Federal Aviation Administration, DOT

§ 120.227 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.

(b) The provisions of this subpart shall not apply to any person who performs a safety-sensitive function by contract for an employer outside the territory of the United States.

PART 121—OPERATING REQUIREMENTS: DOMESTIC, FLAG, AND SUPPLEMENTAL OPERATIONS

Subpart A—General

Sec.
121.1 Applicability.
121.2 Compliance schedule for operators that transition to part 121; certain new entrant operators.
121.4 Applicability of rules to unauthorized operators.
121.7 Definitions.
121.11 Rules applicable to operations in a foreign country.
121.15 Carriage of narcotic drugs, marihuana, and depressant or stimulant drugs or substances.

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

121.91 Applicability.
121.93 Route requirements: General.
121.95 Route width.
121.97 Airports: Required data.
121.99 Communications facilities—domestic and flag operations.

121.101 Weather reporting facilities.

121.103 En route navigation facilities.

121.105 Servicing and maintenance facilities.

121.106 ETOPS Alternate Airport: Rescue and fire fighting service.

121.107 Dispatch centers.

Subpart F—Approval of Areas and Routes for Supplemental Operations

121.111 Applicability.

121.113 Area and route requirements: General.

121.115 Route width.

121.117 Airports: Required data.

121.119 Weather reporting facilities.

121.121 En route navigation facilities.

121.123 Servicing maintenance facilities.

121.125 Flight following system.

121.127 Flight following system; requirements.

Subpart G—Manual Requirements

121.131 Applicability.

121.133 Preparation.

121.135 Manual contents.

121.137 Distribution and availability.

121.139 Requirements for manual aboard aircraft: Supplemental operations.

121.141 Airplane flight manual.

Subpart H—Aircraft Requirements

121.151 Applicability.

121.153 Aircraft requirements: General.

121.155 [Reserved]

121.157 Aircraft certification and equipment requirements.

121.159 Single-engine airplanes prohibited.

121.161 Airplane limitations: Type of route.

121.162 ETOPS Type Design Approval Basis.

121.163 Aircraft proving tests.

Subpart I—Airplane Performance Operating Limitations

121.171 Applicability.

121.173 General.

121.175 Airplanes: Reciprocating engine-powered: Weight limitations.

121.177 Airplanes: Reciprocating engine-powered: Takeoff limitations.

121.179 Airplanes: Reciprocating engine-powered: En route limitations: All engines operating.

121.181 Airplanes: Reciprocating engine-powered: En route limitations: One engine inoperative.

121.183 Part 25 airplanes with four or more engines: Reciprocating engine powered: En route limitations: Two engines inoperative.

121.185 Airplanes: Reciprocating engine-powered: Landing limitations: Destination airport.


121.189 Airplanes: Turbine engine powered: Takeoff limitations.

121.191 Airplanes: Turbine engine powered: En route limitations: One engine inoperative.

121.193 Airplanes: Turbine engine powered: En route limitations: Two engines inoperative.


121.198 Cargo service airplanes: Increased zero fuel and landing weights.

121.199 Nontransport category airplanes: Takeoff limitations.

121.201 Nontransport category airplanes: En route limitations: One engine inoperative.

121.203 Nontransport category airplanes: Landing limitations: Destination airport.

121.205 Nontransport category airplanes: Landing limitations: Alternate airport.

121.207 Provisionally certificated airplanes: Operating limitations.

Subpart J—Special Airworthiness Requirements

121.211 Applicability.

121.213 [Reserved]

121.215 Cabin interiors.

121.217 Internal doors.

121.219 Ventilation.

121.221 Fire precautions.

121.223 Proof of compliance with §121.221.

121.225 Propeller delcing fluid.

121.227 Pressure cross-feed arrangements.

121.229 Location of fuel tanks.

121.231 Fuel system lines and fittings.

121.233 Fuel lines and fittings in designated fire zones.

121.235 Fuel valves.

121.237 Oil lines and fittings in designated fire zones.

121.239 Oil valves.

121.241 Oil system drains.

121.243 Engine breather lines.

121.245 Fire walls.

121.247 Fire-wall construction.

121.249 Cowling.

121.251 Engine accessory section diaphragm.

121.253 Powerplant fire protection.

121.255 Flammable fluids.

121.257 Shutoff means.

121.259 Lines and fittings.

121.261 Vent and drain lines.

121.263 Fire-extinguishing systems.

121.265 Fire-extinguishing agents.
Federal Aviation Administration, DOT

121.267 Extinguishing agent container pressure relief.
121.269 Extinguishing agent container compartment temperature.
121.271 Fire-extinguishing system materials.
121.273 Fire-detector systems.
121.275 Fire detectors.
121.277 Protection of other airplane components against fire.
121.279 Control of engine rotation.
121.281 Fuel system independence.
121.283 Induction system ice prevention.
121.285 Carriage of cargo in passenger compartments.
121.287 Carriage of cargo in cargo compartments.
121.289 Landing gear: Aural warning device.
121.291 Demonstration of emergency evacuation procedures.
121.293 Special airworthiness requirements for nontransport category airplanes type certificated after December 31, 1964.
121.295 Location for a suspect device.

Subpart K—Instrument and Equipment Requirements

121.301 Applicability.
121.303 Airplane instruments and equipment.
121.305 Flight and navigational equipment.
121.306 Portable electronic devices.
121.307 Engine instruments.
121.308 Lavatory fire protection.
121.309 Emergency equipment.
121.310 Additional emergency equipment.
121.311 Seats, safety belts, and shoulder harnesses.
121.312 Materials for compartment interiors.
121.313 Miscellaneous equipment.
121.314 Cargo and baggage compartments.
121.315 Cockpit check procedure.
121.316 Fuel tanks.
121.317 Passenger information requirements, smoking prohibitions, and additional seat belt requirements.
121.318 Public address system.
121.319 Crewmember interphone system.
121.321 [Reserved]
121.323 Instruments and equipment for operations at night.
121.325 Instruments and equipment for operations under IFR or over-the-top.
121.327 Supplemental oxygen: Reciprocating engine powered airplanes.
121.329 Supplemental oxygen for turbine engine powered airplanes.
121.331 Supplemental oxygen requirements for pressurized cabin airplanes: Reciprocating engine powered airplanes.
121.333 Supplemental oxygen for emergency descent and for first aid; turbine engine powered airplanes with pressurized cabins.
121.335 Equipment standards.
121.337 Protective breathing equipment.
121.339 Emergency equipment for extended over-water operations.
121.340 Emergency flotation means.
121.341 Equipment for operations in icing conditions.
121.342 Pitot heat indication systems.
121.343 Flight data recorders.
121.344 Digital flight data recorders for transport category airplanes.
121.344a Digital flight data recorders for 10–19 seat airplanes.
121.345 Radio equipment.
121.346 Flight data recorders: filtered data.
121.347 Communication and navigation equipment for operations under VFR over routes navigated by pilotage.
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.
121.351 Communication and navigation equipment for extended over-water operations and for certain other operations.
121.353 Emergency equipment for operations over uninhabited terrain areas: Flag, supplemental, and certain domestic operators.
121.354 Terrain awareness and warning system.
121.355 Equipment for operations on which specialized means of navigation are used.
121.356 Collision Avoidance System.
121.357 Airborne weather radar equipment requirements.
121.358 Low-altitude windshear system equipment requirements.
121.359 Cockpit voice recorders.
121.360 Ground proximity warning glide slope deviation alerting system.

Subpart L—Maintenance, Preventive Maintenance, and Alterations

121.361 Applicability.
121.363 Responsibility for airworthiness.
121.365 Maintenance, preventive maintenance, and alteration organization.
121.367 Maintenance, preventive maintenance, and alterations programs.
121.368 [Reserved]
121.369 Manual requirements.
121.370–121.370a [Reserved]
121.371 Required inspection personnel.
121.373 Continuing analysis and surveillance.
121.374 Continuous airworthiness maintenance program (CAMP) for two-engine ETOPS.
121.375 Maintenance and preventive maintenance training program.
121.377 Maintenance and preventive maintenance personnel duty time limitations.
121.378 Certificate requirements.
121.379 Authority to perform and approve maintenance, preventive maintenance, and alterations.
Pt. 121

121.380 Maintenance recording requirements.
121.380a Transfer of maintenance records.

Subpart M—Airman and Crewmember Requirements

121.381 Applicability.
121.383 Airman: Limitations on use of services.
121.387 Flight engineer.
121.389 Flight navigator and specialized navigation equipment.
121.391 Flight attendants.
121.393 Crewmember requirements at stops where passengers remain on board.
121.395 Aircraft dispatcher: Domestic and flag operations.
121.397 Emergency and emergency evacuation duties.

Subpart N—Training Program

121.400 Applicability and terms used.
121.401 Training program: General.
121.402 Training program: Special rules.
121.403 Training program: Curriculum.
121.404 Compliance dates: Crew and dispatcher resource management training.
121.405 Training program and revision: Initial and final approval.
121.406 Credit for previous CRM/DRM training.
121.407 Training program: Approval of airplane simulators and other training devices.
121.409 Training courses using airplane simulators and other training devices.
121.411 Qualifications: Check airmen (airplane) and check airmen (simulator).
121.412 Qualifications: Flight instructors (airplane) and flight instructors (simulator).
121.413 Initial and transition training and checking requirements: Check airmen (airplane), check airmen (simulator).
121.414 Initial and transition training and checking requirements: Flight instructors (airplane), flight instructors (simulator).
121.415 Crewmember and dispatcher training requirements.
121.417 Crewmember emergency training.
121.418 Differences training: Crewmembers and dispatchers.
121.419 Pilots and flight engineers: Initial, transition, and upgrade ground training.
121.420 Flight navigators: Initial and transition ground training.
121.421 Flight attendants: Initial and transition ground training.
121.422 Aircraft dispatchers: Initial and transition ground training.
121.424 Pilots: Initial, transition and upgrade flight training.
121.425 Flight engineers: Initial and transition flight training.
121.426 Flight navigators: Initial and transition flight training.
121.427 Recurrent training.
121.429 [Reserved]

Subpart O—Crewmember Qualifications

121.431 Applicability.
121.432 General.
121.433 Training required.
121.434 Operating experience, operating cycles, and consolidation of knowledge and skills.
121.435 Pilot qualification: Certificates required.
121.438 Pilot operating limitations and pairing requirements.
121.439 Pilot qualification: Recent experience.
121.440 Line checks.
121.441 Proficiency checks.
121.443 Pilot in command qualification: Route and airports.
121.445 Pilot in command airport qualification: Special areas and airports.
121.447 [Reserved]
121.453 Flight engineer qualifications.
121.455–121.459 [Reserved]

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.
121.463 Aircraft dispatcher qualifications.
121.465 Aircraft dispatcher duty time limitations: Domestic and flag operations.
121.467 Flight attendant duty period limitations and rest requirements: Domestic, flag, and supplemental operations.

Subpart Q—Flight Time Limitations and Rest Requirements: Domestic Operations

121.470 Applicability.
121.471 Flight time limitations and rest requirements: All flight crewmembers.

Subpart R—Flight Time Limitations: Flag Operations

121.480 Applicability.
121.481 Flight time limitations: One or two pilot crews.
121.483 Flight time limitations: Two pilots and one additional flight crewmember.
121.485 Flight time limitations: Three or more pilots and an additional flight crewmember.
121.487 Flight time limitations: Pilots not regularly assigned.
Federal Aviation Administration, DOT

121.489 Flight time limitations: Other commercial flying.
121.491 Flight time limitations: Deadhead transportation.
121.493 Flight time limitations: Flight engineers and flight navigators.

