis and Surveillance System (E–CASS) program.* A certificate holder's existing CASS must be enhanced to include all elements of the ETOPS maintenance program. In addition to the reporting requirements of §135.415 and §135.417, the program includes reporting procedures, in the form specified in §135.415(e), for the following significant events detrimental to ETOPS within 96 hours of the occurrence to the certificate holding district office (CHDO):

(1) IFSDs, except planned IFSDs performed for flight training.

(2) Diversions and turnbacks for failures, malfunctions, or defects associated with any airplane or engine system.

(3) Uncommanded power or thrust changes or surges.

(4) Inability to control the engine or obtain desired power or thrust.

(5) Inadvertent fuel loss or unavailability, or uncorrectable fuel imbalance in flight.

(6) Failures, malfunctions or defects associated with ETOPS Significant Systems.

(7) Any event that would jeopardize the safe flight and landing of the airplane on an ETOPS flight.

(i) *Propulsion system monitoring.*

The certificate holder, in coordination with the CHDO, must—

(1) Establish criteria as to what action is to be taken when adverse trends in propulsion system conditions are detected, and

(2) Investigate common cause effects or systemic errors and submit the findings to the CHDO within 30 days.

(j) *Engine condition monitoring.*

(1) The certificate holder must establish an engine-condition monitoring program to detect deterioration at an early stage and to allow for corrective action before safe operation is affected.

(2) This program must describe the parameters to be monitored, the method of data collection, the method of analyzing data, and the process for taking corrective action.

(3) The program must ensure that engine limit margins are maintained so that a prolonged engine-inoperative diversion may be conducted at approved power levels and in all expected environmental conditions without exceeding approved engine limits. This includes approved limits for items such as rotor speeds and exhaust gas temperatures.

(k) *Oil consumption monitoring.* The certificate holder must develop an engine oil consumption monitoring program to ensure that there is enough oil to complete each ETOPS flight. APU oil consumption must be included if an APU is required for ETOPS. The operator's consumption limit may not exceed the manufacturer's recommendation. Monitoring must be continuous and include oil added at each ETOPS departure point. The program must compare the amount of oil added at each ETOPS departure point with the running average consumption to identify sudden increases.

(l) *APU in-flight start program.* If an APU is required for ETOPS, but is not required to run during the ETOPS portion of the flight, the certificate holder must have a program acceptable to the FAA for cold soak in-flight start and run reliability.

(m) *Maintenance training.* For each airplane-engine combination, the certificate holder must develop a maintenance training program to ensure that it provides training adequate to support ETOPS. It must include ETOPS specific training for all persons involved in ETOPS maintenance that focuses on the special nature of ETOPS. This training must be in addition to the operator's

maintenance training program used to qualify individuals for specific airplanes and engines.

(n) *Configuration, maintenance, and procedures (CMP) document.* The certificate holder must use a system to ensure compliance with the minimum requirements set forth in the current version of the CMP document for each airplane-engine combination that has a CMP.

(o) *Reporting.* The certificate holder must report quarterly to the CHDO and the airplane and engine manufacturer for each airplane authorized for ETOPS. The report must provide the operating hours and cycles for each airplane.

G135.2.9 *Delayed compliance date for all airplanes.* A certificate holder need not comply with this appendix for any airplane until February 15, 2008.

[Doc. No. FAA–2002–6717, 72 FR 1885, Jan. 16, 2007, as amended by Amdt. 135–108, 72 FR 7348, Feb. 15, 2007; 72 FR 26542, May 10, 2007]

PART 136—COMMERCIAL AIR TOURS AND NATIONAL PARKS AIR TOUR MANAGEMENT

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APPENDIX A TO PART 136—SPECIAL OPERATING RULES FOR AIR TOUR OPERATORS IN THE STATE OF HAWAII

AUTHORITY: 49 U.S.C. 106(g), 40113, 40119, 44101, 44701, 44701–44702, 44705, 44709–44711, 44713, 44716–44717, 44722, 44901, 44903–44904, 44912, 46105.

SOURCE: Docket No. FAA–2001–8690, 67 FR 65667, Oct. 25, 2002, unless otherwise noted.

Subpart A—National Air Tour Safety Standards

SOURCE: Docket No. FAA–1998–4521, 72 FR 6912, Feb. 13, 2007, unless otherwise noted.

§ 136.1 Applicability and definitions.

(a) This subpart applies to each person operating or intending to operate a commercial air tour in an airplane or helicopter and, when applicable, to all occupants of the airplane or helicopter engaged in a commercial air tour. When any requirement of this subpart is more stringent than any other requirement of this chapter, the person operating the commercial air tour must comply with the requirement in this subpart.

(b) As of September 11, 2007, this subpart is applicable to:

(1) Part 121 or 135 operators conducting a commercial air tour and holding a part 119 certificate;

(2) Part 91 operators conducting flights as described in §119.1(e)(2); and

(3) Part 91 operators conducting flights as described in 14 CFR 91.146

(c) This subpart is not applicable to operations conducted in balloons, gliders (powered or un-powered), parachutes (powered or un-powered), gyroplanes, or airships.

(d) For the purposes of this subpart the following definitions apply:

Commercial Air Tour means a flight conducted for compensation or hire in an airplane or helicopter where a purpose of the flight is sightseeing. The FAA may consider the following factors in determining whether a flight is a commercial air tour for purposes of this subpart:

(1) Whether there was a holding out to the public of willingness to conduct a sightseeing flight for compensation or hire;

(2) Whether the person offering the flight provided a narrative that referred to areas or points of interest on the surface below the route of the flight;

(3) The area of operation;

(4) How often the person offering the flight conducts such flights;

(5) The route of the flight;

(6) The inclusion of sightseeing flights as part of any travel arrangement package;

(7) Whether the flight in question would have been canceled based on poor visibility of the surface below the route of the flight; and

(8) Any other factors that the FAA considers appropriate.

Commercial Air Tour operator means any person who conducts a commercial air tour.

Life preserver means a flotation device used by an aircraft occupant if the aircraft ditches in water. If an inflatable device, it must be un-inflated and ready for its intended use once inflated. In evaluating whether a non-inflatable life preserver is acceptable to the FAA, the operator must demonstrate to the FAA that such a preserver can be used during an evacuation and will allow all passengers to exit the aircraft without blocking the exit. Each occupant must have the physical capacity to wear and inflate the type of device used once briefed by the commercial air tour operator. Seat cushions do not meet this definition.

Raw terrain means any area on the surface, including water, devoid of any person, structure, vehicle, or vessel.

Shoreline means that area of the land adjacent to the water of an ocean, sea, lake, pond, river or tidal basin that is above the high water mark and excludes land areas unsuitable for landing such as vertical cliffs or land intermittently under water during the particular flight.

Suitable landing area for helicopters means an area that provides the operator reasonable capability to land without damage to equipment or injury to persons. Suitable landing areas must be site-specific, designated by the operator, and accepted by the FAA. These site-specific areas would provide an emergency landing area for a single-engine helicopter or a multiengine helicopter that does not have the capability to reach a safe landing area after an engine power loss.

(e) In an in-flight emergency requiring immediate action, the pilot in command may deviate from any rule of this subpart to the extent required to meet that emergency.

§ 136.3 Letters of Authorization.

Operators subject to this subpart who have Letters of Authorization may use the procedures described in 14 CFR 119.51 to amend or have the FAA reconsider those Letters of Authorization.

§ 136.5 Additional requirements for Hawaii.

No person may conduct a commercial air tour in the State of Hawaii unless they comply with the additional requirements and restrictions in appendix A to part 136.

§ 136.7 Passenger briefings.

(a) Before takeoff each pilot in command shall ensure that each passenger has been briefed on the following:

(1) Procedures for fastening and unfastening seatbelts;

(2) Prohibition on smoking; and

(3) Procedures for opening exits and exiting the aircraft.

(b) For flight segments over water beyond the shoreline, briefings must also include:

(1) Procedures for water ditching;

(2) Use of required life preservers; and

(3) Procedures for emergency exit from the aircraft in the event of a water landing.

§ 136.9 Life preservers for over water.

(a) Except as provided in paragraphs (b) or (c) of this section, the operator and pilot in command of commercial air tours over water beyond the shoreline must ensure that each occupant is wearing a life preserver from before takeoff until flight is no longer over water.

(b) The operator and pilot in command of a commercial air tour over water beyond the shoreline must ensure that a life preserver is readily available for its intended use and easily accessible to each occupant if:

(1) The aircraft is equipped with floats; or

(2)The airplane is within power-off gliding distance to the shoreline for the duration of the time that the flight is over water.

(3)The aircraft is a multi engine that can be operated with the critical engine inoperative at a weight that will allow it to climb, at least 50 feet a minute, at an altitude of 1,000 feet above the surface, as provided in the Airplane Flight Manual or the Rotorcraft Flight Manual, as appropriate.

(c) No life preserver is required if the overwater operation is necessary only for takeoff or landing.

§ 136.11 Helicopter floats for over water.

(a) A helicopter used in commercial air tours over water beyond the shoreline must be equipped with fixed floats or an inflatable flotation system adequate to accomplish a safe emergency ditching, if—

(1) It is a single-engine helicopter; or

(2) It is a multi-engine helicopter that cannot be operated with the critical engine inoperative at a weight that will allow it to climb, at least 50 feet a minute, at an altitude of 1,000 feet above the surface, as provided in the Rotorcraft Flight Manual (RFM).

(b) Each helicopter that is required to be equipped with an inflatable flotation system must have:

(1) The activation switch for the flotation system on one of the primary flight controls, and

(2) The flotation system armed when the helicopter is over water and is flying at a speed that does not exceed the maximum speed prescribed in the Rotorcraft Flight Manual for flying with the flotation system armed.

(c) Fixed floats or an inflatable flotation system is not required for a helicopter under this section if:

(1) The helicopter is over water only during the takeoff or landing portion of the flight, or

(2) The helicopter is operated within power-off gliding distance to the shoreline for the duration of the flight and each occupant is wearing a life preserver from before takeoff until the aircraft is no longer over water.

(d) Air tour operators required to comply with paragraphs (a) and/or (b) of this section must meet these requirements on or before September 5, 2008.

§ 136.13 Helicopter performance plan and operations.

(a) Each operator must complete a performance plan before each helicopter commercial air tour, or flight operated under 14 CFR 91.146 or 91.147. The pilot in command must review for accuracy and comply with the performance plan on the day the flight is flown. The performance plan must be based on the information in the Rotorcraft Flight Manual (RFM) for that helicopter, taking into consideration the maximum density altitude for which the operation is planned, in order to determine:

(1) Maximum gross weight and center of gravity (CG) limitations for hovering in ground effect;

(2) Maximum gross weight and CG limitations for hovering out of ground effect; and

(3) Maximum combination of weight, altitude, and temperature for which height/velocity information in the RFM is valid.

(b) Except for the approach to and transition from a hover for the purpose of takeoff and landing, or during takeoff and landing, the pilot in command must make a reasonable plan to operate the helicopter outside of the caution/warning/avoid area of the limiting height/velocity diagram.

(c) Except for the approach to and transition from a hover for the purpose of takeoff and landing, during takeoff and landing, or when necessary for safety of flight, the pilot in command must operate the helicopter in compliance with the plan described in paragraph (b) of this section.

§§ 136.15–136.29 [Reserved]

Subpart B—National Parks Air Tour Management

SOURCE: Docket. No. FAA–1998–4521, 72 FR 6912, Feb. 13, 2007, unless otherwise noted.

§ 136.31 Applicability.

(a) This part restates and paraphrases several sections of the National Parks Air Tour Management Act of 2000, including section 803 (codified at 49 U.S.C. 40128) and sections 806 and 809. This subpart clarifies the requirements for the development of an air

tour management plan for each park in the national park system where commercial air tour operations are flown.

(b) Except as provided in paragraph (c) of this section, this subpart applies to each commercial air tour operator who conducts a commercial air tour operation over—

(1) A unit of the national park system;

(2) Tribal lands as defined in this subpart; or

(3) Any area within one-half mile outside the boundary of any unit of the national park system.

(c) This subpart does not apply to a commercial air tour operator conducting a commercial air tour operation—

(1) Over the Grand Canyon National Park;

(2) Over that portion of tribal lands within or abutting the Grand Canyon National Park;

(3) Over any land or waters located in the State of Alaska; or

(4) While flying over or near the Lake Mead Recreation Area, solely as a transportation route, to conduct a commercial air tour over the Grand Canyon National Park.

[Doc. No. FAA–2001–8690, 67 FR 65667, Oct. 25, 2002. Redesignated and amended by Amdt. 136–1, 72 FR 6912, Feb. 13, 2007]

§ 136.33 Definitions.

For purposes of this subpart—

(a) *Commercial air tour operator* means any person who conducts a commercial air tour operation.

(b) *Existing commercial air tour operator* means a commercial air tour operator that was actively engaged in the business of providing commercial air tour operations over a national park at any time during the 12-month period ending on April 5, 2000.

(c) *New entrant commercial air tour operator* means a commercial air tour operator that—

(1) Applies for operating authority as a commercial air tour operator for a national park or tribal lands; and

(2) Has not engaged in the business of providing commercial air tour operations over the national park or tribal lands for the 12-month period preceding enactment.

(d) *Commercial air tour operation*—

(1) Means any flight, conducted for compensation or hire in a powered aircraft where a purpose of the flight is sightseeing over a national park, within ½ mile outside the boundary of any national park, or over tribal lands, during which the aircraft flies—

(i) Below 5,000 feet above ground level (except for the purpose of takeoff or landing, or as necessary for the safe operation of an aircraft as determined under the rules and regulations of the Federal Aviation Administration requiring the pilot-in-command to take action to ensure the safe operation of the aircraft);

(ii) Less than 1 mile laterally from any geographic feature within the park (unless more than ½ mile outside the boundary); or

(iii) Except as provided in § 136.35.