Subpart S—Flight Time Limitations: Supplemental Operations

121.500 Applicability.
121.503 Flight time limitations: Pilots: airplanes.
121.505 Flight time limitations: Two pilot crews: airplanes.
121.507 Flight time limitations: Three pilot crews: airplanes.
121.509 Flight time limitations: Four pilot crews: airplanes.
121.511 Flight time limitations: Flight engineers: airplanes.
121.513 Flight time limitations: Overseas and international operations: airplanes.
121.515 Flight time limitations: All airmen: airplanes.
121.517 Flight time limitations: Other commercial flying: airplanes.
121.519 Flight time limitations: Deadhead transportation: airplanes.
121.521 Flight time limitations: Crew of two pilots and one additional airman as required.
121.523 Flight time limitations: Crew of three or more pilots and additional airmen as required.
121.525 Flight time limitations: Pilots serving in more than one kind of flight crew.

Subpart T—Flight Operations

121.531 Applicability.
121.533 Responsibility for operational control: Domestic operations.
121.535 Responsibility for operational control: Flag operations.
121.537 Responsibility for operational control: Supplemental operations.
121.538 Aircraft security.
121.539 Operations notices.
121.541 Operations schedules: Domestic and flag operations.
121.542 Flight crewmember duties.
121.543 Flight crewmembers at controls.
121.545 Manipulation of controls.
121.547 Admission to flight deck.
121.548 Aviation safety inspector’s credentials: Admission to pilot’s compartment.
121.548a DOD Commercial Air Carrier Evaluator’s Credential.
121.549 Flying equipment.
121.550 Secret Service Agents: Admission to flight deck.
121.551 Restriction or suspension of operation: Domestic and flag operations.
121.553 Restriction or suspension of operation: Supplemental operations.
121.555 Compliance with approved routes and limitations: Domestic and flag operations.
121.557 Emergencies: Domestic and flag operations.
121.559 Emergencies: Supplemental operations.
121.561 Reporting potentially hazardous meteorological conditions and irregularities of ground facilities or navigation aids.
121.563 Reporting mechanical irregularities.
121.565 Engine inoperative: Landing; reporting.
121.567 Instrument approach procedures and IFR landing minimums.
121.569 Equipment interchange: Domestic and flag operations.
121.570 Airplane evacuation capability.
121.571 Briefing passengers before takeoff.
121.573 Briefing passengers: Extended overwater operations.
121.574 Oxygen for medical use by passengers.
121.575 Alcoholic beverages.
121.576 Retention of items of mass in passenger and crew compartments.
121.577 Stowage of food, beverage, and passenger service equipment during airplane movement on the surface, takeoff, and landing.
121.578 Cabin ozone concentration.
121.579 Minimum altitudes for use of autopilot.
121.580 Prohibition on interference with crewmembers.
121.581 Observer’s seat: En route inspections.
121.582 Means to discreetly notify a flightcrew.
121.583 Carriage of persons without compliance with the passenger-carrying requirements of this part.
121.584 Requirement to view the area outside the flightdeck door.
121.585 Exit seating.
121.586 Authority to refuse transportation.
121.587 Closing and locking of flight crew compartment door.
121.589 Carry-on baggage.
121.590 Use of certificated land airports in the United States.

Subpart U—Dispatching and Flight Release Rules

121.591 Applicability.
121.593 Dispatching authority: Domestic operations.
121.595 Dispatching authority: Flag operations.
121.597 Flight release authority: Supplemental operations.
121.599 Familiarity with weather conditions.
121.601 Aircraft dispatcher information to pilot in command: Domestic and flag operations.
Pt. 121  
121.603 Facilities and services: Supplemental operations. 
121.605 Airplane equipment. 
121.607 Communication and navigation facilities: Domestic and flag operations. 
121.609 Communication and navigation facilities: Supplemental operations. 
121.611 Dispatch or flight release under VFR. 
121.613 Dispatch or flight release under IFR or over the top. 
121.615 Dispatch or flight release over water: Flag and supplemental operations. 
121.617 Alternate airport for departure. 
121.619 Alternate airport for destination: IFR or over-the-top: Domestic operations. 
121.621 Alternate airport for destination: Flag operations. 
121.623 Alternate airport for destination: IFR or over-the-top: Supplemental operations. 
121.624 ETOPS Alternate Airports. 
121.626 Alternate Airport weather minima. 
121.627 Continuing flight in unsafe conditions. 
121.629 Inoperable instruments and equipment. 
121.629 Operation in icing conditions. 
121.631 Original dispatch or flight release, redispach or amendment of dispatch or flight release. 
121.633 Considering time-limited systems in planning ETOPS alternates. 
121.635 Dispatch to and from refueling or provisional airports: Domestic and flag operations. 
121.637 Takeoffs from unlisted and alternate airports: Domestic and flag operations. 
121.639 Fuel supply: All domestic operations. 
121.641 Fuel supply: Nonturbine and turbo-propeller-powered airplanes: Flag operations. 
121.643 Fuel supply: Nonturbine and turbo-propeller-powered airplanes: Supplemental operations. 
121.645 Fuel supply: Turbine-engine powered airplanes, other than turbo propeller: Flag and supplemental operations. 
121.646 En-route fuel supply: flag and supplemental operations. 
121.647 Factors for computing fuel required. 
121.649 Takeoff and landing weather minimums: VFR: Domestic operations. 
121.651 Takeoff and landing weather minimums: IFR: All certificate holders. 
121.652 Landing weather minimums: IFR: All certificate holders. 
121.653 [Reserved] 
121.655 Applicability of reported weather minimums. 
121.657 Flight altitude rules. 
121.659 Initial approach altitude: Domestic and supplemental operations. 
121.661 Initial approach altitude: Flag operations. 
121.663 Responsibility for dispatch release: Domestic and flag operations. 
121.665 Load manifest. 
121.667 Flight plan: VFR and IFR: Supplemental operations. 

Subpart V—Records and Reports 
121.681 Applicability. 
121.683 Crewmember and dispatcher record. 
121.685 Aircraft record: Domestic and flag operations. 
121.687 Dispatch release: Flag and domestic operations. 
121.689 Flight release form: Supplemental operations. 
121.691 [Reserved] 
121.693 Load manifest: All certificate holders. 
121.695 Disposition of load manifest, dispatch release, and flight plans: Domestic and flag operations. 
121.697 Disposition of load manifest, flight release, and flight plans: Supplemental operations. 
121.698-121.699 [Reserved] 
121.701 Maintenance log: Aircraft. 
121.703 Service difficulty reports. 
121.705 Mechanical interruption summary report. 
121.707 Alteration and repair reports. 
121.709 Airworthiness release or aircraft log entry. 
121.711 Communication records: Domestic and flag operations. 
121.713 Retention of contracts and amendments: Commercial operators who conduct intrastate operations for compensation or hire. 

Subpart W—Crewmember Certificate: International 
121.721 Applicability. 
121.723 Surrender of international crewmember certificate. 

Subpart X—Emergency Medical Equipment and Training 
121.801 Applicability. 
121.803 Emergency medical equipment. 
121.805 Crewmember training for in-flight medical events. 

Subpart Y—Advanced Qualification Program 
121.901 Purpose and eligibility. 
121.903 General requirements for Advanced Qualification Programs. 
121.905 Confidential commercial information. 
121.907 Definitions. 
121.909 Approval of Advanced Qualification Program. 
121.911 Indoctrination curriculum.
Federal Aviation Administration, DOT

Pt. 121, SFAR No. 14

121.913 Qualification curriculum.
121.915 Continuing qualification curriculum.
121.917 Other requirements.
121.919 Certification.
121.921 Training devices and simulators.
121.923 Approval of training, qualification, or evaluation by a person who provides training by arrangement.
121.925 Recordkeeping requirements.

Subpart Z—Hazardous Materials Training Program

121.1001 Applicability and definitions.
121.1003 Hazardous materials training: General.
121.1005 Hazardous materials training required.
121.1007 Hazardous materials training records.

Subpart AA—Continued Airworthiness and Safety Improvements

121.1101 Purpose and definition.
121.1103 [Reserved]
121.1105 Aging airplane inspections and records reviews.
121.1107 Repairs assessment for pressurized fuselages.
121.1109 Supplemental inspections.
121.1111 Electrical wiring interconnection systems (EWIS) maintenance program.
121.1113 Fuel tank system maintenance program.
121.1115 Limit of validity.
121.1117 Flammability reduction means.

Subpart BB [Reserved]

121.1200–121.1399 [Reserved]

Subpart CC [Reserved]

121.1400–121.1499 [Reserved]

APPENDIX A TO PART 121—FIRST-AID KITS AND EMERGENCY MEDICAL KITS

APPENDIX B TO PART 121—AIRCRAFT FLIGHT RECORDER SPECIFICATIONS

APPENDIX C TO PART 121—C-46 NON-TRANSPORT CATEGORY AIRPLANES

APPENDIX D TO PART 121—CRITERIA FOR DEMONSTRATION OF EMERGENCY EVACUATION PROCEDURES UNDER §121.291

APPENDIX E TO PART 121—FLIGHT TRAINING REQUIREMENTS

APPENDIX F TO PART 121—PROFICIENCY CHECK REQUIREMENTS

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

APPENDIX H TO PART 121—ADVANCED SIMULATION

APPENDIXES I–J TO PART 121 [RESERVED]

APPENDIX K TO PART 121—PERFORMANCE REQUIREMENTS FOR CERTAIN TURBO-PROPELLER POWERED AIRPLANES

APPENDIX L TO PART 121—TYPE CERTIFICATION REGULATIONS MADE PREVIOUSLY EFFECTIVE

APPENDIX M TO PART 121—AIRPLANE FLIGHT RECORDER SPECIFICATIONS

APPENDIX N TO PART 121 [RESERVED]

APPENDIX O TO PART 121—HAZARDOUS MATERIALS TRAINING REQUIREMENTS FOR CERTIFICATE HOLDERS

APPENDIX P TO PART 121—REQUIREMENTS FOR ETOPS AND POLAR OPERATIONS

AUTHORITY: 49 U.S.C. 106(g), 40113, 40119, 41706, 44101, 44700–44702, 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 over-all 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 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 (b)) 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.


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]

(2) 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;

(b) For purposes of this section, an authorization holder may develop the 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 holder 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;
Federal Aviation Administration, DOT

(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.


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.

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)(i). 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 25.790(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 EverGo, Respironics LifeChoice, Invacare XPO2, Invacare Solo, Oxlife Independence Oxygen Concentrator, Respironics EverGo, and SeQual Eclipse 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 dispense 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 EverGo, LifeChoice, Invacare XPO2, Invacare Solo, Oxlife Independence Oxygen Concentrator, Respironics EverGo, and SeQual Eclipse 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, take-off, 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 use 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. will remain in effect until further notice.

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.

§ 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 turbo-propeller powered airplanes type certified after December 31, 1964, that have a passenger seat configuration of 10–19 seats;

(ii) Transport category turbo-propeller 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)(1) of this section shall comply with each applicable requirement of this part on or after March 20, 1997; neither shall that airplane be operated in 14 CFR part 121 operations on or after a date listed in this paragraph (d) unless that airplane meets the applicable requirement listed in paragraph (d)(1) of this section.

(i) Nontransport category turbo-propeller powered airplanes type certificated after December 31, 1964, that have a passenger seat configuration of 10–19 seats. No certificate holder 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 listed in paragraph (d)(1) of this section:

(A) Section 121.308, Lavatory fire protection.
(B) Section 121.310(e), Emergency fire handle illumination.
(C) Section 121.337(b)(8), Protective breathing equipment.
(D) Section 121.340, Emergency flotation means.
(E) Section 121.342, Pitot heat indication system.

(ii) December 20, 1997: 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), Passenger seat cushion flammability.
(D) Section 121.312(c), Third attitude indicator.
(E) 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:

(A) Section 121.308, Landing gear aural warning.
(A) Section 121.305(j), Third attitude indicator.
(B) Section 121.311(f), Safety belts and shoulder harnesses.
(i) Manufactured on or after December 20, 1997; Section 121.317(a), Fasten seat belt light.
(ii) Manufactured on or after December 20, 1999: Section 121.293, Takeoff warning system.
(iii) Manufactured on or after March 12, 1999: Section 121.310(b)(1), Interior emergency exit locating sign.
(iv) Manufactured on or after March 20, 1997: Section 121.305(j), Third attitude indicator.
(B) Section 121.311(f), Safety belts and shoulder harnesses.
(2) For transport category turbo-propeller 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) 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.

(2) For transport category turbo-propeller 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.

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.

(a) 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 airport that meets the requirements of part 139, subpart D of this chapter, excluding those that apply to aircraft rescue and firefighting service, or

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.

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.

North Polar Area means the entire area north of 78° N latitude.

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.

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

§ 121.91 Applicability.

This subpart prescribes rules for obtaining approval of routes by certificate holders conducting domestic or flag operations.

§ 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.

§ 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.
§ 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.


§ 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.


§ 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.

(iv) Obstacles.

(1) 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.
§ 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—

(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.
§ 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 holder’s 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 7, 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.


§ 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.


§ 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.


§ 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.
(1) Facilities.
(ii) Public protection.
§ 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.

§ 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 are 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) Operations conducted under the conditions prescribed in Subpart K of this part.
§ 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.

§ 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.

§ 121.125 Flight following system.

(a) Each certificate holder conducting supplemental operations must show that it has—

(i) 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

(ii) 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.
§ 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.


§ 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.

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(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 diversions 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
§ 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.

§ 121.139 Requirements for manual aboard aircraft: Supplemental operations.

(a) Except as 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.
§ 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 data 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).


§ 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
§ 121.157 14 CFR Ch. I (1–1–11 Edition)

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, 1956, 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 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), and 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.

§ 121.159 Single-engine airplanes prohibited.

No certificate holder may operate a single-engine airplane under this part.

§ 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 (e) 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 non-transport 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.

§ 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...
§ 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 with that airplane, 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.

§ 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
Federal Aviation Administration, DOT

§ 121.175

(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) 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.

(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.

§ 121.177 Airplanes: Reciprocating engine-powered: Takeoff limitations.

(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).

§ 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).

§ 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

\[
(0.079 - 0.106/N) V_{so} \]

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(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).

§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
§ 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).


(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).


§ 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
§ 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 1,500 feet vertically and
§ 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 in such an en route 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 five miles on each side of the intended track, or at an altitude of 5,000 feet, whichever is higher.

(b) Aircraft certificated after September 30, 1958, but before August 30, 1959 (SR 422A). No person may operate a turbine engine powered airplane in such an en route 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 five 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 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 2,000 feet, whichever is higher.

§ 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 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 miles on each side of the intended track, or at an altitude of 2,000 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 five 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

(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
§ 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 turbo-propeller 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.

(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.

§ 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 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.


§ 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.

(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.

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.
§ 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
§ 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
§ 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 assure 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) of 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 non-transport category airplane type certificated after December 31, 1964, if it is carried in an approved cargo rack, bin, or compartment, this section does not apply if the cargo 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.


§ 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.


§ 121.291 Demonstration of emergency evacuation procedures.

(a) Except as provided in paragraph (a)(1) of this section, each certificate
§ 121.291  14 CFR Ch. I (1–1–11 Edition)

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.

§ 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]

§ 121.295 Location for a suspect device.

After November 28, 2009, all airplanes with a maximum certificated passenger seating capacity of more than 60 persons must have a location where a suspected explosive or incendiary device found in flight can be placed to minimize the risk to the airplane.


Subpart K—Instrument and Equipment Requirements


§ 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 §§ 121.213 through 121.289 and § 121.359 and § 121.360, and § 121.303 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.


§ 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).
§ 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.

§ 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.
§ 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)
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:

<table>
<thead>
<tr>
<th>Passenger seating accommodations:</th>
<th>Minimum number of hand fire extinguishers</th>
</tr>
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<tbody>
<tr>
<td>61 through 200</td>
<td>3</td>
</tr>
<tr>
<td>201 through 300</td>
<td>4</td>
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<td>301 through 400</td>
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<td>6</td>
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<td>501 through 600</td>
<td>7</td>
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<tr>
<td>601 or more</td>
<td>8</td>
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(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]

EDITORIAL NOTE: For Federal Register citations affecting §121.309, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and at www.fdsys.gov.

§ 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.

(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.

(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]
Federal Aviation Administration, DOT

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 at www.fdsys.gov.

§ 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)(i)(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.

(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:
§ 121.311

(1) Except as provided in §121.311(b)(2)(i)(C)(3) and §121.311(b)(2)(i)(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, 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.

(4) 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 non-transport 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.

(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]

EDITORIAL NOTE: For Federal Register citations affecting §121.311, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and at www.fdsys.gov.

§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)) 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—(1) Substantially complete replacement of the cabin interior on or after March 6, 1995. Except as provided in paragraph (a)(3)(i) or (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.

(1) Substantially complete replacement of the cabin interior on or after August 20,
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;

(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–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
§ 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 non-transport category airplanes certified 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.
§ 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, 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.

(b) Reports of conversions and retrofits.

(i) Until such time as all Class D compartments in aircraft operated under this part by the certificate holder 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.

(ii) 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;

(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.

(c) After March 19, 2001, each Class D compartment, regardless of volume, must meet the standards of §§25.857(e) and 25.858 of this Chapter for a Class E 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.

(i) 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.

(ii) 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;

(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.

§ 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.
§ 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
§ 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
§ 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
§ 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 during the entire flight time at those altitudes.

(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 30 minutes for 10 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.
§ 121.331 Supplemental oxygen requirements for pressurized cabin 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, 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.

(4) When an airplane is 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.

(5) When an airplane is 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.

(6) When an airplane is 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.
§ 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 ensure that the oxygen mask is functioning, fitted properly, and connected
§ 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.
§ 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
§ 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.


§ 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.


§ 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
§ 121.343 Flight data 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 that 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, 1995, 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.

(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 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;
(7) Pitch attitude;
(8) Roll attitude;
(9) Longitudinal acceleration;
(10) Control column or pitch control surface position; and
(11) Thrust of each engine.

For the purpose of this section, manufactured means the point in time at which the airplane inspection acceptance records reflect that the airplane is manufactured.
§ 121.343  14 CFR Ch. I (1–1–11 Edition)

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, 1989, 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—
§ 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 yaw control surface position;
(17) Primary lateral 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 over speed (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;
(88) All cockpit flight control input forces (control wheel, control column, rudder pedal);
(89) Yaw damper status;
(90) Yaw damper command; and
(91) Standby rudder valve status.
(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
§ 121.344

Federal Aviation Administration, DOT

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)(17) 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.

(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 paragraphs (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)(17) 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.

(e) For all turbine-engine powered transport category airplanes that are manufactured after August 18, 2000—

(1) The parameters listed in paragraphs (a)(1) through (57) of this section must be recorded within the ranges, accuracies, resolutions, and sampling 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.

(3) In addition to the requirements of paragraphs (e)(1) and (e)(2) of this section, all Boeing 737 model airplanes must also comply with the requirements of paragraph (n) of this section, as applicable.

(f) For all turbine-engine powered transport category airplanes manufactured after August 19, 2002—

(1) The parameters listed in paragraphs (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.
§ 121.344  
14 CFR Ch. I (1–1–11 Edition)

(2) In addition to the requirements of paragraphs (f)(1) of this section, all Boeing 737 model airplanes must also comply with the requirements of paragraph (n) of this section.

(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 have an approved device to assist in locating that recorder under water.

(k) 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.


(m) All aircraft subject to the requirements of this section that are manufactured on or after April 7, 2010, must have a digital flight data recorder installed that also—
§ 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, resolutions, and recording intervals specified in Appendix M of this part, 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, resolutions, and recording intervals specified in Appendix M of this part.

(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 B of part 135 of this chapter.

(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.

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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) (except paragraphs (a)(3)(ii) and (6)), (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 (k) and §121.346.

(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.

(g) All airplanes subject to the requirements of this section that are manufactured on or after April 7, 2010, must have a digital flight data recorder installed that also—

(1) Meets the requirements in §23.1459(a)(3), (a)(6), and (a)(7) or §25.1459(a)(3), (a)(7), and (a)(8) of this chapter, as applicable; and
(2) Retains the 25 hours of recorded information required in §121.344(g) using a recorder that meets the standards of TSO-C124a, or later revision.


§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.


§ 121.346 Flight data recorders: filtered data.

(a) A flight data signal is filtered when an original sensor signal has been changed in any way, other than changes necessary to:

(1) Accomplish analog to digital conversion of the signal;

(2) Format a digital signal to be DFDR compatible; or

(3) Eliminate a high frequency component of a signal that is outside the operational bandwidth of the sensor.

(b) An original sensor signal for any flight recorder parameter required to be recorded under §121.344 may be filtered only if the recorded signal value continues to meet the requirements of Appendix B or M of this part, as applicable.

(c) For a parameter described in §121.344(a) (12) through (17), (42), or (88), or the corresponding parameter in Appendix B of this part, if the recorded signal value is filtered and does not meet the requirements of Appendix B or M of this part, as applicable, the certificate holder must:

(1) Remove the filtering and ensure that the recorded signal value meets the requirements of Appendix B or M of this part, as applicable; or

(2) Demonstrate by test and analysis that the original sensor signal value can be reconstructed from the recorded data. This demonstration requires that:

(i) The FAA determine that the procedure and the test results submitted by the certificate holder as its compliance with paragraph (c)(2) of this section are repeatable; and

(ii) The certificate holder maintains documentation of the procedure required to reconstruct the original sensor signal value. This documentation is also subject to the requirements of §121.344(i).

(d) Compliance. Compliance is required as follows:

(1) No later than October 20, 2011, each operator must determine, for each airplane on its operations specifications, whether the airplane's DFDR system is filtering any of the parameters listed in paragraph (c) of this section. The operator must create a record of this determination for each airplane it operates, and maintain it as part of the correlation documentation required by §121.344(j)(3) of this part.

(2) For airplanes that are not filtering any listed parameter, no further action is required unless the airplane's DFDR system is modified in a manner that would cause it to meet the definition of filtering on any listed parameter.