(2) The Administrator may consider the following factors in determining whether a flight is a commercial air tour operation for purposes of this subpart—

(i) Whether there was a holding out to the public of willingness to conduct a sightseeing flight for compensation or hire;

(ii) Whether a narrative that referred to areas or points of interest on the surface below the route of the flight was provided by the person offering the flight;

(iii) The area of operation;

(iv) The frequency of flights conducted by the person offering the flight;

(v) The route of flight;

(vi) The inclusion of sightseeing flights as part of any travel arrangement package offered by the person offering the flight;

(vii) Whether the flight would have been canceled based on poor visibility of the surface below the route of the flight; and

(viii) Any other factors that the Administrator and Director consider appropriate.

(3) For purposes of § 136.35, means any flight conducted for compensation or hire in a powered aircraft where a purpose of the flight is sightseeing over a national park.

(e) *National park* means any unit of the national park system. (See title 16 of the U.S. Code, section 1, *et seq.*)

(f) *Tribal lands* means that portion of Indian country (as that term is defined in section 1151 of title 18 of the U.S. Code) that is within or abutting a national park.

(g) *Administrator* means the Administrator of the Federal Aviation Administration.

(h) *Director* means the Director of the National Park Service.

(i) *Superintendent* means the duly appointed representative of the National Park Service for a particular unit of the national park system.

[Doc. No. FAA–2001–8690, 67 FR 65667, Oct. 25, 2002. Redesignated and amended by Amdt. 136–1, 72 FR 6912, Feb. 13, 2007; Amdt. 136–1, 72 FR 31450, June 7, 2007]

§ 136.35 Prohibition of commercial air tour operations over the Rocky Mountain National Park.

All commercial air tour operations in the airspace over the Rocky Mountain National Park are prohibited regardless of altitude.

[Doc. No. FAA–2001–8690, 67 FR 65667, Oct. 25, 2002. Redesignated by Amdt. 136–1, 72 FR 6912, Feb. 13, 2007]

§ 136.37 Overflights of national parks and tribal lands.

(a) *General.* A commercial air tour operator may not conduct commercial air tour operations over a national park or tribal land except—

(1) In accordance with this section;

(2) In accordance with conditions and limitations prescribed for that operator by the Administrator; and

(3) In accordance with any applicable air tour management plan for the park or tribal lands.

(b) *Application for operating authority.* Before commencing commercial air tour operations over a national park or tribal lands, a commercial air tour operator shall apply to the Administrator for authority to conduct the operations over the park or tribal lands.

(c) *Number of operations authorized.* In determining the number of authorizations to issue to provide commercial air tour operations over a national park, the Administrator, in cooperation with the Director, shall take into consideration the provisions of the air tour management plan, the number of existing commercial air tour operators and current level of service and equipment provided by any such operators, and the financial viability of each commercial air tour operation.

(d) *Cooperation with National Park Service.* Before granting an application under this subpart, the Administrator, in cooperation with the Director, shall develop an air tour management plan in accordance with §136.39 and implement such a plan.

(e) *Time limit on response to applications.* Every effort will be made to act on any application under this subpart and issue a decision on the application not later than 24 months after it is received or amended.

(f) *Priority.* In acting on applications under this paragraph to provide commercial air tour operations over a national park, the Administrator shall give priority to an application under this paragraph in any case where a new entrant commercial air tour operator is seeking operating authority with respect to that national park.

(g) *Exception.* Notwithstanding this section, commercial air tour operators may conduct commercial air tour operations over a national park under part 91 of this chapter if—

(1) Such activity is permitted under part 119 of this chapter;

(2) The operator secures a letter of agreement from the Administrator and the Superintendent for that park describing the conditions under which the operations will be conducted; and

(3) The number of operations under this exception is limited to not more than a total of 5 flights by all operators in any 30-day period over a particular park.

(h) *Special rule for safety requirement.* Notwithstanding §136.41, an existing commercial air tour operator shall apply, not later than January 23, 2003 for operating authority under part 119 of this chapter, for certification under part 121 or part 135 of this chapter. A new entrant commercial air tour operator shall apply for such authority before conducting commercial air tour operations over a national park or tribal lands that are within or abut a national park. The Administrator shall make every effort to act on such application for a new entrant and issue a decision on the application not later than

24 months after it is received or amended.

[Doc. No. FAA–2001–8690, 67 FR 65667, Oct. 25, 2002. Redesignated and amended by Amdt. 136–1, 72 FR 6912, Feb. 13, 2007; Amdt. 136–1, 72 FR 31450]

§ 136.39 Air tour management plans (ATMP).

(a) *Establishment.* The Administrator, in cooperation with the Director, shall establish an air tour management plan for any national park or tribal land for which such a plan is not in effect whenever a person applies for authority to conduct a commercial air tour operation over the park. The air tour management plan shall be developed by means of a public process in accordance with paragraph (d) of this section. The objective of any air tour management plan is to develop acceptable and effective measures to mitigate or prevent the significant adverse impacts, if any, of commercial air tour operations upon the natural and cultural resources, visitor experiences, and tribal lands.

(b) *Environmental determination.* In establishing an air tour management plan under this section, the Administrator and the Director shall each sign the environmental decision document required by section 102 of the National Environmental Policy Act of 1969 (42 U.S.C. 4332) which may include a finding of no significant impact, an environmental assessment, or an environmental impact statement and the record of decision for the air tour management plan.

(c) *Contents.* An air tour management plan for a park—

(1) May prohibit commercial air tour operations in whole or in part;

(2) May establish conditions for the conduct of commercial air tour operations, including, but not limited to, commercial air tour routes, maximum number of flights per unit of time, maximum and minimum altitudes, time of day restrictions, restrictions for particular events, intrusions on privacy on tribal lands, and mitigation of noise, visual, or other impacts;

(3) Shall apply to all commercial air tour operations within ½ mile outside the boundary of a national park;

(4) Shall include incentives (such as preferred commercial air tour routes and altitudes, and relief from caps and curfews) for the adoption of quiet technology aircraft by commercial air tour operators conducting commercial air tour operations at the park;

(5) Shall provide for the initial allocation of opportunities to conduct commercial air tour operations if the plan includes a limitation on the number of commercial air tour operations for any time period; and

(6) Shall justify and document the need for measures taken pursuant to paragraphs (c)(1) through (c)(5) of this section and include such justification in the record of decision.

(d) *Procedure.* In establishing an ATMP for a national park or tribal lands, the Administrator and Director shall—

(1) Hold at least one public meeting with interested parties to develop the air tour management plan;

(2) Publish the proposed plan in the FEDERAL REGISTER for notice and comment and make copies of the proposed plan available to the public;

(3) Comply with the regulations set forth in 40 CFR 1501.3 and 1501.5 through 1501.8 (for the purposes of complying with 40 CFR 1501.3 and 1501.5 through 1501.8, the Federal Aviation Administration is the lead agency and the National Park Service is a cooperating agency); and

(4) Solicit the participation of any Indian tribe whose tribal lands are, or may be, overflown by aircraft involved in a commercial air tour operation over the park or tribal lands to which the plan applies, as a cooperating agency under the regulations referred to in paragraph (d)(3) of this section.

(e) *Amendments.* The Administrator, in cooperation with the Director, may make amendments to an air tour management plan. Any such amendments will be published in the FEDERAL REGISTER for notice and comment. A request for amendment of an ATMP will be made in accordance with § 11.25 of this chapter as a petition for rulemaking.

[Doc. No. FAA–2001–8690, 67 FR 65667, Oct. 25, 2002. Redesignated by Amdt. 136–1, 72 FR 6912, Feb. 13, 2007]

§ 136.41 Interim operating authority.

(a) *General.* Upon application for operating authority, the Administrator shall grant interim operating authority under this section to a commercial air tour operator for commercial air tour operations over a national park or tribal land for which the operator is an existing commercial air tour operator.

(b) *Requirements and limitations.* Interim operating authority granted under this section—

(1) Shall provide annual authorization only for the greater of—

(i) The number of flights used by the operator to provide the commercial air tour operations within the 12-month period prior to April 5, 2000; or

(ii) The average number of flights per 12-month period used by the operator to provide such operations within the 36-month period prior to April 5, 2000, and for seasonal operations, the number of flights so used during the season or seasons covered by that 12-month period;

(2) May not provide for an increase in the number of commercial air tour operations conducted during any time period by the commercial air tour operator above the number the air tour operator was originally granted unless such an increase is agreed to by the Administrator and the Director;

(3) Shall be published in the FEDERAL REGISTER to provide notice and opportunity for comment;

(4) May be revoked by the Administrator for cause;

(5) Shall terminate 180 days after the date on which an air tour management plan is established for the park and tribal lands;

(6) Shall promote protection of national park resources, visitor experiences, and tribal lands;

(7) Shall promote safe commercial air tour operations;

(8) Shall promote the adoption of quiet technology, as appropriate, and

(9) Shall allow for modifications of the interim operating authority based on experience if the modification improves protection of national park resources and values and of tribal lands.

(c) *New entrant operators.* The Administrator, in cooperation with the Director, may grant interim operating authority under this paragraph (c) to an air tour operator for a national park or tribal lands for which that operator is a new entrant air tour operator if the Administrator determines the authority is necessary to ensure competition in the provision of commercial air tour operations over the park or tribal lands.

(1) *Limitation.* The Administrator may not grant interim operating authority under this paragraph (c) if the Administrator determines that it would create a safety problem at the park or on the tribal lands, or if the Director determines that it would create a noise problem at the park or on the tribal lands.

(2) *ATMP limitation.* The Administrator may grant interim operating authority under this paragraph (c) only if the ATMP for the park or tribal lands to which the application relates has not been developed within 24 months after April 5, 2000.

[Doc. No. FAA–2001–8690, 67 FR 65667, Oct. 25, 2002. Redesignated by Amdt. 136–1, 72 FR 6912, Feb. 13, 2007]

§§ 136.43–136.49 [Reserved]

Subpart C—Grand Canyon National Park

§§ 136.51–136.69 [Reserved]

APPENDIX A TO PART 136—SPECIAL OPERATING RULES FOR AIR TOUR OPERATORS IN THE STATE OF HAWAII

Section 1. Applicability. This appendix prescribes operating rules for airplane and helicopter visual flight rules air tour flights conducted in the State of Hawaii under 14 CFR parts 91, 121, and 135. This appendix does not apply to:

(a) Operations conducted under 14 CFR part 121 in airplanes with a passenger seating configuration of more than 30 seats or a payload capacity of more than 7,500 pounds.

(b) Flights conducted in gliders or hot air balloons.

Section 2. Definitions. For the purposes of this appendix:

''Air tour'' means any sightseeing flight conducted under visual flight rules in an airplane or helicopter for compensation or hire.

''Air tour operator'' means any person who conducts an air tour.

Section 3. Helicopter flotation equipment. No person may conduct an air tour in Hawaii in a single-engine helicopter beyond the shore

of any island, regardless of whether the helicopter is within gliding distance of the shore, unless:

(a) The helicopter is amphibious or is equipped with floats adequate to accomplish a safe emergency ditching and approved flotation gear is easily accessible for each occupant; or

(b) Each person on board the helicopter is wearing approved flotation gear.

Section 4. Helicopter performance plan. Each operator must complete a performance plan before each helicopter air tour flight. The performance plan must be based on the information in the Rotorcraft Flight Manual (RFM), considering the maximum density altitude for which the operation is planned for the flight to determine the following:

(a) Maximum gross weight and center of gravity (CG) limitations for hovering in ground effect;

(b) Maximum gross weight and CG limitations for hovering out of ground effect; and,

(c) Maximum combination of weight, altitude, and temperature for which height-velocity information in the RFM is valid.

The pilot in command (PIC) must comply with the performance plan.

Section 5. Helicopter Operating Limitations. Except for approach to and transition from a hover, and except for the purpose of takeoff and landing, the PIC shall operate the helicopter at a combination of height and forward speed (including hover) that would permit a safe landing in event of engine power loss, in accordance with the height-speed envelope for that helicopter under current weight and aircraft altitude.

Section 6. Minimum flight altitudes. Except when necessary for takeoff and landing, or operating in compliance with an air traffic control clearance, or as otherwise authorized by the Administrator, no person may conduct an air tour in Hawaii:

(a) Below an altitude of 1,500 feet above the surface over all areas of the State of Hawaii, and,

(b) Closer than 1,500 feet to any person or property; or,

(c) Below any altitude prescribed by federal statute or regulation.

Section 7. Passenger briefing. Before takeoff, each PIC of an air tour flight of Hawaii with a flight segment beyond the ocean shore of any island shall ensure that each passenger has been briefed on the following, in addition to requirements set forth in 14 CFR 91.107, 121.571, or 135.117:

(a) Water ditching procedures;

(b) Use of required flotation equipment; and

(c) Emergency egress from the aircraft in event of a water landing.

[Docket No. FAA–1998–4521, 72 FR 6914 Feb. 13, 2007]

PART 137—AGRICULTURAL AIRCRAFT OPERATIONS

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AUTHORITY: 49 U.S.C. 106(g), 40103, 40113, 44701–44702.

SOURCE: Docket No. 1464, 30 FR 8106, June 24, 1965, unless otherwise noted.

Subpart A—General

§ 137.1 Applicability.

(a) This part prescribes rules governing—

(1) Agricultural aircraft operations within the United States; and

(2) The issue of commercial and private agricultural aircraft operator certificates for those operations.

(b) In a public emergency, a person conducting agricultural aircraft operations under this part may, to the extent necessary, deviate from the operating rules of this part for relief and welfare activities approved by an agency of the United States or of a State or local government.

(c) Each person who, under the authority of this section, deviates from a rule of this part shall, within 10 days after the deviation send to the nearest FAA Flight Standards District Office a complete report of the aircraft operation involved, including a description of the operation and the reasons for it.