(3) For airplanes found to be filtering a parameter listed in paragraph (c) of this section, the operator must either:

(i) No later than April 21, 2014, remove the filtering; or

(ii) No later than April 22, 2013, submit the necessary procedure and test results required by paragraph (c)(2) of this section.

(4) After April 21, 2014, no aircraft flight data recording system may filter any parameter listed in paragraph (c) of this section that does not meet the requirements of Appendix B or M of this part, unless the certificate holder possesses test and analysis procedures and the test results that have been approved by the FAA. All records of tests, analysis and procedures used to comply with this section must be maintained as part of the correlation documentation required by §121.344(j)(3) of this part.


§ 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;
§ 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,
§ 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.

§ 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.

(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.

§ 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.

§ 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:

<table>
<thead>
<tr>
<th>COLLISION AVOIDANCE SYSTEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>If you operate any—</td>
</tr>
<tr>
<td>(a) Turbine-powered airplane of more than 33,000 pounds maximum certificated take-off weight.</td>
</tr>
<tr>
<td>(1) TCAS II that meets TSO C–119b (version 7.0), or takeoff weight a later version.</td>
</tr>
<tr>
<td>(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–118a, or a later version.</td>
</tr>
<tr>
<td>(1) TCAS I that meets TSO C–118, or a later version, or</td>
</tr>
<tr>
<td>(2) A collision avoidance system equivalent to has a TSO C–118, or a later version, or</td>
</tr>
<tr>
<td>(3) A collision avoidance system and Mode S transponder that meet paragraph (a)(1) of this section.</td>
</tr>
<tr>
<td>(c) Piston-powered airplane of more than 33,000 pounds maximum certificated take-off weight.</td>
</tr>
<tr>
<td>(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:</td>
</tr>
<tr>
<td>(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.</td>
</tr>
<tr>
<td>(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–118a, or a later version.</td>
</tr>
<tr>
<td>(2) A collision avoidance system equivalent to has a TSO C–118, or a later version, or</td>
</tr>
<tr>
<td>(3) A collision avoidance system and Mode S transponder that meet paragraph (a)(1) of this section.</td>
</tr>
</tbody>
</table>
§ 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.

§ 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
§ 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 effect 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)(1)(i), (2) and (3), (e), (f), and (g); or §25.1457(a)(1) and (2), (b), (c), (d)(1)(i), (2) and (3), (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 accordance with the requirements of §23.1457 (except paragraphs (a)(6), (d)(1)(ii), (4), and (5)) or §25.1457 (except paragraphs (a)(6), (d)(1)(ii), (4), and (5)) 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, 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.

(i) By April 7, 2012, all turbine engine-powered airplanes subject to this section that are manufactured before April 7, 2010, must have a cockpit voice recorder installed that also—

(1) Meets the requirements of §23.1457(d)(6) or §25.1457(d)(6) of this chapter, as applicable;

(2) Retains at least the last 2 hours of recorded information using a recorder that meets the standards of TSO–C123a, or later revision; and

(3) Is operated continuously from the use of the checklist before the flight to completion of the final checklist at the end of the flight.

(j) All turbine engine-powered airplanes subject to this section that are manufactured on or after April 7, 2010, must have a cockpit voice recorder that also—

(1) Is installed in accordance with the requirements of §23.1457 (except for paragraph (a)(6) or §25.1457 (except for paragraph (a)(6)) of this chapter, as applicable;

(2) Retains at least the last 2 hours of recorded information using a recorder that meets the standards of TSO–C123a, or later revision; and

(3) Is operated continuously from the use of the checklist before the flight to completion of the final checklist at the end of the flight.

(k) All airplanes required by this part to have a cockpit voice recorder and a flight data recorder, that install datalink communication equipment on or after December 6, 2010, must record all datalink messages as required by the certification rule applicable to the airplane.
§ 121.361 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.

§ 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.

§ 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 §121.366(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.


§ 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.


§ 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.
§ 121.370–121.370a

(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.

§ 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 inspective 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.

§ 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.
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.
   (i) 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.** 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 trained maintenance person, who is ETOPS qualified, must accomplish and certify by signature ETOPS specific tasks. Before an ETOPS flight may commence, an ETOPS pre-departure service check (PDSC) Signatory Person, who has been authorized by the certificate holder, must certify by signature, that the ETOPS PDSC has been completed.
   (4) For the purposes of this paragraph, the following definitions apply:
      (i) **ETOPS qualified person:** A person is ETOPS qualified when that person satisfactorily completes the operator’s ETOPS training program and is authorized by the certificate holder.
      (ii) **ETOPS PDSC Signatory Person:** A person is an ETOPS PDSC Signatory Person when that person is ETOPS qualified and that person:

(A) When certifying the completion of the ETOPS PDSC in the United States:
   (I) Works for an operator authorized to engage in part 121 operation or works for a part 145 repair station; and
   (2) Holds a U.S. Mechanic’s Certificate with airframe and powerplant ratings.

(B) When certifying the completion of the ETOPS PDSC outside of the U.S. holds a certificate in accordance with §43.17(c)(1) of this chapter; or

(C) When certifying the completion of the ETOPS PDSC outside the U.S. holds the certificates needed or has the requisite experience or training to return aircraft to service on behalf of an ETOPS maintenance entity.

(iii) **ETOPS maintenance entity:** An entity authorized to perform ETOPS maintenance and complete ETOPS PDSC and that entity is:
   (A) Certified to engage in part 121 operations;
   (B) Repair station certificated under part 145 of this chapter; or
   (C) Entity authorized pursuant to §43.17(c)(2) of this chapter.

(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.
§ 121.374  14 CFR Ch. I (1–1–11 Edition)

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.

§ 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.

§ 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).

§ 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).

§ 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

§ 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 com-
mand and the other second in com-
mand.

(d) On each flight requiring a flight
engineer at least one flight crew-
member, other than the flight engi-
neer, must be qualified to provide
emergency performance of the flight
engineer’s functions for the safe com-
pletion of the flight if the flight engi-
neer becomes ill or is otherwise inca-
pacitated. A pilot need not hold a
flight engineer’s certificate to perform
the flight engineer’s functions in such
a situation.

§ 121.387 Flight engineer.

No certificate holder may operate an
airplane for which a type certificate
was issued before January 2, 1964, hav-
ing a maximum certificated takeoff
weight of more than 80,000 pounds with-
out a flight crewmember holding a cur-
rent 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.

§ 121.389 Flight navigator and special-
ized 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 air-
plane by each pilot seated at his duty
station.

(b) Notwithstanding paragraph (a) of
this section, the Administrator may
also require a flight navigator or spe-
cial navigation equipment, or both,
when specialized means of navigation
are necessary for 1 hour or less. In
making this determination, the Admini-
strator 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 cov-
erage at destination;
(6) Fuel requirements;
(7) Fuel available for return to point
of departure or alternates;
(8) Predication of flight upon oper-
ation 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 navi-
gator or special navigation equipment,
or both, are required are specified in
the operations specifications of the air
carrier or commercial operator.

§ 121.391 Flight attendants.

(a) Each certificate holder shall pro-
vide at least the following flight at-
tendants 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 pas-
sengers—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 ca-
pacity of more than 50 but less than 101
passengers—two flight attendants.
(4) For airplanes having a seating ca-
pacity of more than 100 passengers—
two flight attendants plus one addi-
tional flight attendant for each unit
(or part of a unit) of 50 passenger seats
above a seating capacity of 100 pas-
sengers.

(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
Federal Aviation Administration, DOT

§ 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...


EFFECTIVE DATE NOTE: At 75 FR 68198, Nov. 5, 2010, §121.391 was amended by revising paragraph (a) introductory text, effective Jan. 4, 2011. For the convenience of the user, the revised text is set forth as follows:

§ 121.391 Flight attendants.

(a) Except as specified in §121.393 and §121.394, each certificate holder must provide at least the following flight attendants on board each passenger-carrying airplane when passengers are on board:

* * * * *
§ 121.394 Flight attendant requirements during passenger boarding and deplaning.

(a) During passenger boarding, on each airplane for which more than one flight attendant is required by §121.391, the certificate holder may:

(1) Reduce the number of required flight attendants by one, provided that:

(i) The flight attendant that leaves the aircraft remains within the immediate vicinity of the door through which passengers are boarding;

(ii) The flight attendant that leaves the aircraft only conducts safety duties related to the flight being boarded;

(iii) The airplane engines are shut down; and

(iv) At least one floor level exit remains open to provide for passenger egress; or

(2) Substitute a pilot or flight engineer employed by the certificate holder and trained and qualified on that type airplane for one flight attendant, provided the certificate holder—

(i) Describes in the manual required by §121.133:

(A) The necessary functions to be performed by the substitute pilot or flight engineer in an emergency, to include a situation requiring an emergency evacuation. The certificate holder must show those functions are realistic, can be practically accomplished, and will meet any reasonably anticipated emergency; and

(B) How other regulatory functions performed by a flight attendant will be accomplished by the substitute pilot or flight engineer on the airplane.

(ii) Ensures that the following requirements are met:

(A) The substitute pilot or flight engineer is not assigned to operate the flight for which that person is substituting for a required flight attendant.

(B) The substitute pilot or flight engineer is trained in all assigned flight attendant duties regarding passenger handling.

(C) The substitute pilot or flight engineer meets the emergency training requirements for flight attendants in evacuation management and evacuation commands, as appropriate, and frequency of performance drills regarding operation of exits in the normal and emergency modes on that type aircraft.

(b) The substitute pilot or flight engineer is in possession of all items required for duty.

(E) The substitute pilot or flight engineer is located in the passenger cabin.

(F) The substitute pilot or flight engineer is identified to the passengers.

(G) The substitution of a pilot or flight engineer for a required flight attendant does not interfere with the safe operation of the flight.

(h) The airplane engines are shut down.

(1) At least one floor-level exit remains open to provide for passenger egress.

(b) During passenger deplaning, on each airplane for which more than one flight attendant is required by §121.391, the certificate holder may reduce the number of flight attendants required by that paragraph provided:

(1) The airplane engines are shut down;

(2) At least one floor level exit remains open to provide for passenger egress; and

(3) The number of flight attendants on board is at least half the number required by §121.391, rounded down to the next lower number in the case of fractions, but never fewer than one.

(c) If only one flight attendant is on the airplane during passenger boarding or deplaning, that flight attendant must be located in accordance with the certificate holder’s FAA-approved operating procedures. If more than one flight attendant is on the airplane during passenger boarding or deplaning, the flight attendants must be evenly distributed throughout the airplane cabin, in the vicinity of the floor-level exits, to provide the most effective assistance in the event of an emergency.

(d) The time spent by any crewmember conducting passenger boarding or deplaning duties is considered duty time.

§ 121.394 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
§ 121.401 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, 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.

§ 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
§ 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.
§ 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.

§ 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 pre-flight 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.

§ 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.

§ 121.411 Qualifications: Check airmen (airplane) and check airmen (simulator).

(a) For the purposes of this section and §121.413:
§ 121.411 14 CFR Ch. I (1–1–11 Edition)

(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 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 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 65th 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
§ 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 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; and

(3) Has satisfactorily completed the applicable training requirements of §121.414.