[Doc. No. 1464, 30 FR 8106, June 24, 1965, as amended by Amdt. 137–13, 54 FR 39294, Sept. 25, 1989]

§ 137.3 Definition of terms.

For the purposes of this part—

Agricultural aircraft operation means the operation of an aircraft for the purpose of (1) dispensing any economic poison, (2) dispensing any other substance intended for plant nourishment, soil treatment, propagation of plant life, or pest control, or (3) engaging in dispensing activities directly affecting agriculture, horticulture, or forest preservation, but not including the dispensing of live insects.

Economic poison means (1) any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any insects, rodents, nematodes, fungi, weeds, and other forms of plant or animal life or viruses, except viruses on or in living man or other animals, which the Secretary of Agriculture shall declare to be a pest, and (2) any substance or mixture of substances intended for use as a plant regulator, defoliant or desiccant.

[Doc. No. 1464, 30 FR 8106, June 24, 1965, as amended by Amdt. 137–3, 33 FR 9601, July 2, 1968]

Subpart B—Certification Rules

§ 137.11 Certificate required.

(a) Except as provided in paragraphs (c) and (d) of this section, no person may conduct agricultural aircraft operations without, or in violation of, an agricultural aircraft operator certificate issued under this part.

(b) Notwithstanding part 133 of this chapter, an operator may, if he complies with this part, conduct agricultural aircraft operations with a rotorcraft with external dispensing equipment in place without a rotorcraft external-load operator certificate.

(c) A Federal, State, or local government conducting agricultural aircraft operations with public aircraft need not comply with this subpart.

(d) The holder of a rotorcraft external-load operator certificate under part 133 of this chapter conducting an agricultural aircraft operation, involving only the dispensing of water on forest fires by rotorcraft external-load means, need not comply with this subpart.

[Doc. No. 1464, 30 FR 8106, June 24, 1965, as amended by Amdt. 137–3, 33 FR 9601, July 2, 1968; Amdt. 137–6, 41 FR 35060, Aug. 19, 1976]

§ 137.15 Application for certificate.

An application for an agricultural aircraft operator certificate is made on a form and in a manner prescribed by the Administrator, and filed with the FAA Flight Standards District Office that has jurisdiction over the area in which the applicant's home base of operations is located.

[Doc. No. 1464, 30 FR 8106, June 24, 1965, as amended by Amdt. 137–13, 54 FR 39294, Sept. 25, 1989]

§ 137.17 Amendment of certificate.

(a) An agricultural aircraft operator certificate may be amended—

(1) On the Administrator's own initiative, under section 609 of the Federal Aviation Act of 1958 (49 U.S.C. 1429) and part 13 of this chapter; or

(2) Upon application by the holder of that certificate.

(b) An application to amend an agricultural aircraft operator certificate is submitted on a form and in a manner prescribed by the Administrator. The applicant must file the application

with the FAA Flight Standards District Office having jurisdiction over the area in which the applicant's home base of operations is located at least 15 days before the date that it proposes the amendment become effective, unless a shorter filing period is approved by that office.

(c) The Flight Standards District Office grants a request to amend a certificate if it determines that safety in air commerce and the public interest so allow.

(d) Within 30 days after receiving a refusal to amend, the holder may petition the Director, Flight Standards Service, to reconsider the refusal.

[Doc. No. 1464, 30 FR 8106, June 24, 1965, as amended by Amdt. 137–9, 43 FR 52206, Nov. 9, 1978; Amdt. 137–11, 45 FR 47838, July 17, 1980; Amdt. 137–13, 54 FR 39294, Sept. 25, 1989]

§ 137.19 Certification requirements.

(a) *General.* An applicant for a private agricultural aircraft operator certificate is entitled to that certificate if he shows that he meets the requirements of paragraphs (b), (d), and (e) of this section. An applicant for a commercial agricultural aircraft operator certificate is entitled to that certificate if he shows that he meets the requirements of paragraphs (c), (d), and (e) of this section. However, if an applicant applies for an agricultural aircraft operator certificate containing a prohibition against the dispensing of economic poisons, that applicant is not required to demonstrate the knowledge required in paragraphs (e)(1) (ii) through (iv) of this section.

(b) *Private operator—pilot.* The applicant must hold a current U.S. private, commercial, or airline transport pilot certificate and be properly rated for the aircraft to be used.

(c) *Commercial operator—pilots.* The applicant must have available the services of at least one person who holds a current U.S. commercial or airline transport pilot certificate and who is properly rated for the aircraft to be used. The applicant himself may be the person available.

(d) *Aircraft.* The applicant must have at least one certificated and airworthy aircraft, equipped for agricultural operation.

(e) *Knowledge and skill tests.* The applicant must show, or have the person who is designated as the chief supervisor of agricultural aircraft operations for him show, that he has satisfactory knowledge and skill regarding agricultural aircraft operations, as described in paragraphs (e) (1) and (2) of this section.

(1) The test of knowledge consists of the following:

(i) Steps to be taken before starting operations, including survey of the area to be worked.

(ii) Safe handling of economic poisons and the proper disposal of used containers for those poisons.

(iii) The general effects of economic poisons and agricultural chemicals on plants, animals, and persons, with emphasis on those normally used in the areas of intended operations; and the precautions to be observed in using poisons and chemicals.

(iv) Primary symptoms of poisoning of persons from economic poisons, the appropriate emergency measures to be taken, and the location of poison control centers.

(v) Performance capabilities and operating limitations of the aircraft to be used.

(vi) Safe flight and application procedures.

(2) The test of skill consists of the following maneuvers that must be shown in any of the aircraft specified in paragraph (d) of this section, and at that aircraft's maximum certificated take-off weight, or the maximum weight established for the special purpose load, whichever is greater:

(i) Short-field and soft-field takeoffs (airplanes and gyroplanes only).

(ii) Approaches to the working area.

(iii) Flare-outs.

(iv) Swath runs.

(v) Pullups and turnarounds.

(vi) Rapid deceleration (quick stops) in helicopters only.

[Doc. No. 1464, 30 FR 8106, June 24, 1965, as amended by Amdt. 137–1, 30 FR 15143, Dec. 8, 1965; Amdt. 137–7, 43 FR 22643, May 25, 1978]

§ 137.21 Duration of certificate.

An agricultural aircraft operator certificate is effective until it is surrendered, suspended, or revoked. The holder of an agricultural aircraft operator

certificate that is suspended or revoked shall return it to the Administrator.

§ 137.23 Carriage of narcotic drugs, marihuana, and depressant or stimulant drugs or substances.

If the holder of a certificate issued under this part permits any aircraft owned or leased by that holder to be engaged in any operation that the certificate holder knows to be in violation of §91.19(a) of this chapter, that operation is a basis for suspending or revoking the certificate.

[Doc. No. 12035, 38 FR 17493, July 2, 1973, as amended by Amdt. 137–12, 54 FR 34332, Aug. 18, 1989]

Subpart C—Operating Rules

§ 137.29 General.

(a) Except as provided in paragraphs (d) and (e) of this section, this subpart prescribes rules that apply to persons and aircraft used in agricultural aircraft operations conducted under this part.

(b) [Reserved]

(c) The holder of an agricultural aircraft operator certificate may deviate from the provisions of part 91 of this chapter without a certificate of waiver, as authorized in this subpart for dispensing operations, when conducting nondispensing aerial work operations related to agriculture, horticulture, or forest preservation in accordance with the operating rules of this subpart.

(d) Sections 137.31 through 137.35, §§137.41, and 137.53 through 137.59 do not apply to persons and aircraft used in agricultural aircraft operations conducted with public aircraft.

(e) Sections 137.31 through 137.35, §§137.39, 137.41, 137.51 through 137.59, and subpart D do not apply to persons and rotorcraft used in agricultural aircraft operations conducted by a person holding a certificate under part 133 of this chapter and involving only the dispensing of water on forest fires by rotorcraft external-load means. However, the operation shall be conducted in accordance with—

(1) The rules of part 133 of this chapter governing rotorcraft external-load operations; and

(2) The operating rules of this subpart contained in §§137.29, 137.37, and §§137.43 through 137.49.

[Doc. No. 1464, 30 FR 8106, June 24, 1965, as amended by Amdt. 137–3, 33 FR 9601, July 2, 1968; Amdt. 137–6, 41 FR 35060, Aug. 19, 1976]

§ 137.31 Aircraft requirements.

No person may operate an aircraft unless that aircraft—

(a) Meets the requirements of §137.19(d); and

(b) Is equipped with a suitable and properly installed shoulder harness for use by each pilot.

§ 137.33 Carrying of certificate.

(a) No person may operate an aircraft unless a facsimile of the agricultural aircraft operator certificate, under which the operation is conducted, is carried on that aircraft. The facsimile shall be presented for inspection upon the request of the Administrator or any Federal, State, or local law enforcement officer.

(b) Notwithstanding part 91 of this chapter, the registration and airworthiness certificates issued for the aircraft need not be carried in the aircraft. However, when those certificates are not carried in the aircraft they shall be kept available for inspection at the base from which the dispensing operation is conducted.

[Doc. No. 1464, 30 FR 8106, June 24, 1965, as amended by Amdt. 137–3, 33 FR 9601, July 2, 1968]

§ 137.35 Limitations on private agricultural aircraft operator.

No person may conduct an agricultural aircraft operation under the authority of a private agricultural aircraft operator certificate—

(a) For compensation or hire;

(b) Over a congested area; or

(c) Over any property unless he is the owner or lessee of the property, or has ownership or other property interest in the crop located on that property.

§ 137.37 Manner of dispensing.

No persons may dispense, or cause to be dispensed, from an aircraft, any material or substance in a manner that

creates a hazard to persons or property on the surface.

[Doc. No. 1464, 30 FR 8106, June 24, 1965, as amended by Amdt. 137–3, 33 FR 9601, July 2, 1968]

§ 137.39 Economic poison dispensing.

(a) Except as provided in paragraph (b) of this section, no person may dispense or cause to be dispensed from an aircraft, any economic poison that is registered with the U.S. Department of Agriculture under the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 135–135k)—

(1) For a use other than that for which it is registered;

(2) Contrary to any safety instructions or use limitations on its label; or

(3) In violation of any law or regulation of the United States.

(b) This section does not apply to any person dispensing economic poisons for experimental purposes under—

(1) The supervision of a Federal or State agency authorized by law to conduct research in the field of economic poisons; or

(2) A permit from the U.S. Department of Agriculture issued pursuant to the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 135–135k).

[Amdt. 137–2, 31 FR 6686, May 5, 1966]

§ 137.41 Personnel.

(a) *Information.* The holder of an agricultural aircraft operator certificate shall insure that each person used in the holder's agricultural aircraft operation is informed of that person's duties and responsibilities for the operation.

(b) *Supervisors.* No person may supervise an agricultural aircraft operation unless he has met the knowledge and skill requirements of § 137.19(e).

(c) *Pilot in command.* No person may act as pilot in command of an aircraft unless he holds a pilot certificate and rating prescribed by § 137.19 (b) or (c), as appropriate to the type of operation conducted. In addition, he must demonstrate to the holder of the Agricultural Aircraft Operator Certificate conducting the operation that he has met the knowledge and skill requirements of § 137.19(e). If the holder of that certificate has designated a person under § 137.19(e) to supervise his agricultural aircraft operations the demonstration must be made to the person so designated. However, a demonstration of the knowledge and skill requirement is not necessary for any pilot in command who—

(1) Is, at the time of the filing of an application by an agricultural aircraft operator, working as a pilot in command for that operator; and

(2) Has a record of operation under that applicant that does not disclose any question regarding the safety of his flight operations or his competence in dispensing agricultural materials or chemicals.

§ 137.42 Fastening of safety belts and shoulder harnesses.

No person may operate an aircraft in operations required to be conducted under part 137 without a safety belt and shoulder harness properly secured about that person except that the shoulder harness need not be fastened if that person would be unable to perform required duties with the shoulder harness fastened.

[Amdt. 137–10, 44 FR 61325, Oct. 25, 1979]

§ 137.43 Operations in controlled airspace designated for an airport.

(a) Except for flights to and from a dispensing area, no person may operate an aircraft within the lateral boundaries of the surface area of Class D airspace designated for an airport unless authorization for that operation has been obtained from the ATC facility having jurisdiction over that area.

(b) No person may operate an aircraft in weather conditions below VFR minimums within the lateral boundaries of a Class E airspace area that extends upward from the surface unless authorization for that operation has been obtained from the ATC facility having jurisdiction over that area.

(c) Notwithstanding § 91.157(a)(2) of this chapter, an aircraft may be operated under the special VFR weather minimums without meeting the requirements prescribed therein.

[Amdt. 137–14, 56 FR 65664, Dec. 17, 1991, as amended by Amdt. 137–14, 58 FR 32840, June 14, 1993]

§ 137.45 Nonobservance of airport traffic pattern.

Notwithstanding part 91 of this chapter, the pilot in command of an aircraft may deviate from an airport traffic pattern when authorized by the control tower concerned. At an airport without a functioning control tower, the pilot in command may deviate from the traffic pattern if—

(a) Prior coordination is made with the airport management concerned;

(b) Deviations are limited to the agricultural aircraft operation;

(c) Except in an emergency, landing and takeoffs are not made on ramps, taxiways, or other areas of the airport not intended for such use; and

(d) The aircraft at all times remains clear of, and gives way to, aircraft conforming to the traffic pattern for the airport.

§ 137.47 Operation without position lights.

Notwithstanding part 91 of this chapter, an aircraft may be operated without position lights if prominent unlighted objects are visible for at least 1 mile and takeoffs and landings at—

(a) Airports with a functioning control tower are made only as authorized by the control tower operator; and

(b) Other airports are made only with the permission of the airport management and no other aircraft operations requiring position lights are in progress at that airport.

§ 137.49 Operations over other than congested areas.

Notwithstanding part 91 of this chapter, during the actual dispensing operation, including approaches, departures, and turnarounds reasonably necessary for the operation, an aircraft may be operated over other than congested areas below 500 feet above the surface and closer than 500 feet to persons, vessels, vehicles, and structures, if the operations are conducted without creating a hazard to persons or property on the surface.

[Amdt. 137–3, 33 FR 9601, July 2, 1968]

§ 137.51 Operation over congested areas: General.

(a) Notwithstanding part 91 of this chapter, an aircraft may be operated over a congested area at altitudes required for the proper accomplishment of the agricultural aircraft operation if the operation is conducted—

(1) With the maximum safety to persons and property on the surface, consistent with the operation; and

(2) In accordance with the requirements of paragraph (b) of this section.

(b) No person may operate an aircraft over a congested area except in accordance with the requirements of this paragraph.

(1) Prior written approval must be obtained from the appropriate official or governing body of the political subdivision over which the operations are conducted.

(2) Notice of the intended operation must be given to the public by some effective means, such as daily newspapers, radio, television, or door-to-door notice.

(3) A plan for each complete operation must be submitted to, and approved by appropriate personnel of the FAA Flight Standards District Office having jurisdiction over the area where the operation is to be conducted. The plan must include consideration of obstructions to flight; the emergency landing capabilities of the aircraft to be used; and any necessary coordination with air traffic control.

(4) Single engine aircraft must be operated as follows:

(i) Except for helicopters, no person may take off a loaded aircraft, or make a turnaround over a congested area.

(ii) No person may operate an aircraft over a congested area below the altitudes prescribed in part 91 of this chapter except during the actual dispensing operation, including the approaches and departures necessary for that operation.

(iii) No person may operate an aircraft over a congested area during the actual dispensing operation, including the approaches and departures for that operation, unless it is operated in a pattern and at such an altitude that the aircraft can land, in an emergency, without endangering persons or property on the surface.

(5) Multiengine aircraft must be operated as follows:

(i) No person may take off a multiengine airplane over a congested area except under conditions that will allow the airplane to be brought to a safe stop within the effective length of the runway from any point on takeoff up to the time of attaining, with all engines operating at normal takeoff power, 105 percent of the minimum control speed with the critical engine inoperative in the takeoff configuration or 115 percent of the power-off stall speed in the takeoff configuration, whichever is greater, as shown by the accelerate stop distance data. In applying this requirement, takeoff data is based upon still-air conditions, and no correction is made for any uphill gradient of 1 percent or less when the percentage is measured as the difference between elevation at the end points of the runway divided by the total length. For uphill gradients greater than 1 percent, the effective takeoff length of the runway is reduced 20 percent for each 1-percent grade.

(ii) No person may operate a multiengine airplane at a weight greater than the weight that, with the critical engine inoperative, would permit a rate of climb of at least 50 feet per minute at an altitude of at least 1,000 feet above the elevation of the highest ground or obstruction within the area to be worked or at an altitude of 5,000 feet, whichever is higher. For the purposes of this subdivision, it is assumed that the propeller of the inoperative engine is in the minimum drag position; that the wing flaps and landing gear are in the most favorable positions; and that the remaining engine or engines are operating at the maximum continuous power available.

(iii) No person may operate any multiengine aircraft over a congested area below the altitudes prescribed in part 91 of this chapter except during the actual dispensing operation, including the approaches, departures, and turnarounds necessary for that operation.

[Doc. No. 1464, 30 FR 8106, June 24, 1965, as amended by Doc. No. 8084, 32 FR 5769, Apr. 11, 1967; Amdt. 137–13, 54 FR 39294, Sept. 25, 1989]

§ 137.53 Operation over congested areas: Pilots and aircraft.

(a) *General.* No person may operate an aircraft over a congested area except in accordance with the pilot and aircraft rules of this section.

(b) *Pilots.* Each pilot in command must have at least—

(1) 25 hours of pilot-in-command flight time in the make and basic model of the aircraft, at least 10 hours of which must have been acquired within the preceding 12 calendar months; and

(2) 100 hours of flight experience as pilot in command in dispensing agricultural materials or chemicals.

(c) *Aircraft.* (1) Each aircraft must—

(i) If it is an aircraft not specified in paragraph (c)(1)(ii) of this section, have had within the preceding 100 hours of time in service a 100-hour or annual inspection by a person authorized by part 65 or 145 of this chapter, or have been inspected under a progressive inspection system; and

(ii) If it is a large or turbine-powered multiengine civil airplane of U.S. registry, have been inspected in accordance with the applicable inspection program requirements of § 91.409 of this chapter.

(2) If other than a helicopter, it must be equipped with a device capable of jettisoning at least one-half of the aircraft's maximum authorized load of agricultural material within 45 seconds. If the aircraft is equipped with a device for releasing the tank or hopper as a unit, there must be a means to prevent inadvertent release by the pilot or other crewmember.

[Doc. No. 1464, 30 FR 8106, June 24, 1965, as amended by Amdt. 137–5, 41 FR 16796, Apr. 22, 1976; Amdt. 137–12, 54 FR 34332, Aug. 18, 1989]

§ 137.55 Business name: Commercial agricultural aircraft operator.

No person may operate under a business name that is not shown on his commercial agricultural aircraft operator certificate.

§ 137.57 Availability of certificate.

Each holder of an agricultural aircraft operator certificate shall keep

that certificate at his home base of operations and shall present it for inspection on the request of the Administrator or any Federal, State, or local law enforcement officer.

§ 137.59 Inspection authority.

Each holder of an agricultural aircraft operator certificate shall allow the Administrator at any time and place to make inspections, including on-the-job inspections, to determine compliance with applicable regulations and his agricultural aircraft operator certificate.

Subpart D—Records and Reports

§ 137.71 Records: Commercial agricultural aircraft operator.

(a) Each holder of a commercial agricultural aircraft operator certificate shall maintain and keep current, at the home base of operations designated in his application, the following records:

(1) The name and address of each person for whom agricultural aircraft services were provided;

(2) The date of the service;

(3) The name and quantity of the material dispensed for each operation conducted; and

(4) The name, address, and certificate number of each pilot used in agricultural aircraft operations and the date that pilot met the knowledge and skill requirements of § 137.19(e).

(b) The records required by this section must be kept at least 12 months and made available for inspection by the Administrator upon request.

§ 137.75 Change of address.

Each holder of an agricultural aircraft operator certificate shall notify the FAA in writing in advance of any change in the address of his home base of operations.

§ 137.77 Termination of operations.

Whenever a person holding an agricultural aircraft operator certificate ceases operations under this part, he shall surrender that certificate to the FAA Flight Standards District Office last having jurisdiction over his operation.

[Doc. No. 1464, 30 FR 8106, June 24, 1965, as amended by Amdt. 137–13, 54 FR 39294, Sept. 25, 1989; 54 FR 52872, Dec. 22, 1989]

PART 139—CERTIFICATION OF AIRPORTS

Subpart A—General

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139.343 Noncomplying conditions.

AUTHORITY: 49 U.S.C. 106(g), 40113, 44701–44706, 44709, 44719.

SOURCE: Docket No. FAA–2000–7479, 69 FR 6424, Feb. 10, 2004, unless otherwise noted.

EDITORIAL NOTE: Nomenclature changes to part 139 appear at 69 FR 24069, May 3, 2004.

Subpart A—General

§ 139.1 Applicability.

(a) This part prescribes rules governing the certification and operation of airports in any State of the United States, the District of Columbia, or any territory or possession of the United States serving any—

(1) Scheduled passenger-carrying operations of an air carrier operating aircraft designed for more than 9 passenger seats, as determined by the aircraft type certificate issued by a competent civil aviation authority; and

(2) Unscheduled passenger-carrying operations of an air carrier operating aircraft designed for at least 31 passenger seats, as determined by the aircraft type certificate issued by a competent civil aviation authority.

(b) This part applies to those portions of a joint-use or shared-use airport that are within the authority of a person serving passenger-carrying operations defined in paragraphs (a)(1) and (a)(2) of this section.

(c) This part does not apply to—

(1) Airports serving scheduled air carrier operations only by reason of being designated as an alternate airport;

(2) Airports operated by the United States;

(3) Airports located in the State of Alaska that only serve scheduled operations of small air carrier aircraft and do not serve scheduled or unscheduled operations of large air carrier aircraft;

(4) Airports located in the State of Alaska during periods of time when not serving operations of large air carrier aircraft; or

(5) Heliports.

§ 139.3 Delegation of authority.

The authority of the Administrator to issue, deny, and revoke Airport Operating Certificates is delegated to the Associate Administrator for Airports, Director of Airport Safety and Standards, and Regional Airports Division Managers.

§ 139.5 Definitions.

The following are definitions of terms used in this part:

AFFF means aqueous film forming foam agent.

Air carrier aircraft means an aircraft that is being operated by an air carrier and is categorized as either a large air carrier aircraft if designed for at least 31 passenger seats or a small air carrier aircraft if designed for more than 9 passenger seats but less than 31 passenger seats, as determined by the aircraft type certificate issued by a competent civil aviation authority.

Air carrier operation means the takeoff or landing of an air carrier aircraft and includes the period of time from 15 minutes before until 15 minutes after the takeoff or landing.

Airport means an area of land or other hard surface, excluding water, that is used or intended to be used for the landing and takeoff of aircraft, including any buildings and facilities.

Airport Operating Certificate means a certificate, issued under this part, for operation of a Class I, II, III, or IV airport.

Average daily departures means the average number of scheduled departures per day of air carrier aircraft computed on the basis of the busiest 3 consecutive calendar months of the immediately preceding 12 consecutive calendar months. However, if the average daily departures are expected to increase, then ''average daily departures'' may be determined by planned rather than current activity, in a manner authorized by the Administrator.

Certificate holder means the holder of an Airport Operating Certificate issued under this part.

Class I airport means an airport certificated to serve scheduled operations of large air carrier aircraft that can also serve unscheduled passenger operations of large air carrier aircraft and/or scheduled operations of small air carrier aircraft.

Class II airport means an airport certificated to serve scheduled operations of small air carrier aircraft and the unscheduled passenger operations of large air carrier aircraft. A Class II airport

cannot serve scheduled large air carrier aircraft.

Class III airport means an airport certificated to serve scheduled operations of small air carrier aircraft. A Class III airport cannot serve scheduled or unscheduled large air carrier aircraft.

Class IV airport means an airport certificated to serve unscheduled passenger operations of large air carrier aircraft. A Class IV airport cannot serve scheduled large or small air carrier aircraft.

Clean agent means an electrically nonconducting volatile or gaseous fire extinguishing agent that does not leave a residue upon evaporation and has been shown to provide extinguishing action equivalent to halon 1211 under test protocols of FAA Technical Report DOT/FAA/AR–95/87.

Heliport means an airport, or an area of an airport, used or intended to be used for the landing and takeoff of helicopters.

Index means the type of aircraft rescue and firefighting equipment and quantity of fire extinguishing agent that the certificate holder must provide in accordance with §139.315.

Joint-use airport means an airport owned by the United States that leases a portion of the airport to a person operating an airport specified under §139.1(a).

Movement area means the runways, taxiways, and other areas of an airport that are used for taxiing, takeoff, and landing of aircraft, exclusive of loading ramps and aircraft parking areas.

Regional Airports Division Manager means the airports division manager for the FAA region in which the airport is located.

Safety area means a defined area comprised of either a runway or taxiway and the surrounding surfaces that is prepared or suitable for reducing the risk of damage to aircraft in the event of an undershoot, overshoot, or excursion from a runway or the unintentional departure from a taxiway.

Scheduled operation means any common carriage passenger-carrying operation for compensation or hire conducted by an air carrier for which the air carrier or its representatives offers in advance the departure location, departure time, and arrival location. It does not include any operation that is conducted as a supplemental operation under 14 CFR part 121 or public charter operations under 14 CFR part 380.

Shared-use airport means a U.S. Government-owned airport that is co-located with an airport specified under §139.1(a) and at which portions of the movement areas and safety areas are shared by both parties.

Unscheduled operation means any common carriage passenger-carrying operation for compensation or hire, using aircraft designed for at least 31 passenger seats, conducted by an air carrier for which the departure time, departure location, and arrival location are specifically negotiated with the customer or the customer's representative. It includes any passenger-carrying supplemental operation conducted under 14 CFR part 121 and any passenger-carrying public charter operation conducted under 14 CFR part 380.

Wildlife hazard means a potential for a damaging aircraft collision with wildlife on or near an airport. As used in this part, ''wildlife'' includes feral animals and domestic animals out of the control of their owners.

NOTE: *Special Statutory Requirement To Operate to or From a Part 139 Airport.* Each air carrier that provides—in an aircraft designed for more than 9 passenger seats—regularly scheduled charter air transportation for which the public is provided in advance a schedule containing the departure location, departure time, and arrival location of the flight must operate to and from an airport certificated under part 139 of this chapter in accordance with 49 U.S.C. 41104(b). That statutory provision contains stand-alone requirements for such air carriers and special exceptions for operations in Alaska and outside the United States. Certain operations by air carriers that conduct public charter operations under 14 CFR part 380 are covered by the statutory requirements to operate to and from part 139 airports. See 49 U.S.C. 41104(b).

§139.7 Methods and procedures for compliance.

Certificate holders must comply with requirements prescribed by subparts C and D of this part in a manner authorized by the Administrator. FAA Advisory Circulars contain methods and procedures for compliance with this part that are acceptable to the Administrator.

Subpart B—Certification

§ 139.101 General requirements.

(a) Except as otherwise authorized by the Administrator, no person may operate an airport specified under § 139.1 of this part without an Airport Operating Certificate or in violation of that certificate, the applicable provisions, or the approved Airport Certification Manual.

(b) Each certificate holder shall adopt and comply with an Airport Certification Manual as required under § 139.203.