(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 65th birthday or who do not hold an appropriate medical certificate may function as flight instructors, but may not serve as pilot flight crew members 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...
§ 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.


§ 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.


§ 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—

(a) Duties and responsibilities of crewmembers or dispatchers, as applicable;

(b) Appropriate provisions of the Federal Aviation Regulations;

(c) Contents of the certificate holder’s operating certificate and operations specifications (not required for flight attendants); and

(d) 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 121.405.

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.

5. Each training program must provide the flight training specified in §§121.424 through 121.426, as applicable.

(b) Each training program must provide recurrent ground and flight training as provided in §121.427.

(c) Each training program must provide the differences training specified in §121.417 if the Administrator finds that, due to differences between airplanes of the same type operated by the certificate holder, additional training is necessary to ensure that each crewmember and dispatcher is adequately trained to perform his assigned duties.

(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 ensure that each crewmember and dispatcher is adequately trained to perform his assigned duties.

7. 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.

8. 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.

9. 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 ensure that each crewmember and dispatcher—

(a) Remains adequately trained and currently proficient with respect to each airplane, crewmember position, and type of operation in which he serves; and

(b) Qualifies in new equipment, facilities, procedures, and techniques, including modifications to airplanes.


§ 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 combatting 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;
§ 121.418

(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).

§ 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,
Federal Aviation Administration, DOT § 121.420

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

(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.


§ 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 crew members, 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.

§ 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.

§ 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.

§ 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.
§ 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.

§ 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.

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.
§ 121.432 Operating cycle

Operating cycle is a complete flight segment consisting of a takeoff, climb, enroute portion, descent, and a landing.


§ 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.


§ 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.

§ 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 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)(1) (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.

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§ 121.434

(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...
§ 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 and 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.

§ 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 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 satisfactorily 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, 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.
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 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 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 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 maneuvers prescribed in paragraph (b)(1) 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
§ 121.441 Proficiency checks.

(a) No certificate holder may use any person nor may any person serve as a required pilot flight crewmember unless the certificate holder has completed the required training or a proficiency check, or an approved simulator course of training under §121.409, as follows:

(1) A pilot in command line check of each pilot of the certificate holder who has attained 60 years of age. Notwithstanding the foregoing, a certificate holder is not required to conduct for a 6-month period a line check under this paragraph of a pilot serving as a second-in-command if the pilot has undergone a regularly scheduled simulator evaluation during that period.

(e) No pilot who has attained 60 years of age may serve as a pilot in operations under this part unless the certificate holder has evaluated the pilot’s performance every 6 months, through a line check. Notwithstanding the foregoing, a certificate holder is not required to conduct for a 6-month period a line check under this paragraph of a pilot serving as a second-in-command if the pilot has undergone a regularly scheduled simulator evaluation during that period.

(f) The training program provisions of §121.401(b) do not apply to pilots who have attained 60 years of age and serve in operations under this part.

§ 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 to perform flight duty in operations under this part and may require any additional maneuvers that are determined necessary to make this certifying statement.

(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 both the route and 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.

(d) No certificate holder may use the services of any person as a pilot in operations under this part unless the certificate holder evaluates the performance, through a line check, of each pilot of the certificate holder who has attained 60 years of age. Notwithstanding the foregoing, a certificate holder is not required to conduct for a 6-month period a line check under this paragraph of a pilot serving as a second-in-command if the pilot has undergone a regularly scheduled simulator evaluation during that period.

(e) No pilot who has attained 60 years of age may serve as a pilot in operations under this part unless the certificate holder has evaluated the pilot’s performance every 6 months, through a line check. Notwithstanding the foregoing, a certificate holder is not required to conduct for a 6-month period a line check under this paragraph of a pilot serving as a second-in-command if the pilot has undergone a regularly scheduled simulator evaluation during that period.

(f) The training program provisions of §121.401(b) do not apply to pilots who have attained 60 years of age and serve in operations under this part.
§ 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.
3. Communication procedures, including airport visual aids.
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.

(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 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.


§ 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.
3. Communication procedures, including airport visual aids.
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.

§ 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.

§ 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 and 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.

§§ 121.455–121.459 [Reserved]

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.

§ 121.463 Aircraft dispatcher qualifications.

(a) No certificate holder conducting domestic or flag operations may use any person, nor may any person serve,
§ 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.
§ 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 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—
§ 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.

§ 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
§ 121.480

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.


Subpart R—Flight Time Limitations: Flag Operations


§ 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
Federal Aviation Administration, DOT

§ 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

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.

§ 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) 350 hours during any 90 consecutive days; or

(2) 1,000 hours during any 12-calendar-month period.

§ 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.

§ 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.

[Doc. No. 28154, 61 FR 2612, Jan. 26, 1996]

§ 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 §121.483 apply to those flight engineers or flight navigators.
§ 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.
§ 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.


§ 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
§ 121.535 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 §121.523.

(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.
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 redispaching 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.


§ 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 operations specifications.

(f) No pilot may operate an aircraft, in a careless or reckless manner, so as to endanger life or property.


§ 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 any known change in the use of navigation
§ 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 during 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).

§ 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.


§ 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 certificate 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
§ 121.557 Emergencies: Domestic and flag operations.

(a) In an emergency situation that requires immediate decision and action

§ 121.558 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.

§ 121.558a 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.

§ 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.

§ 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.

§ 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.

§ 121.555 Compliance with approved routes and limitations: Domestic and flag operations.

(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.
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 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.


§ 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 an ground 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.


§ 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.


§ 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.


§ 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
§ 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.

§ 121.571 Briefing passengers before takeoff.

(a) Each certificate holder operating a passenger-carrying airplane shall ensure 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 lighted passenger information signs and crewmember instructions concerning the use of safety belts.

(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 MSF, 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.
Federal Aviation Administration, DOT

§ 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:

(i) The equipment is—

(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 must be given before reaching the overwater part of the flight.

§ 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 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]

§ 121.576  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]
Federal Aviation Administration, DOT § 121.579

(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 re-engining under the provisions of subpart E of part 91, until it is re-engined.

§ 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 re-engining under the provisions of subpart E of part 91, until it is re-engined.

§ 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
§ 121.580 Prohibition on interference with crewmembers.

(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.

§ 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.

§ 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 flight crew 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, 121.319, 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.

§ 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.

§ 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.

(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 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—

(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 tick-
et counters at each airport where it conducts passenger operations, written procedures established for making deter-
minations in regard to exit row seating.

(g) No certificate holder may allow taxi or pushback unless at least one re-
quired crewmember has verified that no exit seat is occupied by a person the crewmember determines is likely to be un-
able to perform the applicable func-
tions listed in paragraph (d) of this sec-
tion.

(h) Each certificate holder shall in-
clude in its passenger briefings a ref-
ence 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 in-
clude in its passenger briefings a re-
quest 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 sec-
tion;

(2) Has a nondiscernible condition that will prevent him or her from per-
forming the applicable functions listed in paragraph (d) of this section;

(3) May suffer bodily harm as the re-
sult 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 sec-
tion that it is likely that a passenger assigned to an exit seat would be un-
able to perform the functions listed in paragraph (d) of this section or a pas-
senger requests a non-exit seat, the certificate holder shall expeditiously reloca-
te the passenger to a non-exit seat.

(l) In the event of full booking in the non-exit seats and if necessary to ac-
commodate a passenger being relocated from an exit seat, the certificate holder shall move a passenger who is will-
ing 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 crew-
member 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 sec-
tion 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 in-
formation, passenger information cards, crewmember verification of ap-
propriate seating in exit seats, pas-
senger 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 certifi-
cate holder employee on the airport to whom complaints should be addressed for resolution; and,

(2) Submit their procedures for pre-
liminary review and approval to the principal operations inspectors as-
signed to them at the certificate-hold-
ing 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 para-
graph (n) of this section will not be-
come effective until final approval is granted by the Director, Flight Stand-
ards Service, Washington, DC. Ap-
proval will be based solely upon the
§ 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.

§ 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.

§ 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.


§ 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).


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.


§ 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.


§ 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),
§ 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.

§ 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.

§ 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.
§ 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 §121.625.

(c) No person may dispatch a flight unless he lists each required alternate airport in the dispatch 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 or 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.


§ 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...
§ 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

(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).

§ 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.

§ 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)
§ 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 holder 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.

§ 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 takeoff. 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
§ 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.

§ 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, 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

(1) 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 sys-
tems).
(c) For turbine-engine powered air-
planes with more than two engines, the
certificate holder need not meet para-
graph (b)(1) of this section until Feb-
ruary 15, 2013.
[Doc. No. FAA–2002–6717, 72 FR 1882, Jan. 16,
2007]
§ 121.635 Dispatch to and from refuel-
ing or provisional airports: Domes-
tic 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 un-
less that airport meets the require-
ments 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 applica-
table to operation from an approved air-
port; 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 pre-
scribed 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 pre-
scribed 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 takeoff from an al-
ternate airport unless the weather con-
ditions are at least equal to the mini-
mums 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,
§ 121.639 Fuel supply: All domestic op-
erations.
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
(whenever 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 au-
thorized to conduct day VFR oper-
ations in their operations specifi-
cations and who are operating non-
transport category airplanes type cer-
tificated 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 re-
quired to fly at normal cruising fuel
consumption to the airports specified
in paragraphs (a) (1) and (2) of this sec-
tion or to fly for 90 minutes at normal
cruising fuel consumption, whichever
is less.
(b) No person may dispatch a nontur-
bine or turbo-propeller-powered air-
plane to an airport for which an alter-
nate 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
§ 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 non-transport 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.

§ 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.

§ 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 requirements of §121.333 of this chapter; or

(B) 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 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.

(iv) Fuel to account for engine anti-ice, and if appropriate wing anti-ice, for the entire time during which icing is forecast.

(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 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.

(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

Federal Aviation Administration, DOT
§ 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.

§ 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.

5. 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.
§ 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.

§ 121.655 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 of...
§ 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
§ 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.

§ 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.

§ 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 or dispatcher. It may include any additional available weather reports or forecasts that the pilot in command or the aircraft dispatcher considers necessary or desirable.
§ 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).

(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.

§ 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.

§ 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.


§§ 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, descent 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.

§ 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.

§ 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.

§ 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.

§ 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 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.

(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.

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.

§ 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.
§ 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 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—Advanced Qualification Program

§ 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.
Federal Aviation Administration, DOT § 121.913

(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.

(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.
§ 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...

(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.
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.
§ 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 certified 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

§ 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

(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 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 §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
§ 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 maintain 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 with this part. This exception applies only to those persons who load aircraft.

Federal Aviation Administration, DOT
§ 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 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.


§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, McDonnell 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]


§ 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) 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 of repairs, alterations, and modifications that 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 7,500 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)
§ 121.1115 Limit of validity.

(a) Applicability. This section applies to certificate holders operating any transport category, turbine-powered airplane with a maximum takeoff gross weight greater than 75,000 pounds and a type certificate issued after January 1, 1958, regardless of whether the maximum takeoff gross weight is a result of an original type certificate or a later design change. This section also applies to certificate holders operating any transport category, turbine-powered airplane with a type certificate issued after January 1, 1958, regardless of the maximum takeoff gross weight, for which a limit of validity of the engineering data that supports the structural maintenance program (hereafter referred to as LOV) is required in accordance with §25.571 or §26.21 of this chapter after January 14, 2011.