(c) Persons required to have an Airport Operating Certificate under this part shall submit their Airport Certification Manual to the FAA for approval, in accordance with the following schedule:

(1) Class I airports—6 months after June 9, 2004.

(2) Class II, III, and IV airports—12 months after June 9, 2004.

§ 139.103 Application for certificate.

Each applicant for an Airport Operating Certificate must—

(a) Prepare and submit an application, in a form and in the manner prescribed by the Administrator, to the Regional Airports Division Manager.

(b) Submit with the application, two copies of an Airport Certification Manual prepared in accordance with subpart C of this part.

§ 139.105 Inspection authority.

Each applicant for, or holder of, an Airport Operating Certificate must allow the Administrator to make any inspections, including unannounced inspections, or tests to determine compliance with 49 U.S.C. 44706 and the requirements of this part.

§ 139.107 Issuance of certificate.

An applicant for an Airport Operating Certificate is entitled to a certificate if—

(a) The applicant provides written documentation that air carrier service will begin on a date certain.

(b) The applicant meets the provisions of § 139.103.

(c) The Administrator, after investigation, finds the applicant is properly and adequately equipped and able to provide a safe airport operating environment in accordance with—

(1) Any limitation that the Administrator finds necessary to ensure safety in air transportation.

(2) The requirements of the Airport Certification Manual, as specified under § 139.203.

(3) Any other provisions of this part that the Administrator finds necessary to ensure safety in air transportation.

(d) The Administrator approves the Airport Certification Manual.

§ 139.109 Duration of certificate.

An Airport Operating Certificate issued under this part is effective until the certificate holder surrenders it or the certificate is suspended or revoked by the Administrator.

§ 139.111 Exemptions.

(a) An applicant or a certificate holder may petition the Administrator under 14 CFR part 11, General Rulemaking Procedures, of this chapter for an exemption from any requirement of this part.

(b) Under 49 U.S.C. 44706(c), the Administrator may exempt an applicant or a certificate holder that enplanes annually less than one-quarter of 1 percent of the total number of passengers enplaned at all air carrier airports from all, or part, of the aircraft rescue and firefighting equipment requirements of this part on the grounds that compliance with those requirements is, or would be, unreasonably costly, burdensome, or impractical.

(1) Each petition filed under this paragraph must—

(i) Be submitted in writing at least 120 days before the proposed effective date of the exemption;

(ii) Set forth the text of §§ 139.317 or 139.319 from which the exemption is sought;

(iii) Explain the interest of the certificate holder in the action requested, including the nature and extent of relief sought; and

(iv) Contain information, views, or arguments that demonstrate that the requirements of §§ 139.317 or 139.319 would be unreasonably costly, burdensome, or impractical.

(2) Information, views, or arguments provided under paragraph (b)(1) of this

section shall include the following information pertaining to the airport for which the Airport Operating Certificate is held:

(i) An itemized cost to comply with the requirement from which the exemption is sought;

(ii) Current staffing levels;

(iii) The current annual financial report, such as a single audit report or FAA Form 5100–127, Operating and Financial Summary;

(iv) Annual passenger enplanement data for the previous 12 calendar months;

(v) The type and frequency of air carrier operations served;

(vi) A history of air carrier service;

(vii) Anticipated changes to air carrier service;

(c) Each petition filed under this section must be submitted in duplicate to the—

(1) Regional Airports Division Manager and

(2) Federal Docket Management System, as specified under 14 CFR part 11.

[Docket No. FAA–2000–7479, 69 FR 6424, Feb. 10, 2004; 72 FR 68475, Dec. 5, 2007]

§ 139.113 Deviations.

In emergency conditions requiring immediate action for the protection of life or property, the certificate holder may deviate from any requirement of subpart D of this part, or the Airport Certification Manual, to the extent required to meet that emergency. Each certificate holder who deviates from a requirement under this section must, within 14 days after the emergency, notify the Regional Airports Division Manager of the nature, extent, and duration of the deviation. When requested by the Regional Airports Division Manager, the certificate holder must provide this notification in writing.

Subpart C—Airport Certification Manual

§ 139.201 General requirements.

(a) No person may operate an airport subject to this part unless that person adopts and complies with an Airport Certification Manual, as required under this part, that—

(1) Has been approved by the Administrator;

(2) Contains only those items authorized by the Administrator;

(3) Is in printed form and signed by the certificate holder acknowledging the certificate holder's responsibility to operate the airport in compliance with the Airport Certification Manual approved by the Administrator; and

(4) Is in a form that is easy to revise and organized in a manner helpful to the preparation, review, and approval processes, including a revision log. In addition, each page or attachment must include the date of the Administrator's initial approval or approval of the latest revision.

(b) Each holder of an Airport Operating Certificate must—

(1) Keep its Airport Certification Manual current at all times;

(2) Maintain at least one complete and current copy of its approved Airport Certification Manual on the airport, which will be available for inspection by the Administrator; and

(3) Furnish the applicable portions of the approved Airport Certification Manual to airport personnel responsible for its implementation.

(c) Each certificate holder must ensure that the Regional Airports Division Manager is provided a complete copy of its most current approved Airport Certification Manual, as specified under paragraph (b)(2) of this section, including any amendments approved under § 139.205.

(d) FAA Advisory Circulars contain methods and procedures for the development of Airport Certification Manuals that are acceptable to the Administrator.

§ 139.203 Contents of Airport Certification Manual.

(a) Except as otherwise authorized by the Administrator, each certificate holder must include in the Airport Certification Manual a description of operating procedures, facilities and equipment, responsibility assignments, and any other information needed by personnel concerned with operating the airport in order to comply with applicable provisions of subpart D of this part and paragraph (b) of this section.

(b) Except as otherwise authorized by the Administrator, the certificate holder must include in the Airport Certification Manual the following elements, as appropriate for its class:

REQUIRED AIRPORT CERTIFICATION MANUAL ELEMENTS

Manual elements	Airport certificate class			
	Class I	Class II	Class III	Class IV
1. Lines of succession of airport operational responsibility ..	X	X	X	X
2. Each current exemption issued to the airport from the requirements of this part	X	X	X	X
3. Any limitations imposed by the Administrator	X	X	X	X
4. A grid map or other means of identifying locations and terrain features on and around the airport that are significant to emergency operations	X	X	X	X
5. The location of each obstruction required to be lighted or marked within the airport's area of authority	X	X	X	X
6. A description of each movement area available for air carriers and its safety areas, and each road described in § 139.319(k) that serves it	X	X	X	X
7. Procedures for avoidance of interruption or failure during construction work of utilities serving facilities or NAVAIDS that support air carrier operations	X	X	X	
8. A description of the system for maintaining records, as required under § 139.301	X	X	X	X
9. A description of personnel training, as required under § 139.303	X	X	X	X
10. Procedures for maintaining the paved areas, as required under § 139.305	X	X	X	X
11. Procedures for maintaining the unpaved areas, as required under § 139.307	X	X	X	X
12. Procedures for maintaining the safety areas, as required under § 139.309	X	X	X	X
13. A plan showing the runway and taxiway identification system, including the location and inscription of signs, runway markings, and holding position markings, as required under § 139.311	X	X	X	X
14. A description of, and procedures for maintaining, the marking, signs, and lighting systems, as required under § 139.311	X	X	X	X
15. A snow and ice control plan, as required under § 139.313	X	X	X	
16. A description of the facilities, equipment, personnel, and procedures for meeting the aircraft rescue and firefighting requirements, in accordance with §§ 139.315, 139.317 and 139.319	X	X	X	X
17. A description of any approved exemption to aircraft rescue and firefighting requirements, as authorized under § 139.111	X	X	X	X
18. Procedures for protecting persons and property during the storing, dispensing, and handling of fuel and other hazardous substances and materials, as required under § 139.321	X	X	X	X
19. A description of, and procedures for maintaining, the traffic and wind direction indicators, as required under § 139.323	X	X	X	X
20. An emergency plan as required under § 139.325	X	X	X	X
21. Procedures for conducting the self-inspection program, as required under § 139.327	X	X	X	X
22. Procedures for controlling pedestrians and ground vehicles in movement areas and safety areas, as required under § 139.329	X	X	X	
23. Procedures for obstruction removal, marking, or lighting, as required under § 139.331	X	X	X	X
24. Procedures for protection of NAVAIDS, as required under § 139.333	X	X	X	
25. A description of public protection, as required under § 139.335	X	X	X	
26. Procedures for wildlife hazard management, as required under § 139.337	X	X	X	
27. Procedures for airport condition reporting, as required under § 139.339	X	X	X	X

REQUIRED AIRPORT CERTIFICATION MANUAL ELEMENTS—Continued

Manual elements	Airport certificate class			
	Class I	Class II	Class III	Class IV
28. Procedures for identifying, marking, and lighting construction and other unserviceable areas, as required under § 139.341	X	X	X	
29. Any other item that the Administrator finds is necessary to ensure safety in air transportation	X	X	X	X

[Doc. No. FAA–2000–7479, 69 FR 6424, Feb. 10, 2004; Amdt. 139–26, 69 FR 31522, June 4, 2004]

§ 139.205 Amendment of Airport Certification Manual.

(a) Under § 139.3, the Regional Airports Division Manager may amend any Airport Certification Manual approved under this part, either—

(1) Upon application by the certificate holder or

(2) On the Regional Airports Division Manager's own initiative, if the Regional Airports Division Manager determines that safety in air transportation requires the amendment.

(b) A certificate holder must submit in writing a proposed amendment to its Airport Certification Manual to the Regional Airports Division Manager at least 30 days before the proposed effective date of the amendment, unless a shorter filing period is allowed by the Regional Airports Division Manager.

(c) At any time within 30 days after receiving a notice of refusal to approve the application for amendment, the certificate holder may petition the Associate Administrator for Airports to reconsider the refusal to amend.

(d) In the case of amendments initiated by the FAA, the Regional Airports Division Manager notifies the certificate holder of the proposed amendment, in writing, fixing a reasonable period (but not less than 7 days) within which the certificate holder may submit written information, views, and arguments on the amendment. After considering all relevant material presented, the Regional Airports Division Manager notifies the certificate holder within 30 days of any amendment adopted or rescinds the notice. The amendment becomes effective not less than 30 days after the certificate holder receives notice of it, except that, prior to the effective date, the certificate holder may petition the Associate Administrator for Airports to reconsider the amendment, in which case its effective date is stayed pending a decision by the Associate Administrator for Airports.

(e) Notwithstanding the provisions of paragraph (d) of this section, if the Regional Airports Division Manager finds there is an emergency requiring immediate action with respect to safety in air transportation, the Regional Airports Division Manager may issue an amendment, effective without stay on the date the certificate holder receives notice of it. In such a case, the Regional Airports Division Manager incorporates the finding of the emergency and a brief statement of the reasons for the finding in the notice of the amendment. Within 30 days after the issuance of such an emergency amendment, the certificate holder may petition the Associate Administrator for Airports to reconsider either the finding of an emergency, the amendment itself, or both. This petition does not automatically stay the effectiveness of the emergency amendment.

Subpart D—Operations

§ 139.301 Records.

In a manner authorized by the Administrator, each certificate holder must—

(a) Furnish upon request by the Administrator all records required to be maintained under this part.

(b) Maintain records required under this part as follows:

(1) *Personnel training.* Twenty-four consecutive calendar months for personnel training records, as required under §§ 139.303 and 139.327.

(2) *Emergency personnel training.* Twenty-four consecutive calendar

months for aircraft rescue and firefighting and emergency medical service personnel training records, as required under § 139.319.

(3) *Airport fueling agent inspection.* Twelve consecutive calendar months for records of inspection of airport fueling agents, as required under § 139.321.

(4) *Fueling personnel training.* Twelve consecutive calendar months for training records of fueling personnel, as required under § 139.321.

(5) *Self-inspection.* Twelve consecutive calendar months for self-inspection records, as required under § 139.327.

(6) *Movement areas and safety areas training.* Twenty-four consecutive calendar months for records of training given to pedestrians and ground vehicle operators with access to movement areas and safety areas, as required under § 139.329.

(7) *Accident and incident.* Twelve consecutive calendar months for each accident or incident in movement areas and safety areas involving an air carrier aircraft and/or ground vehicle, as required under § 139.329.

(8) *Airport condition.* Twelve consecutive calendar months for records of airport condition information dissemination, as required under § 139.339.

(c) Make and maintain any additional records required by the Administrator, this part, and the Airport Certification Manual.

§ 139.303 Personnel.

In a manner authorized by the Administrator, each certificate holder must—

(a) Provide sufficient and qualified personnel to comply with the requirements of its Airport Certification Manual and the requirements of this part.

(b) Equip personnel with sufficient resources needed to comply with the requirements of this part.

(c) Train all personnel who access movement areas and safety areas and perform duties in compliance with the requirements of the Airport Certification Manual and the requirements of this part. This training must be completed prior to the initial performance of such duties and at least once every 12 consecutive calendar months. The curriculum for initial and recurrent training must include at least the following areas:

(1) Airport familiarization, including airport marking, lighting, and signs system.

(2) Procedures for access to, and operation in, movement areas and safety areas, as specified under § 139.329.

(3) Airport communications, including radio communication between the air traffic control tower and personnel, use of the common traffic advisory frequency if there is no air traffic control tower or the tower is not in operation, and procedures for reporting unsafe airport conditions.

(4) Duties required under the Airport Certification Manual and the requirements of this part.

(5) Any additional subject areas required under §§ 139.319, 139.321, 139.327, 139.329, 139.337, and 139.339, as appropriate.

(d) Make a record of all training completed after June 9, 2004 by each individual in compliance with this section that includes, at a minimum, a description and date of training received. Such records must be maintained for 24 consecutive calendar months after completion of training.