§ 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
§ 121.1115

(b) Limit of validity. No certificate holder may operate an airplane identified in paragraph (a) of this section after the applicable date identified in Table 1 of this section unless an Airworthiness Limitations section approved under Appendix H to part 25 or §26.21 of this chapter is incorporated into its maintenance program. The ALS must—

(1) Include an LOV approved under §25.571 or §26.21 of this chapter, as applicable, except as provided in paragraph (f) of this section; and

(2) Be clearly distinguishable within its maintenance program.

(c) Operation of airplanes excluded from §26.21. No certificate holder may operate an airplane identified in §26.21(g) of this chapter after July 14, 2013, unless an Airworthiness Limitations section approved under Appendix H to part 25 or §26.21 of this chapter is incorporated into its maintenance program. The ALS must—

(1) Include an LOV approved under §25.571 or §26.21 of this chapter, as applicable, except as provided in paragraph (f) of this section; and

(2) Be clearly distinguishable within its maintenance program.

(d) Extended limit of validity. No certificate holder may operate an airplane beyond the LOV, or extended LOV, specified in paragraph (b)(1), (c), (d), or (f) of this section, as applicable, unless the following conditions are met:

(1) An ALS must be incorporated into its maintenance program that—

(i) Includes an extended LOV and any widespread fatigue damage airworthiness limitation items approved under §26.23 of this chapter; and

(ii) Is approved under §26.23 of this chapter.

(2) The extended LOV and the airworthiness limitation items pertaining to widespread fatigue damage must be clearly distinguishable within its maintenance program.

(e) Principal Maintenance Inspector approval. Certificate holders must submit the maintenance program revisions required by paragraphs (b), (c), and (d) of this section to the Principal Maintenance Inspector for review and approval.

(f) Exception. For any airplane for which an LOV has not been approved as of the applicable compliance date specified in paragraph (c) or Table 1 of this section, instead of including an approved LOV in the ALS, an operator must include the applicable default LOV specified in Table 1 or Table 2 of this section, as applicable, in the ALS.

Table 1—Airplanes Subject to §26.21

<table>
<thead>
<tr>
<th>Airplane model</th>
<th>Compliance date—months after January 14, 2011</th>
<th>Default LOV (flight cycles (FC) or flight hours (FH))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airbus—Existing 1 Models Only:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A300 B4–2C, B4–103</td>
<td>30</td>
<td>40,000 FC</td>
</tr>
<tr>
<td>A300 B4–203</td>
<td>30</td>
<td>34,000 FC</td>
</tr>
<tr>
<td>A300–600 Series</td>
<td>30</td>
<td>30,000 FC/67,500 FH</td>
</tr>
<tr>
<td>A310–200 Series</td>
<td>30</td>
<td>40,000 FC/60,000 FH</td>
</tr>
<tr>
<td>A310–300 Series</td>
<td>30</td>
<td>35,000 FC/60,000 FH</td>
</tr>
<tr>
<td>A318 Series</td>
<td>60</td>
<td>48,000 FC/60,000 FH</td>
</tr>
<tr>
<td>A319 Series</td>
<td>60</td>
<td>48,000 FC/60,000 FH</td>
</tr>
<tr>
<td>A320–100 Series</td>
<td>60</td>
<td>48,000 FC/48,000 FH</td>
</tr>
<tr>
<td>A320–200 Series</td>
<td>60</td>
<td>48,000 FC/60,000 FH</td>
</tr>
<tr>
<td>A321 Series</td>
<td>60</td>
<td>48,000 FC/60,000 FH</td>
</tr>
<tr>
<td>A330–200, –300 Series (except WV050 family) (non enhanced)</td>
<td>60</td>
<td>40,000 FC/60,000 FH</td>
</tr>
<tr>
<td>A330–200, –300 Series WV050 family (enhanced)</td>
<td>60</td>
<td>33,000 FC/100,000 FH</td>
</tr>
<tr>
<td>A330–200 Freighter Series</td>
<td>60</td>
<td>See NOTE.</td>
</tr>
<tr>
<td>A340–200, –300 Series (except WV 027 and WV050 family) (non enhanced)</td>
<td>60</td>
<td>20,000 FC/80,000 FH</td>
</tr>
<tr>
<td>A340–200, –300 Series WV 027 (non enhanced)</td>
<td>60</td>
<td>30,000 FC/60,000 FH</td>
</tr>
<tr>
<td>A340–300 Series WV050 family (enhanced)</td>
<td>60</td>
<td>20,000 FC/100,000 FH</td>
</tr>
<tr>
<td>A340–500, –600 Series</td>
<td>60</td>
<td>16,600 FC/100,000 FH</td>
</tr>
<tr>
<td>A380–800 Series</td>
<td>72</td>
<td>See NOTE.</td>
</tr>
<tr>
<td>Boeing—Existing 1 Models Only:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>717</td>
<td>60</td>
<td>60,000 FC/60,000 FH</td>
</tr>
<tr>
<td>727 (all series)</td>
<td>30</td>
<td>60,000 FC</td>
</tr>
<tr>
<td>737 (Classics): 737–100, –200, –200C, –300, –400, –500</td>
<td>30</td>
<td>75,000 FC</td>
</tr>
<tr>
<td>737 (NG): 737–600, –700, –700C, –800, –900, –900ER</td>
<td>60</td>
<td>75,000 FC</td>
</tr>
</tbody>
</table>
### TABLE 1—AIRPLANES SUBJECT TO § 26.21—Continued

<table>
<thead>
<tr>
<th>Airplane model</th>
<th>Compliance date—months after January 14, 2011</th>
<th>Default LOV [flight cycles (FC) or flight hours (FH)]</th>
</tr>
</thead>
<tbody>
<tr>
<td>747–400: 747–400, –400D, –400F</td>
<td>60</td>
<td>20,000 FC</td>
</tr>
<tr>
<td>757</td>
<td>60</td>
<td>50,000 FC</td>
</tr>
<tr>
<td>767</td>
<td>60</td>
<td>50,000 FC</td>
</tr>
<tr>
<td>777–200, –300</td>
<td>60</td>
<td>40,000 FC</td>
</tr>
<tr>
<td>777–200LR, 777–300ER</td>
<td>72</td>
<td>40,000 FC</td>
</tr>
<tr>
<td>777F</td>
<td>72</td>
<td>11,000 FC</td>
</tr>
<tr>
<td><strong>Bombardier—Existing Models Only:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CL–600: 2015 (Regional Jet Series 705), 2024 (Regional Jet Series 900)</td>
<td>72</td>
<td>60,000 FC</td>
</tr>
<tr>
<td><strong>Embraer—Existing Models Only:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ERJ 170</td>
<td>72</td>
<td>See NOTE.</td>
</tr>
<tr>
<td>ERJ 190</td>
<td>72</td>
<td>See NOTE.</td>
</tr>
<tr>
<td><strong>Fokker—Existing Models Only:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F28 Mark 0070, Mark 0100</td>
<td>30</td>
<td>90,000 FC</td>
</tr>
<tr>
<td><strong>Lockheed—Existing Models Only:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L–1011</td>
<td>30</td>
<td>36,000 FC</td>
</tr>
<tr>
<td>188 (all series)</td>
<td>30</td>
<td>26,600 FC</td>
</tr>
<tr>
<td>382 (all series)</td>
<td>30</td>
<td>20,000 FC/50,000 FH</td>
</tr>
<tr>
<td><strong>McDonnell Douglas—Existing Models Only:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC–8, –8F</td>
<td>30</td>
<td>50,000 FC/50,000 FH</td>
</tr>
<tr>
<td>DC–9 (except for MD–80 models)</td>
<td>30</td>
<td>100,000 FC/100,000 FH</td>
</tr>
<tr>
<td>MD–80 (DC–9–81, –82, –83, –87, MD–88)</td>
<td>30</td>
<td>50,000 FC/50,000 FH</td>
</tr>
<tr>
<td>MD–90</td>
<td>60</td>
<td>60,000 FC/90,000 FH</td>
</tr>
<tr>
<td>DC–10–10, –15</td>
<td>30</td>
<td>42,000 FC/60,000 FH</td>
</tr>
<tr>
<td>DC–10–30, –40, –10F, –30F, –40F</td>
<td>30</td>
<td>30,000 FC/60,000 FH</td>
</tr>
<tr>
<td>MD–10–10F</td>
<td>60</td>
<td>42,000 FC/60,000 FH</td>
</tr>
<tr>
<td>MD–10–30F</td>
<td>60</td>
<td>30,000 FC/60,000 FH</td>
</tr>
<tr>
<td>MD–11, MD–11F</td>
<td>60</td>
<td>20,000 FC/60,000 FH</td>
</tr>
<tr>
<td><strong>Maximum Takeoff Gross Weight Changes:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All airplanes whose maximum takeoff gross weight has been decreased to 75,000 pounds or below after January 14, 2011 or increased to greater than 75,000 pounds at any time after the LOV is approved, or before operating the airplane, whichever occurs latest, or within 12 months after the LOV is approved, or before operating the airplane, whichever occurs latest.</td>
<td>30, or within 12 months</td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>All Other Airplane Models (TCs and amended TCs) not Listed in Table 2:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>72, or within 12 months</td>
<td>Not applicable.</td>
</tr>
</tbody>
</table>

**NOTE:** Airplane operation limitation is stated in the Airworthiness Limitation section.

### TABLE 2—AIRPLANES EXCLUDED FROM § 26.21

<table>
<thead>
<tr>
<th>Airplane model</th>
<th>Default LOV [flight cycles (FC) or flight hours (FH)]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airbus: Caravelle</td>
<td>15,000 FC/24,000 FH</td>
</tr>
<tr>
<td>Avions Marcel Dassault: Breguet Aviation Mercure 100C</td>
<td>20,000 FC/16,000 FH</td>
</tr>
<tr>
<td>Boeing: Boeing 707 (-100 Series and -200 Series)</td>
<td>20,000 FC</td>
</tr>
<tr>
<td>Boeing 707 (-300 Series and -400 Series)</td>
<td>20,000 FC</td>
</tr>
<tr>
<td>Boeing 720</td>
<td>30,000 FC</td>
</tr>
<tr>
<td>Bombardier: CL–44D4 and CL–44J</td>
<td>20,000 FC</td>
</tr>
<tr>
<td>BD–700</td>
<td>15,000 FH</td>
</tr>
<tr>
<td>Bristol Aeroplane Company: Britannia 305</td>
<td>10,000 FC</td>
</tr>
<tr>
<td>British Aerospace Airbus, Ltd.: BAC 1–11 (all models)</td>
<td>85,000 FC</td>
</tr>
<tr>
<td>British Aerospace (Commercial Aircraft) Ltd.: Armstrong Whitworth Argosy A.W. 650 Series 101</td>
<td>20,000 FC</td>
</tr>
<tr>
<td>BAE Systems (Operations) Ltd.: BAE 146–100A (all models)</td>
<td>50,000 FC</td>
</tr>
</tbody>
</table>
§ 121.1117 Flammability reduction means.

(a) Applicability. Except as provided in paragraph (o) 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) New Production Airplanes. Except in accordance with §121.628, no certificate holder may operate an airplane identified in Table I of this section (including all-cargo airplanes) for which the State of Manufacture issued the original certificate of airworthiness or export airworthiness approval after December 27, 2010 unless an Ignition Mitigation Means (IMM) or Flammability Reduction Means (FRM) meeting the requirements of §26.33 of this chapter is operational.