(e) As appropriate, comply with the following training requirements of this part:

(1) § 139.319, Aircraft rescue and firefighting: Operational requirements;

(2) § 139.321, Handling and storage of hazardous substances and materials;

(3) § 139.327, Self-inspection program;

(4) § 139.329, Pedestrians and Ground Vehicles;

(5) § 139.337, Wildlife hazard management; and

(6) § 139.339, Airport condition reporting.

(f) Use an independent organization, or designee, to comply with the requirements of its Airport Certification Manual and the requirements of this part only if—

(1) Such an arrangement is authorized by the Administrator;

(2) A description of responsibilities and duties that will be assumed by an independent organization or designee is specified in the Airport Certification Manual; and

(3) The independent organization or designee prepares records required

under this part in sufficient detail to assure the certificate holder and the Administrator of adequate compliance with the Airport Certification Manual and the requirements of this part.

[Doc. No. FAA–2000–7479, 69 FR 6424, Feb. 10, 2004; Amdt. 139–26, 69 FR 31522, June 4, 2004]

§ 139.305 Paved areas.

(a) In a manner authorized by the Administrator, each certificate holder must maintain, and promptly repair the pavement of, each runway, taxiway, loading ramp, and parking area on the airport that is available for air carrier use as follows:

(1) The pavement edges must not exceed 3 inches difference in elevation between abutting pavement sections and between pavement and abutting areas.

(2) The pavement must have no hole exceeding 3 inches in depth nor any hole the slope of which from any point in the hole to the nearest point at the lip of the hole is 45 degrees or greater, as measured from the pavement surface plane, unless, in either case, the entire area of the hole can be covered by a 5-inch diameter circle.

(3) The pavement must be free of cracks and surface variations that could impair directional control of air carrier aircraft, including any pavement crack or surface deterioration that produces loose aggregate or other contaminants.

(4) Except as provided in paragraph (b) of this section, mud, dirt, sand, loose aggregate, debris, foreign objects, rubber deposits, and other contaminants must be removed promptly and as completely as practicable.

(5) Except as provided in paragraph (b) of this section, any chemical solvent that is used to clean any pavement area must be removed as soon as possible, consistent with the instructions of the manufacturer of the solvent.

(6) The pavement must be sufficiently drained and free of depressions to prevent ponding that obscures markings or impairs safe aircraft operations.

(b) Paragraphs (a)(4) and (a)(5) of this section do not apply to snow and ice accumulations and their control, including the associated use of materials, such as sand and deicing solutions.

(c) FAA Advisory Circulars contain methods and procedures for the maintenance and configuration of paved areas that are acceptable to the Administrator.

[Doc. No. FAA–2000–7479, 69 FR 6424, Feb. 10, 2004; Amdt. 139–26, 69 FR 31522, June 4, 2004]

§ 139.307 Unpaved areas.

(a) In a manner authorized by the Administrator, each certificate holder must maintain and promptly repair the surface of each gravel, turf, or other unpaved runway, taxiway, or loading ramp and parking area on the airport that is available for air carrier use as follows:

(1) No slope from the edge of the full-strength surfaces downward to the existing terrain must be steeper than 2:1.

(2) The full-strength surfaces must have adequate crown or grade to assure sufficient drainage to prevent ponding.

(3) The full-strength surfaces must be adequately compacted and sufficiently stable to prevent rutting by aircraft or the loosening or build-up of surface material, which could impair directional control of aircraft or drainage.

(4) The full-strength surfaces must have no holes or depressions that exceed 3 inches in depth and are of a breadth capable of impairing directional control or causing damage to an aircraft.

(5) Debris and foreign objects must be promptly removed from the surface.

(b) FAA Advisory Circulars contain methods and procedures for the maintenance and configuration of unpaved areas that are acceptable to the Administrator.

§ 139.309 Safety areas.

(a) In a manner authorized by the Administrator, each certificate holder must provide and maintain, for each runway and taxiway that is available for air carrier use, a safety area of at least the dimensions that—

(1) Existed on December 31, 1987, if the runway or taxiway had a safety area on December 31, 1987, and if no reconstruction or significant expansion of the runway or taxiway was begun on or after January 1, 1988; or

(2) Are authorized by the Administrator at the time the construction, reconstruction, or expansion began if

construction, reconstruction, or significant expansion of the runway or taxiway began on or after January 1, 1988.

(b) Each certificate holder must maintain its safety areas as follows:

(1) Each safety area must be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations.

(2) Each safety area must be drained by grading or storm sewers to prevent water accumulation.

(3) Each safety area must be capable under dry conditions of supporting snow removal and aircraft rescue and firefighting equipment and of supporting the occasional passage of aircraft without causing major damage to the aircraft.

(4) No objects may be located in any safety area, except for objects that need to be located in a safety area because of their function. These objects must be constructed, to the extent practical, on frangibly mounted structures of the lowest practical height, with the frangible point no higher than 3 inches above grade.

(c) FAA Advisory Circulars contain methods and procedures for the configuration and maintenance of safety areas acceptable to the Administrator.

§ 139.311 Marking, signs, and lighting.

(a) *Marking.* Each certificate holder must provide and maintain marking systems for air carrier operations on the airport that are authorized by the Administrator and consist of at least the following:

(1) Runway markings meeting the specifications for takeoff and landing minimums for each runway.

(2) A taxiway centerline.

(3) Taxiway edge markings, as appropriate.

(4) Holding position markings.

(5) Instrument landing system (ILS) critical area markings.

(b) *Signs.* (1) Each certificate holder must provide and maintain sign systems for air carrier operations on the airport that are authorized by the Administrator and consist of at least the following:

(i) Signs identifying taxiing routes on the movement area.

(ii) Holding position signs.

(iii) Instrument landing system (ILS) critical area signs.

(2) Unless otherwise authorized by the Administrator, the signs required by paragraph (b)(1) of this section must be internally illuminated at each Class I, II, and IV airport.

(3) Unless otherwise authorized by the Administrator, the signs required by paragraphs (b)(1)(ii) and (b)(1)(iii) of this section must be internally illuminated at each Class III airport.

(c) *Lighting.* Each certificate holder must provide and maintain lighting systems for air carrier operations when the airport is open at night, during conditions below visual flight rules (VFR) minimums, or in Alaska, during periods in which a prominent unlighted object cannot be seen from a distance of 3 statute miles or the sun is more than six degrees below the horizon. These lighting systems must be authorized by the Administrator and consist of at least the following:

(1) Runway lighting that meets the specifications for takeoff and landing minimums, as authorized by the Administrator, for each runway.

(2) One of the following taxiway lighting systems:

(i) Centerline lights.

(ii) Centerline reflectors.

(iii) Edge lights.

(iv) Edge reflectors.

(3) An airport beacon.

(4) Approach lighting that meets the specifications for takeoff and landing minimums, as authorized by the Administrator, for each runway, unless provided and/or maintained by an entity other than the certificate holder.

(5) Obstruction marking and lighting, as appropriate, on each object within its authority that has been determined by the FAA to be an obstruction.

(d) *Maintenance.* Each certificate holder must properly maintain each marking, sign, or lighting system installed and operated on the airport. As used in this section, to ''properly maintain'' includes cleaning, replacing, or repairing any faded, missing, or nonfunctional item; keeping each item unobscured and clearly visible; and ensuring that each item provides an accurate reference to the user.

(e) *Lighting interference.* Each certificate holder must ensure that all lighting on the airport, including that for aprons, vehicle parking areas, roadways, fuel storage areas, and buildings, is adequately adjusted or shielded to prevent interference with air traffic control and aircraft operations.

(f) *Standards.* FAA Advisory Circulars contain methods and procedures for the equipment, material, installation, and maintenance of marking, sign, and lighting systems listed in this section that are acceptable to the Administrator.

(g) *Implementation.* The sign systems required under paragraph (b)(3) of this section must be implemented by each holder of a Class III Airport Operating Certificate not later than 36 consecutive calendar months after June 9, 2004.

§ 139.313 Snow and ice control.

(a) As determined by the Administrator, each certificate holder whose airport is located where snow and icing conditions occur must prepare, maintain, and carry out a snow and ice control plan in a manner authorized by the Administrator.

(b) The snow and ice control plan required by this section must include, at a minimum, instructions and procedures for—

(1) Prompt removal or control, as completely as practical, of snow, ice, and slush on each movement area;

(2) Positioning snow off the movement area surfaces so all air carrier aircraft propellers, engine pods, rotors, and wing tips will clear any snowdrift and snowbank as the aircraft's landing gear traverses any portion of the movement area;

(3) Selection and application of authorized materials for snow and ice control to ensure that they adhere to snow and ice sufficiently to minimize engine ingestion;

(4) Timely commencement of snow and ice control operations; and

(5) Prompt notification, in accordance with §139.339, of all air carriers using the airport when any portion of the movement area normally available to them is less than satisfactorily cleared for safe operation by their aircraft.

(c) FAA Advisory Circulars contain methods and procedures for snow and ice control equipment, materials, and removal that are acceptable to the Administrator.

§ 139.315 Aircraft rescue and firefighting: Index determination.

(a) An index is required by paragraph (c) of this section for each certificate holder. The Index is determined by a combination of—

(1) The length of air carrier aircraft and

(2) Average daily departures of air carrier aircraft.

(b) For the purpose of Index determination, air carrier aircraft lengths are grouped as follows:

(1) Index A includes aircraft less than 90 feet in length.

(2) Index B includes aircraft at least 90 feet but less than 126 feet in length.

(3) Index C includes aircraft at least 126 feet but less than 159 feet in length.

(4) Index D includes aircraft at least 159 feet but less than 200 feet in length.

(5) Index E includes aircraft at least 200 feet in length.

(c) Except as provided in §139.319(c), if there are five or more average daily departures of air carrier aircraft in a single Index group serving that airport, the longest aircraft with an average of five or more daily departures determines the Index required for the airport. When there are fewer than five average daily departures of the longest air carrier aircraft serving the airport, the Index required for the airport will be the next lower Index group than the Index group prescribed for the longest aircraft.

(d) The minimum designated index shall be Index A.

(e) A holder of a Class III Airport Operating Certificate may comply with this section by providing a level of safety comparable to Index A that is approved by the Administrator. Such alternate compliance must be described in the ACM and must include:

(1) Pre-arranged firefighting and emergency medical response procedures, including agreements with responding services.

(2) Means for alerting firefighting and emergency medical response personnel.

(3) Type of rescue and firefighting equipment to be provided.

(4) Training of responding firefighting and emergency medical personnel on airport familiarization and communications.

[Doc. No. FAA–2000–7479, 69 FR 6424, Feb. 10, 2004; Amdt. 139–26, 69 FR 31522, June 4, 2004]

§ 139.317 Aircraft rescue and firefighting: Equipment and agents.

Unless otherwise authorized by the Administrator, the following rescue and firefighting equipment and agents are the minimum required for the Indexes referred to in § 139.315:

(a) *Index A.* One vehicle carrying at least—

(1) 500 pounds of sodium-based dry chemical, halon 1211, or clean agent; or

(2) 450 pounds of potassium-based dry chemical and water with a commensurate quantity of AFFF to total 100 gallons for simultaneous dry chemical and AFFF application.

(b) *Index B.* Either of the following:

(1) One vehicle carrying at least 500 pounds of sodium-based dry chemical, halon 1211, or clean agent and 1,500 gallons of water and the commensurate quantity of AFFF for foam production.

(2) Two vehicles—

(i) One vehicle carrying the extinguishing agents as specified in paragraphs (a)(1) or (a)(2) of this section; and

(ii) One vehicle carrying an amount of water and the commensurate quantity of AFFF so the total quantity of water for foam production carried by both vehicles is at least 1,500 gallons.

(c) *Index C.* Either of the following:

(1) Three vehicles—

(i) One vehicle carrying the extinguishing agents as specified in paragraph (a)(1) or (a)(2) of this section; and

(ii) Two vehicles carrying an amount of water and the commensurate quantity of AFFF so the total quantity of water for foam production carried by all three vehicles is at least 3,000 gallons.

(2) Two vehicles—

(i) One vehicle carrying the extinguishing agents as specified in paragraph (b)(1) of this section; and

(ii) One vehicle carrying water and the commensurate quantity of AFFF so the total quantity of water for foam production carried by both vehicles is at least 3,000 gallons.

(d) *Index D.* Three vehicles—

(1) One vehicle carrying the extinguishing agents as specified in paragraphs (a)(1) or (a)(2) of this section; and

(2) Two vehicles carrying an amount of water and the commensurate quantity of AFFF so the total quantity of water for foam production carried by all three vehicles is at least 4,000 gallons.

(e) *Index E.* Three vehicles—

(1) One vehicle carrying the extinguishing agents as specified in paragraphs (a)(1) or (a)(2) of this section; and

(2) Two vehicles carrying an amount of water and the commensurate quantity of AFFF so the total quantity of water for foam production carried by all three vehicles is at least 6,000 gallons.

(f) *Foam discharge capacity.* Each aircraft rescue and firefighting vehicle used to comply with Index B, C, D, or E requirements with a capacity of at least 500 gallons of water for foam production must be equipped with a turret. Vehicle turret discharge capacity must be as follows:

(1) Each vehicle with a minimum-rated vehicle water tank capacity of at least 500 gallons, but less than 2,000 gallons, must have a turret discharge rate of at least 500 gallons per minute, but not more than 1,000 gallons per minute.

(2) Each vehicle with a minimum-rated vehicle water tank capacity of at least 2,000 gallons must have a turret discharge rate of at least 600 gallons per minute, but not more than 1,200 gallons per minute.

(g) *Agent discharge capacity.* Each aircraft rescue and firefighting vehicle that is required to carry dry chemical, halon 1211, or clean agent for compliance with the Index requirements of this section must meet one of the following minimum discharge rates for the equipment installed:

(1) Dry chemical, halon 1211, or clean agent through a hand line—5 pounds per second.

(2) Dry chemical, halon 1211, or clean agent through a turret—16 pounds per second.