(c) Auxiliary Fuel Tanks. After the applicable date stated in paragraph (e) of this section, no certificate holder may operate any airplane subject to §26.33 of this chapter that has an Auxiliary Fuel Tank installed pursuant to a field approval, unless the following requirements are met:

1. The certificate holder complies with 14 CFR 26.35 by the applicable date stated in that section.
2. The certificate holder installs Flammability Impact Mitigation Means (FIMM), if applicable, that is approved by the FAA Oversight Office.
3. Except in accordance with §121.628, the FIMM, if applicable, is operational.

(d) Retrofit. Except as provided in paragraphs (j), (k), and (l) of this section, after the dates specified in paragraph (e) of this section, no certificate holder may operate an airplane to which this section applies unless the requirements of paragraphs (d)(1) and (d)(2) of this section are met.

1. IMM, FRM or FIMM, if required by §§26.33, 26.35, or 26.37 of this chapter,

§ 121.1117—AIRPLANES EXCLUDED FROM § 26.21—Continued

<table>
<thead>
<tr>
<th>Airplane model</th>
<th>Default LOV [flight cycles (FC) or flight hours (FH)]</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAe 146–200–07</td>
<td>50,000 FC</td>
</tr>
<tr>
<td>BAe 146–200–07 Dev</td>
<td>50,000 FC</td>
</tr>
<tr>
<td>BAe 146–200–11</td>
<td>50,000 FC</td>
</tr>
<tr>
<td>BAe 146–200–07A</td>
<td>47,000 FC</td>
</tr>
<tr>
<td>BAe 146–200–11 Dev</td>
<td>43,000 FC</td>
</tr>
<tr>
<td>BAe 146–300 (all models)</td>
<td>40,000 FC</td>
</tr>
<tr>
<td>Avro 146–RU0A (all models)</td>
<td>40,000 FC</td>
</tr>
<tr>
<td>Avro 146–RU85A and 146–RU100A (all models)</td>
<td>50,000 FC</td>
</tr>
<tr>
<td>D &amp; R Nevada, LLC: Convair Model 22</td>
<td>1,000 FC/1,000 FH</td>
</tr>
<tr>
<td>Convair Model 23M</td>
<td>1,000 FC/1,000 FH</td>
</tr>
<tr>
<td>deHavilland Aircraft Company, Ltd.: D.H. 106 Comet 4C</td>
<td>8,000 FH</td>
</tr>
<tr>
<td>Gulfstream: GV</td>
<td>40,000 FH</td>
</tr>
<tr>
<td>GV–SP</td>
<td>40,000 FH</td>
</tr>
<tr>
<td>Ilyushin Aviation Complex: IL–96T</td>
<td>10,000 FC/30,000 FH</td>
</tr>
<tr>
<td>Lockheed: 300–50A01 (USAF C 141A)</td>
<td>20,000 FC</td>
</tr>
</tbody>
</table>


EFFECTIVE DATE NOTE: By Amdt. 121–351, 75 FR 69785, Nov. 15, 2010, §121.1115 was added, effective Jan. 14, 2011.
that are approved by the FAA Oversight Office, are installed within the compliance times specified in paragraph (e) of this section.

(2) Except in accordance with §§121.628, the IMM, FRM or FIMM, as applicable, are operational.

(e) Compliance Times. Except as provided in paragraphs (k) and (l) of this section, the installations required by paragraph (d) of this section must be accomplished no later than the applicable dates specified in paragraph (e)(1), (e)(2), or (e)(3) of this section.

(1) Fifty percent of each certificate holder’s fleet identified in paragraph (d)(1) of this section must be modified no later than December 26, 2014.

(2) One hundred percent of each certificate holder’s fleet identified in paragraph (d)(1) of this section must be modified no later than December 26, 2017.

(3) For those certificate holders that have only one airplane of a model identified in Table 1 of this section, the airplane must be modified no later than December 26, 2017.

(f) Compliance After Installation. Except in accordance with §121.628, no certificate holder may—

(1) Operate an airplane on which IMM or FRM has been installed before the dates specified in paragraph (e) of this section unless the IMM or FRM is operational, or

(2) Deactivate or remove an IMM or FRM once installed unless it is replaced by a means that complies with paragraph (d) of this section.

(g) Maintenance Program Revisions. No certificate holder may operate an airplane for which airworthiness limitations have been approved by the FAA Oversight Office in accordance with §§26.33, 26.35, or 26.37 of this chapter after the airplane is modified in accordance with paragraph (d) of this section unless the maintenance program for that airplane is revised to include those applicable airworthiness limitations.

(h) After the maintenance program is revised as required by paragraph (g) of this section, before returning an airplane to service after any alteration for which airworthiness limitations are required by §§25.361, 26.33, or 26.37 of this chapter, the certificate holder must revise the maintenance program for the airplane to include those airworthiness limitations.

(i) The maintenance program changes identified in paragraphs (g) and (h) of this section must be submitted to the operator’s Principal Maintenance Inspector responsible for review and approval prior to incorporation.

(j) The requirements of paragraph (d) of this section do not apply to airplanes operated in all-cargo service, but those airplanes are subject to paragraph (f) of this section.

(k) The compliance dates specified in paragraph (e) of this section may be extended by one year, provided that—

(1) No later than March 26, 2009, the certificate holder notifies its assigned Flight Standards Office or Principal Inspector that it intends to comply with this paragraph;

(2) No later than June 24, 2009, the certificate holder applies for an amendment to its operations specification in accordance with §119.51 of this chapter and revises the manual required by §121.133 to include a requirement for the airplane models specified in Table 2 of this section to use ground air conditioning systems for actual gate times of more than 30 minutes, when available at the gate and operational, whenever the ambient temperature exceeds 60 degrees Fahrenheit; and

(3) Thereafter, the certificate holder uses ground air conditioning systems as described in paragraph (k)(2) of this section on each airplane subject to the extension.

Table 2

<table>
<thead>
<tr>
<th>Model—Boeing</th>
<th>Model—Airbus</th>
</tr>
</thead>
<tbody>
<tr>
<td>747 Series</td>
<td>A318, A319, A320, A321 Series</td>
</tr>
<tr>
<td>737 Series</td>
<td>A300, A310 Series</td>
</tr>
<tr>
<td>777 Series</td>
<td>A330, A340 Series</td>
</tr>
<tr>
<td>767 Series</td>
<td></td>
</tr>
<tr>
<td>757 Series</td>
<td></td>
</tr>
</tbody>
</table>

(l) For any certificate holder for which the operating certificate is issued after December 26, 2008, the compliance date specified in paragraph (e) of this section may be extended by one year, provided that the certificate holder meets the requirements of paragraph (k)(2) of this section when its initial operations specifications are
issued and, thereafter, uses ground air conditioning systems as described in paragraph (k)(2) of this section on each airplane subject to the extension. 

(m) After the date by which any person is required by this section to modify 100 percent of the affected fleet, no certificate holder may operate in passenger service any airplane model specified in Table 2 of this section unless the airplane has been modified to comply with §26.33(c) of this chapter.

(n) No certificate holder may operate any airplane on which an auxiliary fuel tank is installed after December 26, 2017 unless the FAA has certified the tank as compliant with §25.981 of this chapter, in effect on December 26, 2008.

(o) Exclusions. The requirements of this section do not apply to the following airplane models:

(1) Convair CV–240, 340, 440, including turbine powered conversions.
(2) Lockheed L–188 Electra.
(3) Vickers VC–10.
(4) Douglas DC–3, including turbine powered conversions.
(5) Bombardier CL–44.
(6) Mitsubishi YS–11.
(7) BAC 1–11.
(8) Concorde.
(9) deHavilland D.H. 106 Comet 4C.
(10) VFW—Vereinigte Flugtechnische VFW–614.
(11) Ilyushin Aviation IL 96T.
(12) Bristol Aircraft Britannia 305.
(13) Handley Page Herald Type 300.
(14) Avions Marcel Dassault—Breguet Aviation Mercure 100C.
(15) Airbus Caravelle.
(17) Lockheed L–300.


Subpart BB [Reserved]

§§ 121.1200–121.1399 [Reserved]

Subpart CC [Reserved]

§§ 121.1400–121.1499 [Reserved]

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:

<table>
<thead>
<tr>
<th>No. of passenger seats</th>
<th>No. of first-aid kits</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–50</td>
<td>1</td>
</tr>
<tr>
<td>51–150</td>
<td>2</td>
</tr>
<tr>
<td>151–250</td>
<td>3</td>
</tr>
<tr>
<td>More than 250</td>
<td>4</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>Contents</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adhesive bandage compresses, 1-inch</td>
<td>16</td>
</tr>
<tr>
<td>Antiseptic swabs</td>
<td>20</td>
</tr>
<tr>
<td>Ammonia inhalants</td>
<td>10</td>
</tr>
<tr>
<td>Bandage compresses, 4-inch</td>
<td>8</td>
</tr>
<tr>
<td>Triangular bandage compresses, 40-inch</td>
<td>5</td>
</tr>
<tr>
<td>Arm splint, noninflatable</td>
<td>1</td>
</tr>
<tr>
<td>Leg splint, noninflatable</td>
<td>1</td>
</tr>
<tr>
<td>Roller bandage, 4-inch</td>
<td>4</td>
</tr>
<tr>
<td>Adhesive tape, 1-inch standard roll</td>
<td>2</td>
</tr>
<tr>
<td>Bandage scissors</td>
<td>1</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>Contents</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sphygmomanometer</td>
<td>1</td>
</tr>
<tr>
<td>Stethoscope</td>
<td>1</td>
</tr>
<tr>
<td>Airways, oropharyngeal (3 sizes)</td>
<td>3</td>
</tr>
<tr>
<td>Syringes (sizes necessary to administer required drugs)</td>
<td>4</td>
</tr>
<tr>
<td>Needles (sizes necessary to administer required drugs)</td>
<td>6</td>
</tr>
<tr>
<td>50% Dextrose injection, 50cc</td>
<td>1</td>
</tr>
<tr>
<td>Epinephrine 1:1000, single dose ampule or equivalent</td>
<td>2</td>
</tr>
<tr>
<td>Diphenhydramine HC1 injection, single dose ampule or equivalent</td>
<td>2</td>
</tr>
<tr>
<td>Nitroglycerin tablets</td>
<td>10</td>
</tr>
<tr>
<td>Basic instructions for use of the drugs in the kit protective nonpermeable gloves or equivalent</td>
<td>1 pair</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</th>
<th>Accuracy sensor input to DFDR readout</th>
<th>Sampling interval (per second)</th>
<th>Resolution 4 readout</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time (GMT or Frame Counter)</td>
<td>30 days to 60 days, sampled 1 per frame</td>
<td>±1/4 % Per Hour</td>
<td>0.25 (1 per 4 seconds)</td>
<td>1 sec.</td>
</tr>
<tr>
<td>Altitude</td>
<td>±1000 ft to max certificated altitude of aircraft</td>
<td>±1/2 % to ±1.000 ft (See Table 1, TSO-C51a)</td>
<td>1 sec.</td>
<td>5' to 35'</td>
</tr>
<tr>
<td>Airspeed</td>
<td>50 KIAS to V, and V, to 1.2V,A</td>
<td>±3%, ±3%</td>
<td>1 sec.</td>
<td>1 k</td>
</tr>
<tr>
<td>Heading</td>
<td>360°</td>
<td>±1°</td>
<td>8 sec.</td>
<td>0.01 g</td>
</tr>
<tr>
<td>Normal Acceleration (Vertical)</td>
<td>±6g</td>
<td>±1% of max range excluding datum error of ±5%</td>
<td>1 sec.</td>
<td>0.5%</td>
</tr>
<tr>
<td>Pitch Attitude</td>
<td>±75°</td>
<td>±2°</td>
<td>1 sec.</td>
<td>0.5°</td>
</tr>
<tr>
<td>Roll Attitude</td>
<td>±180°</td>
<td>±2°</td>
<td>1 sec.</td>
<td>0.5°</td>
</tr>
<tr>
<td>Radio Transmitter Keying</td>
<td>On-Off (Discrete)</td>
<td>±2°</td>
<td>1 sec.</td>
<td>0.5°</td>
</tr>
<tr>
<td>Thrust/Pitch on Engine</td>
<td>Full Range Forward</td>
<td>±2°</td>
<td>1 sec.</td>
<td>0.5°</td>
</tr>
<tr>
<td>Trailng Edge Flap or Cockpit Control Selection</td>
<td>Full Range or Each Discrete Position</td>
<td>±3° or as Pilot's Indicator</td>
<td>0.5 sec.</td>
<td>0.5%</td>
</tr>
<tr>
<td>Leading Edge Flap or Cockpit Control Selection</td>
<td>Full Range or Each Discrete Position</td>
<td>±3° or as Pilot's Indicator</td>
<td>0.5 sec.</td>
<td>0.5%</td>
</tr>
<tr>
<td>Thrust Reverser Position</td>
<td>Stowed, In Transit, and Reverse (Discrete)</td>
<td>1 (per engine)</td>
<td>1 sec.</td>
<td>0.5%</td>
</tr>
<tr>
<td>Ground Spoiler Position/ Speed Brake Selection</td>
<td>Full Range or Each Discrete Position</td>
<td>±2% Unless Higher Accuracy</td>
<td>1 sec.</td>
<td>0.2%</td>
</tr>
<tr>
<td>Marker Beacon Passage</td>
<td>Discrete</td>
<td>1 sec.</td>
<td>1 sec.</td>
<td>0.2%</td>
</tr>
<tr>
<td>Autopilot Engagement</td>
<td>Discrete</td>
<td>1 sec.</td>
<td>1 sec.</td>
<td>0.2%</td>
</tr>
<tr>
<td>Longitudinal Acceleration</td>
<td>±1g</td>
<td>±1.5% max range excluding datum error of ±5%</td>
<td>1 sec.</td>
<td>0.01 g</td>
</tr>
</tbody>
</table>