(h) *Extinguishing agent substitutions.* Other extinguishing agent substitutions authorized by the Administrator may be made in amounts that provide equivalent firefighting capability.

(i) *AFFF quantity requirements.* In addition to the quantity of water required, each vehicle required to carry AFFF must carry AFFF in an appropriate amount to mix with twice the water required to be carried by the vehicle.

(j) *Methods and procedures.* FAA Advisory Circulars contain methods and procedures for ARFF equipment and extinguishing agents that are acceptable to the Administrator.

(k) *Implementation.* Each holder of a Class II, III, or IV Airport Operating Certificate must implement the requirements of this section no later than 36 consecutive calendar months after June 9, 2004.

[Doc. No. FAA–2000–7479, 69 FR 6424, Feb. 10, 2004; Amdt. 139–26, 69 FR 31523, June 4, 2004]

§ 139.319 Aircraft rescue and firefighting: Operational requirements.

(a) *Rescue and firefighting capability.* Except as provided in paragraph (c) of this section, each certificate holder must provide on the airport, during air carrier operations at the airport, at least the rescue and firefighting capability specified for the Index required by § 139.317 in a manner authorized by the Administrator.

(b) *Increase in Index.* Except as provided in paragraph (c) of this section, if an increase in the average daily departures or the length of air carrier aircraft results in an increase in the Index required by paragraph (a) of this section, the certificate holder must comply with the increased requirements.

(c) *Reduction in rescue and firefighting.* During air carrier operations with only aircraft shorter than the Index aircraft group required by paragraph (a) of this section, the certificate holder may reduce the rescue and firefighting to a lower level corresponding to the Index group of the longest air carrier aircraft being operated.

(d) *Procedures for reduction in capability.* Any reduction in the rescue and firefighting capability from the Index required by paragraph (a) of this section, in accordance with paragraph (c) of this section, must be subject to the following conditions:

(1) Procedures for, and the persons having the authority to implement, the reductions must be included in the Airport Certification Manual.

(2) A system and procedures for recall of the full aircraft rescue and firefighting capability must be included in the Airport Certification Manual.

(3) The reductions may not be implemented unless notification to air carriers is provided in the Airport/Facility Directory or Notices to Airmen (NOTAM), as appropriate, and by direct notification of local air carriers.

(e) *Vehicle communications.* Each vehicle required under § 139.317 must be equipped with two-way voice radio communications that provide for contact with at least—

(1) All other required emergency vehicles;

(2) The air traffic control tower;

(3) The common traffic advisory frequency when an air traffic control tower is not in operation or there is no air traffic control tower, and

(4) Fire stations, as specified in the airport emergency plan.

(f) *Vehicle marking and lighting.* Each vehicle required under § 139.317 must—

(1) Have a flashing or rotating beacon and

(2) Be painted or marked in colors to enhance contrast with the background environment and optimize daytime and nighttime visibility and identification.

(g) *Vehicle readiness.* Each vehicle required under § 139.317 must be maintained as follows:

(1) The vehicle and its systems must be maintained so as to be operationally capable of performing the functions required by this subpart during all air carrier operations.

(2) If the airport is located in a geographical area subject to prolonged temperatures below 33 degrees Fahrenheit, the vehicles must be provided with cover or other means to ensure equipment operation and discharge under freezing conditions.

(3) Any required vehicle that becomes inoperative to the extent that it cannot perform as required by paragraph (g)(1) of this section must be replaced immediately with equipment having at

least equal capabilities. If replacement equipment is not available immediately, the certificate holder must so notify the Regional Airports Division Manager and each air carrier using the airport in accordance with §139.339. If the required Index level of capability is not restored within 48 hours, the airport operator, unless otherwise authorized by the Administrator, must limit air carrier operations on the airport to those compatible with the Index corresponding to the remaining operative rescue and firefighting equipment.

(h) *Response requirements.* (1) With the aircraft rescue and firefighting equipment required under this part and the number of trained personnel that will assure an effective operation, each certificate holder must—

(i) Respond to each emergency during periods of air carrier operations; and

(ii) When requested by the Administrator, demonstrate compliance with the response requirements specified in this section.

(2) The response required by paragraph (h)(1)(ii) of this section must achieve the following performance criteria:

(i) Within 3 minutes from the time of the alarm, at least one required aircraft rescue and firefighting vehicle must reach the midpoint of the farthest runway serving air carrier aircraft from its assigned post or reach any other specified point of comparable distance on the movement area that is available to air carriers, and begin application of extinguishing agent.

(ii) Within 4 minutes from the time of alarm, all other required vehicles must reach the point specified in paragraph (h)(2)(i) of this section from their assigned posts and begin application of an extinguishing agent.

(i) *Personnel.* Each certificate holder must ensure the following:

(1) All rescue and firefighting personnel are equipped in a manner authorized by the Administrator with protective clothing and equipment needed to perform their duties.

(2) All rescue and firefighting personnel are properly trained to perform their duties in a manner authorized by the Administrator. Such personnel must be trained prior to initial performance of rescue and firefighting duties and receive recurrent instruction every 12 consecutive calendar months. The curriculum for initial and recurrent training must include at least the following areas:

(i) Airport familiarization, including airport signs, marking, and lighting.

(ii) Aircraft familiarization.

(iii) Rescue and firefighting personnel safety.

(iv) Emergency communications systems on the airport, including fire alarms.

(v) Use of the fire hoses, nozzles, turrets, and other appliances required for compliance with this part.

(vi) Application of the types of extinguishing agents required for compliance with this part.

(vii) Emergency aircraft evacuation assistance.

(viii) Firefighting operations.

(ix) Adapting and using structural rescue and firefighting equipment for aircraft rescue and firefighting.

(x) Aircraft cargo hazards, including hazardous materials/dangerous goods incidents.

(xi) Familiarization with firefighters' duties under the airport emergency plan.

(3) All rescue and firefighting personnel must participate in at least one live-fire drill prior to initial performance of rescue and firefighting duties and every 12 consecutive calendar months thereafter.

(4) At least one individual, who has been trained and is current in basic emergency medical services, is available during air carrier operations. This individual must be trained prior to initial performance of emergency medical services. Training must be at a minimum 40 hours in length and cover the following topics:

(i) Bleeding.

(ii) Cardiopulmonary resuscitation.

(iii) Shock.

(iv) Primary patient survey.

(v) Injuries to the skull, spine, chest, and extremities.

(vi) Internal injuries.

(vii) Moving patients.

(viii) Burns.

(ix) Triage.

(5) A record is maintained of all training given to each individual under this section for 24 consecutive calendar

months after completion of training. Such records must include, at a minimum, a description and date of training received.

(6) Sufficient rescue and firefighting personnel are available during all air carrier operations to operate the vehicles, meet the response times, and meet the minimum agent discharge rates required by this part.

(7) Procedures and equipment are established and maintained for alerting rescue and firefighting personnel by siren, alarm, or other means authorized by the Administrator to any existing or impending emergency requiring their assistance.

(j) *Hazardous materials guidance.* Each aircraft rescue and firefighting vehicle responding to an emergency on the airport must be equipped with, or have available through a direct communications link, the ''North American Emergency Response Guidebook'' published by the U.S. Department of Transportation or similar response guidance to hazardous materials/dangerous goods incidents. Information on obtaining the ''North American Emergency Response Guidebook'' is available from the Regional Airports Division Manager.

(k) *Emergency access roads.* Each certificate holder must ensure that roads designated for use as emergency access roads for aircraft rescue and firefighting vehicles are maintained in a condition that will support those vehicles during all-weather conditions.

(l) *Methods and procedures.* FAA Advisory Circulars contain methods and procedures for aircraft rescue and firefighting and emergency medical equipment and training that are acceptable to the Administrator.

(m) *Implementation.* Each holder of a Class II, III, or IV Airport Operating Certificate must implement the requirements of this section no later than 36 consecutive calendar months after June 9, 2004.

[Doc. No. FAA–2000–7479, 69 FR 6424, Feb. 10, 2004; Amdt. 139–26, 69 FR 31523, June 4, 2004]

§ 139.321 Handling and storing of hazardous substances and materials.

(a) Each certificate holder who acts as a cargo handling agent must establish and maintain procedures for the protection of persons and property on the airport during the handling and storing of any material regulated by the Hazardous Materials Regulations (49 CFR 171 through 180) that is, or is intended to be, transported by air. These procedures must provide for at least the following:

(1) Designated personnel to receive and handle hazardous substances and materials.

(2) Assurance from the shipper that the cargo can be handled safely, including any special handling procedures required for safety.

(3) Special areas for storage of hazardous materials while on the airport.

(b) Each certificate holder must establish and maintain standards authorized by the Administrator for protecting against fire and explosions in storing, dispensing, and otherwise handling fuel (other than articles and materials that are, or are intended to be, aircraft cargo) on the airport. These standards must cover facilities, procedures, and personnel training and must address at least the following:

(1) Bonding.

(2) Public protection.

(3) Control of access to storage areas.

(4) Fire safety in fuel farm and storage areas.

(5) Fire safety in mobile fuelers, fueling pits, and fueling cabinets.

(6) Training of fueling personnel in fire safety in accordance with paragraph (e) of this section. Such training at Class III airports must be completed within 12 consecutive calendar months after June 9, 2004.

(7) The fire code of the public body having jurisdiction over the airport.

(c) Each certificate holder must, as a fueling agent, comply with, and require all other fueling agents operating on the airport to comply with, the standards established under paragraph (b) of this section and must perform reasonable surveillance of all fueling activities on the airport with respect to those standards.

(d) Each certificate holder must inspect the physical facilities of each airport tenant fueling agent at least once every 3 consecutive months for compliance with paragraph (b) of this section

and maintain a record of that inspection for at least 12 consecutive calendar months.

(e) The training required in paragraph (b)(6) of this section must include at least the following:

(1) At least one supervisor with each fueling agent must have completed an aviation fuel training course in fire safety that is authorized by the Administrator. Such an individual must be trained prior to initial performance of duties, or enrolled in an authorized aviation fuel training course that will be completed within 90 days of initiating duties, and receive recurrent instruction at least every 24 consecutive calendar months.

(2) All other employees who fuel aircraft, accept fuel shipments, or otherwise handle fuel must receive at least initial on-the-job training and recurrent instruction every 24 consecutive calendar months in fire safety from the supervisor trained in accordance with paragraph (e)(1) of this section.

(f) Each certificate holder must obtain a written confirmation once every 12 consecutive calendar months from each airport tenant fueling agent that the training required by paragraph (e) of this section has been accomplished. This written confirmation must be maintained for 12 consecutive calendar months.

(g) Unless otherwise authorized by the Administrator, each certificate holder must require each tenant fueling agent to take immediate corrective action whenever the certificate holder becomes aware of noncompliance with a standard required by paragraph (b) of this section. The certificate holder must notify the appropriate FAA Regional Airports Division Manager immediately when noncompliance is discovered and corrective action cannot be accomplished within a reasonable period of time.

(h) FAA Advisory Circulars contain methods and procedures for the handling and storage of hazardous substances and materials that are acceptable to the Administrator.

§ 139.323 Traffic and wind direction indicators.

In a manner authorized by the Administrator, each certificate holder must provide and maintain the following on its airport:

(a) A wind cone that visually provides surface wind direction information to pilots. For each runway available for air carrier use, a supplemental wind cone must be installed at the end of the runway or at least at one point visible to the pilot while on final approach and prior to takeoff. If the airport is open for air carrier operations at night, the wind direction indicators, including the required supplemental indicators, must be lighted.

(b) For airports serving any air carrier operation when there is no control tower operating, a segmented circle, a landing strip indicator and a traffic pattern indicator must be installed around a wind cone for each runway with a right-hand traffic pattern.

(c) FAA Advisory Circulars contain methods and procedures for the installation, lighting, and maintenance of traffic and wind indicators that are acceptable to the Administrator.

§ 139.325 Airport emergency plan.

(a) In a manner authorized by the Administrator, each certificate holder must develop and maintain an airport emergency plan designed to minimize the possibility and extent of personal injury and property damage on the airport in an emergency. The plan must—

(1) Include procedures for prompt response to all emergencies listed in paragraph (b) of this section, including a communications network;

(2) Contain sufficient detail to provide adequate guidance to each person who must implement these procedures; and

(3) To the extent practicable, provide for an emergency response for the largest air carrier aircraft in the Index group required under § 139.315.

(b) The plan required by this section must contain instructions for response to—

(1) Aircraft incidents and accidents;

(2) Bomb incidents, including designation of parking areas for the aircraft involved;

(3) Structural fires;

(4) Fires at fuel farms or fuel storage areas;

(5) Natural disaster;

(6) Hazardous materials/dangerous goods incidents;

(7) Sabotage, hijack incidents, and other unlawful interference with operations;

(8) Failure of power for movement area lighting; and

(9) Water rescue situations, as appropriate.

(c) The plan required by this section must address or include—

(1) To the extent practicable, provisions for medical services, including transportation and medical assistance for the maximum number of persons that can be carried on the largest air carrier aircraft that the airport reasonably can be expected to serve;

(2) The name, location, telephone number, and emergency capability of each hospital and other medical facility and the business address and telephone number of medical personnel on the airport or in the communities it serves who have agreed to provide medical assistance or transportation;

(3) The name, location, and telephone number of each rescue squad, ambulance service, military installation, and government agency on the airport or in the communities it serves that agrees to provide medical assistance or transportation;

(4) An inventory of surface vehicles and aircraft that the facilities, agencies, and personnel included in the plan under paragraphs (c)(2) and (3) of this section will provide to transport injured and deceased persons to locations on the airport and in the communities it serves;

(5) A list of each hangar or other building on the airport or in the communities it serves that will be used to accommodate uninjured, injured, and deceased persons;

(6) Plans for crowd control, including the name and location of each safety or security agency that agrees to provide assistance for the control of crowds in the event of an emergency on the airport; and

(7) Procedures for removing disabled aircraft, including, to the extent practical, the name, location, and telephone numbers of agencies with aircraft removal responsibilities or capabilities.

(d) The plan required by this section must provide for—

(1) The marshalling, transportation, and care of ambulatory injured and uninjured accident survivors;

(2) The removal of disabled aircraft;

(3) Emergency alarm or notification systems; and

(4) Coordination of airport and control tower functions relating to emergency actions, as appropriate.

(e) The plan required by this section must contain procedures for notifying the facilities, agencies, and personnel who have responsibilities under the plan of the location of an aircraft accident, the number of persons involved in that accident, or any other information necessary to carry out their responsibilities, as soon as that information becomes available.

(f) The plan required by this section must contain provisions, to the extent practicable, for the rescue of aircraft accident victims from significant bodies of water or marsh lands adjacent to the airport that are crossed by the approach and departure flight paths of air carriers. A body of water or marshland is significant if the area exceeds one-quarter square mile and cannot be traversed by conventional land rescue vehicles. To the extent practicable, the plan must provide for rescue vehicles with a combined capacity for handling the maximum number of persons that can be carried on board the largest air carrier aircraft in the Index group required under §139.315.

(g) Each certificate holder must—

(1) Coordinate the plan with law enforcement agencies, rescue and firefighting agencies, medical personnel and organizations, the principal tenants at the airport, and all other persons who have responsibilities under the plan;

(2) To the extent practicable, provide for participation by all facilities, agencies, and personnel specified in paragraph (g)(1) of this section in the development of the plan;

(3) Ensure that all airport personnel having duties and responsibilities under the plan are familiar with their assignments and are properly trained; and

(4) At least once every 12 consecutive calendar months, review the plan with

all of the parties with whom the plan is coordinated, as specified in paragraph (g)(1) of this section, to ensure that all parties know their responsibilities and that all of the information in the plan is current.

(h) Each holder of a Class I Airport Operating Certificate must hold a full-scale airport emergency plan exercise at least once every 36 consecutive calendar months.

(i) Each airport subject to applicable FAA and Transportation Security Administration security regulations must ensure that instructions for response to paragraphs (b)(2) and (b)(7) of this section in the airport emergency plan are consistent with its approved airport security program.

(j) FAA Advisory Circulars contain methods and procedures for the development of an airport emergency plan that are acceptable to the Administrator.

(k) The emergency plan required by this section must be submitted by each holder of a Class II, III, or IV Airport Operating Certificate no later than 24 consecutive calendar months after June 9, 2004.

§ 139.327 Self-inspection program.

(a) In a manner authorized by the Administrator, each certificate holder must inspect the airport to assure compliance with this subpart according to the following schedule:

(1) Daily, except as otherwise required by the Airport Certification Manual;

(2) When required by any unusual condition, such as construction activities or meteorological conditions, that may affect safe air carrier operations; and

(3) Immediately after an accident or incident.

(b) Each certificate holder must provide the following:

(1) Equipment for use in conducting safety inspections of the airport;

(2) Procedures, facilities, and equipment for reliable and rapid dissemination of information between the certificate holder's personnel and air carriers; and

(3) Procedures to ensure qualified personnel perform the inspections. Such procedures must ensure personnel are trained, as specified under § 139.303, and receive initial and recurrent instruction every 12 consecutive calendar months in at least the following areas:

(i) Airport familiarization, including airport signs, marking and lighting.

(ii) Airport emergency plan.

(iii) Notice to Airmen (NOTAM) notification procedures.

(iv) Procedures for pedestrians and ground vehicles in movement areas and safety areas.

(v) Discrepancy reporting procedures; and

(4) A reporting system to ensure prompt correction of unsafe airport conditions noted during the inspection, including wildlife strikes.

(c) Each certificate holder must—

(1) Prepare, and maintain for at least 12 consecutive calendar months, a record of each inspection prescribed by this section, showing the conditions found and all corrective actions taken.

(2) Prepare records of all training given after June 9, 2004 to each individual in compliance with this section that includes, at a minimum, a description and date of training received. Such records must be maintained for 24 consecutive calendar months after completion of training.

(d) FAA Advisory Circulars contain methods and procedures for the conduct of airport self-inspections that are acceptable to the Administrator.

§ 139.329 Pedestrians and ground vehicles.

In a manner authorized by the Administrator, each certificate holder must—

(a) Limit access to movement areas and safety areas only to those pedestrians and ground vehicles necessary for airport operations;

(b) Establish and implement procedures for the safe and orderly access to, and operation in, movement areas and safety areas by pedestrians and ground vehicles, including provisions identifying the consequences of noncompliance with the procedures by an employee, tenant, or contractor;

(c) When an air traffic control tower is in operation, ensure that each pedestrian and ground vehicle in movement areas or safety areas is controlled by one of the following:

(1) Two-way radio communications between each pedestrian or vehicle and the tower;

(2) An escort with two-way radio communications with the tower accompanying any pedestrian or vehicle without a radio; or

(3) Measures authorized by the Administrator for controlling pedestrians and vehicles, such as signs, signals, or guards, when it is not operationally practical to have two-way radio communications between the tower and the pedestrian, vehicle, or escort;

(d) When an air traffic control tower is not in operation, or there is no air traffic control tower, provide adequate procedures to control pedestrians and ground vehicles in movement areas or safety areas through two-way radio communications or prearranged signs or signals;

(e) Ensure that each employee, tenant, or contractor is trained on procedures required under paragraph (b) of this section, including consequences of noncompliance, prior to moving on foot, or operating a ground vehicle, in movement areas or safety areas; and

(f) Maintain the following records:

(1) A description and date of training completed after June 9, 2004 by each individual in compliance with this section. A record for each individual must be maintained for 24 consecutive months after the termination of an individual's access to movement areas and safety areas.

(2) A description and date of any accidents or incidents in the movement areas and safety areas involving air carrier aircraft, a ground vehicle or a pedestrian. Records of each accident or incident occurring after the June 9, 2004 must be maintained for 12 consecutive calendar months from the date of the accident or incident.

§ 139.331 Obstructions.

In a manner authorized by the Administrator, each certificate holder must ensure that each object in each area within its authority that has been determined by the FAA to be an obstruction is removed, marked, or lighted, unless determined to be unnecessary by an FAA aeronautical study. FAA Advisory Circulars contain methods and procedures for the lighting of obstructions that are acceptable to the Administrator.

§ 139.333 Protection of NAVAIDS.

In a manner authorized by the Administrator, each certificate holder must—

(a) Prevent the construction of facilities on its airport that, as determined by the Administrator, would derogate the operation of an electronic or visual NAVAID and air traffic control facilities on the airport;

(b) Protect—or if the owner is other than the certificate holder, assist in protecting—all NAVAIDS on its airport against vandalism and theft; and

(c) Prevent, insofar as it is within the airport's authority, interruption of visual and electronic signals of NAVAIDS.

§ 139.335 Public protection.

(a) In a manner authorized by the Administrator, each certificate holder must provide—

(1) Safeguards to prevent inadvertent entry to the movement area by unauthorized persons or vehicles; and

(2) Reasonable protection of persons and property from aircraft blast.

(b) Fencing that meets the requirements of applicable FAA and Transportation Security Administration security regulations in areas subject to these regulations is acceptable for meeting the requirements of paragraph (a)(1) of this section.

§ 139.337 Wildlife hazard management.

(a) In accordance with its Airport Certification Manual and the requirements of this section, each certificate holder must take immediate action to alleviate wildlife hazards whenever they are detected.

(b) In a manner authorized by the Administrator, each certificate holder must ensure that a wildlife hazard assessment is conducted when any of the following events occurs on or near the airport:

(1) An air carrier aircraft experiences multiple wildlife strikes;

(2) An air carrier aircraft experiences substantial damage from striking wildlife. As used in this paragraph, substantial damage means damage or

structural failure incurred by an aircraft that adversely affects the structural strength, performance, or flight characteristics of the aircraft and that would normally require major repair or replacement of the affected component;

(3) An air carrier aircraft experiences an engine ingestion of wildlife; or

(4) Wildlife of a size, or in numbers, capable of causing an event described in paragraphs (b)(1), (b)(2), or (b)(3) of this section is observed to have access to any airport flight pattern or aircraft movement area.

(c) The wildlife hazard assessment required in paragraph (b) of this section must be conducted by a wildlife damage management biologist who has professional training and/or experience in wildlife hazard management at airports or an individual working under direct supervision of such an individual. The wildlife hazard assessment must contain at least the following:

(1) An analysis of the events or circumstances that prompted the assessment.

(2) Identification of the wildlife species observed and their numbers, locations, local movements, and daily and seasonal occurrences.

(3) Identification and location of features on and near the airport that attract wildlife.

(4) A description of wildlife hazards to air carrier operations.

(5) Recommended actions for reducing identified wildlife hazards to air carrier operations.

(d) The wildlife hazard assessment required under paragraph (b) of this section must be submitted to the Administrator for approval and determination of the need for a wildlife hazard management plan. In reaching this determination, the Administrator will consider—

(1) The wildlife hazard assessment;

(2) Actions recommended in the wildlife hazard assessment to reduce wildlife hazards;

(3) The aeronautical activity at the airport, including the frequency and size of air carrier aircraft;

(4) The views of the certificate holder;

(5) The views of the airport users; and

(6) Any other known factors relating to the wildlife hazard of which the Administrator is aware.

(e) When the Administrator determines that a wildlife hazard management plan is needed, the certificate holder must formulate and implement a plan using the wildlife hazard assessment as a basis. The plan must—

(1) Provide measures to alleviate or eliminate wildlife hazards to air carrier operations;

(2) Be submitted to, and approved by, the Administrator prior to implementation; and

(3) As authorized by the Administrator, become a part of the Airport Certification Manual.

(f) The plan must include at least the following:

(1) A list of the individuals having authority and responsibility for implementing each aspect of the plan.

(2) A list prioritizing the following actions identified in the wildlife hazard assessment and target dates for their initiation and completion:

(i) Wildlife population management;

(ii) Habitat modification; and

(iii) Land use changes.

(3) Requirements for and, where applicable, copies of local, State, and Federal wildlife control permits.

(4) Identification of resources that the certificate holder will provide to implement the plan.

(5) Procedures to be followed during air carrier operations that at a minimum includes—

(i) Designation of personnel responsible for implementing the procedures;

(ii) Provisions to conduct physical inspections of the aircraft movement areas and other areas critical to successfully manage known wildlife hazards before air carrier operations begin;

(iii) Wildlife hazard control measures; and

(iv) Ways to communicate effectively between personnel conducting wildlife control or observing wildlife hazards and the air traffic control tower.

(6) Procedures to review and evaluate the wildlife hazard management plan every 12 consecutive months or following an event described in paragraphs (b)(1), (b)(2), and (b)(3) of this section, including:

(i) The plan's effectiveness in dealing with known wildlife hazards on and in the airport's vicinity and

(ii) Aspects of the wildlife hazards described in the wildlife hazard assessment that should be reevaluated.

(7) A training program conducted by a qualified wildlife damage management biologist to provide airport personnel with the knowledge and skills needed to successfully carry out the wildlife hazard management plan required by paragraph (d) of this section.

(g) FAA Advisory Circulars contain methods and procedures for wildlife hazard management at airports that are acceptable to the Administrator.

§ 139.339 Airport condition reporting.

In a manner authorized by the Administrator, each certificate holder must—

(a) Provide for the collection and dissemination of airport condition information to air carriers.

(b) In complying with paragraph (a) of this section, use the NOTAM system, as appropriate, and other systems and procedures authorized by the Administrator.

(c) In complying with paragraph (a) of this section, provide information on the following airport conditions that may affect the safe operations of air carriers:

(1) Construction or maintenance activity on movement areas, safety areas, or loading ramps and parking areas.

(2) Surface irregularities on movement areas, safety areas, or loading ramps and parking areas.

(3) Snow, ice, slush, or water on the movement area or loading ramps and parking areas.

(4) Snow piled or drifted on or near movement areas contrary to §139.313.

(5) Objects on the movement area or safety areas contrary to §139.309.

(6) Malfunction of any lighting system, holding position signs, or ILS critical area signs required by §139.311.

(7) Unresolved wildlife hazards as identified in accordance with §139.337.

(8) Nonavailability of any rescue and firefighting capability required in §§139.317 or 139.319.

(9) Any other condition as specified in the Airport Certification Manual or that may otherwise adversely affect the safe operations of air carriers.

(d) Each certificate holder must prepare and keep, for at least 12 consecutive calendar months, a record of each dissemination of airport condition information to air carriers prescribed by this section.

(e) FAA Advisory Circulars contain methods and procedures for using the NOTAM system and the dissemination of airport information that are acceptable to the Administrator.

§ 139.341 Identifying, marking, and lighting construction and other unserviceable areas.

(a) In a manner authorized by the Administrator, each certificate holder must—

(1) Mark and, if appropriate, light in a manner authorized by the Administrator—

(i) Each construction area and unserviceable area that is on or adjacent to any movement area or any other area of the airport on which air carrier aircraft may be operated;

(ii) Each item of construction equipment and each construction roadway, which may affect the safe movement of aircraft on the airport; and

(iii) Any area adjacent to a NAVAID that, if traversed, could cause derogation of the signal or the failure of the NAVAID; and

(2) Provide procedures, such as a review of all appropriate utility plans prior to construction, for avoiding damage to existing utilities, cables, wires, conduits, pipelines, or other underground facilities.

(b) FAA Advisory Circulars contain methods and procedures for identifying and marking construction areas that are acceptable to the Administrator.

§ 139.343 Noncomplying conditions.

Unless otherwise authorized by the Administrator, whenever the requirements of subpart D of this part cannot be met to the extent that uncorrected unsafe conditions exist on the airport, the certificate holder must limit air carrier operations to those portions of the airport not rendered unsafe by those conditions.