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;
   - (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.

### Pt. 121, App. B

#### 14 CFR Ch. I (1–1–11 Edition)

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Range</th>
<th>Accuracy sensor input to DFDR readout</th>
<th>Sampling interval (per second)</th>
<th>Resolution*4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pilot Input and/or Surface Position—Primary Controls (Pitch, Roll, Yaw)*3</td>
<td>Full Range</td>
<td>±2° Unless Higher Accuracy Uniquely Required.</td>
<td>1</td>
<td>0.2%*2</td>
</tr>
<tr>
<td>Lateral Acceleration</td>
<td>±1g</td>
<td>±1.5% max range excluding datum error of ±5%</td>
<td>4</td>
<td>0.01g</td>
</tr>
<tr>
<td>Pitch Trim Position</td>
<td>Full Range</td>
<td>±3% Unless Higher Accuracy Uniquely Required.</td>
<td>1</td>
<td>0.3%*2</td>
</tr>
<tr>
<td>Glideslope Deviation</td>
<td>±400 Microamps</td>
<td>±3%</td>
<td>1</td>
<td>0.3%*2</td>
</tr>
<tr>
<td>Localizer Deviation</td>
<td>±400 Microamps</td>
<td>±3%</td>
<td>1</td>
<td>0.3%*2</td>
</tr>
<tr>
<td>AFCS Mode and Engagement Status</td>
<td>Discrete</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Radio Altitude</td>
<td>−20 ft to 2,500 ft</td>
<td>±2 ft or ±3% Whichever is Greater Below 500 ft and ±5% Above 500 ft.</td>
<td>1</td>
<td>1 ft ± 5%*2</td>
</tr>
<tr>
<td>Master Warning</td>
<td>Discrete</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Main Gear Squat Switch Status</td>
<td>Discrete</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Angle of Attack (if recorded directly)</td>
<td>As installed</td>
<td>As installed</td>
<td>2</td>
<td>0.3%*2</td>
</tr>
<tr>
<td>Outside Air Temperature or Total Air Temperature..</td>
<td>−50 °C to +90 °C</td>
<td>±2 °C</td>
<td>0.5</td>
<td>±3°C</td>
</tr>
<tr>
<td>Hydraulics, Each System Low Pressure</td>
<td>Discrete</td>
<td></td>
<td></td>
<td>0.5%*2 or 0.5%*2</td>
</tr>
<tr>
<td>Groundspeed</td>
<td>As installed</td>
<td>Most Accurate Systems Installed (IMS Equipped Aircraft Only)</td>
<td>1</td>
<td>0.2%*2</td>
</tr>
</tbody>
</table>

*If additional recording capacity is available, recording of the following parameters is recommended. The parameters are listed in order of significance:

<table>
<thead>
<tr>
<th>Parameters</th>
<th>When available, As installed</th>
<th>4</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Drift Angle</td>
<td>As installed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wind Speed and Direction</td>
<td>As installed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latitude and Longitude</td>
<td>As installed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brake pressure/Brake pedal position</td>
<td>As installed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional engine parameters:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPR</td>
<td>As installed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N1</td>
<td>As installed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N2</td>
<td>As installed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EGT</td>
<td>As installed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Throttle Lever Position</td>
<td>As installed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel Flow</td>
<td>As installed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TCAS:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TA</td>
<td>As installed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RA</td>
<td>As installed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensitivity level (as selected by crew).</td>
<td>As installed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GPWS (ground proximity warning system).</td>
<td>Discrete</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Landing gear or gear selector position</td>
<td>Discrete</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DME 1 and 2 Distance</td>
<td>0–200 NM.</td>
<td>As installed</td>
<td></td>
</tr>
<tr>
<td>Nav 1 and 2 Frequency Selection</td>
<td>Full range</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*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 of 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.

APPENDIX C TO PART 121—C-46 NONTRANSPORT CATEGORY AIRPLANES

Cabin 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 SE-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 §121.235.
Pt. 121, App. C

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 stainless 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 §121.245 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 firewall 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 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 this 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) **Engine compartment.** C–46 engine compartments meet the requirements of §121.261 if—

(1) The compartments conform to type design and 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, dibrodiifluoromethane 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)

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).

<table>
<thead>
<tr>
<th>Standard altitude in feet</th>
<th>Airplane weight in pounds</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
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</table>

1 Ref. Fig. 1(a)(1) for weight and distance for altitudes above 7,000.

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<thead>
<tr>
<th>Standard altitude in feet</th>
<th>Airplane weight in pounds</th>
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<td>8,000</td>
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</table>

1 Ref. Fig. 1(a)(2) for weight and distance for altitudes above 6,000.

(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)

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).

<table>
<thead>
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<th>Standard altitude in feet</th>
<th>Airplane weight in pounds</th>
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<td>5,470</td>
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<tr>
<td>4,000</td>
<td>5,770</td>
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<tr>
<td>5,000</td>
<td>6,070</td>
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<td>6,000</td>
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<tr>
<td>7,000</td>
<td>6,680</td>
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<tr>
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1 Ref. Fig. 1(b)(1) for weight and distance for altitudes above 6,000.

<table>
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<th>Standard altitude in feet</th>
<th>Airplane weight in pounds</th>
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<tr>
<td>7,000</td>
<td>6,680</td>
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<tr>
<td>8,000</td>
<td>6,990</td>
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</table>

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)).

<table>
<thead>
<tr>
<th>Weight (pounds)</th>
<th>Terrain clearance (feet) 1</th>
<th>Blower setting</th>
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</thead>
<tbody>
<tr>
<td>45,000</td>
<td>6,450 Low.</td>
<td></td>
</tr>
<tr>
<td>44,000</td>
<td>7,000 Do.</td>
<td></td>
</tr>
<tr>
<td>43,000</td>
<td>7,500 Do.</td>
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</tr>
<tr>
<td>42,200</td>
<td>8,000 High.</td>
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<td>41,000</td>
<td>9,600 Do.</td>
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<td>40,000</td>
<td>11,000 Do.</td>
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</tr>
<tr>
<td>39,000</td>
<td>12,300 Do.</td>
<td></td>
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</tbody>
</table>

1 Highest altitude of terrain over which airplanes may be operated in compliance with §121.201.

(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)).
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

<table>
<thead>
<tr>
<th>Terrain clearance (feet)</th>
<th>Blower setting</th>
</tr>
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<tbody>
<tr>
<td>Low.</td>
<td></td>
</tr>
<tr>
<td>Do.</td>
<td></td>
</tr>
<tr>
<td>High.</td>
<td></td>
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</table>

Ref. Fig. 2(a).

Ref. Fig. 3(a)(2).

Distance in feet

<table>
<thead>
<tr>
<th>Standard altitude in feet</th>
<th>Airplane weight in pounds and approach speeds in knots</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>$V_{50}$</td>
</tr>
<tr>
<td></td>
<td>40,000</td>
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<td>4,320</td>
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<td>5,310</td>
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</tbody>
</table>

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. (0.60 factor)

Distance in feet

<table>
<thead>
<tr>
<th>Standard altitude in feet</th>
<th>Airplane weight in pounds and approach speeds in knots</th>
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<tbody>
<tr>
<td></td>
<td>$V_{50}$</td>
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<td>8,000</td>
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</tbody>
</table>

1 For use with Curtiss model C–46 airplanes when approved for this weight.

2 Steady approach speed through 50 foot height TIAS denoted by symbol $V_{50}$.

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)
### Pt. 121, App. C

**14 CFR Ch. 1 (1–1–11 Edition)**

#### Distance in feet

<table>
<thead>
<tr>
<th>Standard altitude in feet</th>
<th>Airplane weight in pounds and approach speeds ¹ in knots</th>
<th>40,000</th>
<th>42,000</th>
<th>44,000</th>
<th>46,000</th>
<th>48,000</th>
<th>50,000</th>
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<td></td>
<td></td>
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<tr>
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<tr>
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<td>8,000</td>
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</tr>
</tbody>
</table>

¹ Steady approach speed through 50 foot-height-knots TIAS denoted by symbol Vₛₘₖ.

(2) Curtiss model C–46 certificated for maximum weight of 45,000 pounds. (0.55 factor.)

<table>
<thead>
<tr>
<th>Standard altitude in feet</th>
<th>Airplane weight in pounds and approach speeds ² in knots</th>
<th>42,000</th>
<th>44,000</th>
<th>46,000</th>
<th>48,000</th>
<th>50,000</th>
</tr>
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<td></td>
<td></td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2,000</td>
<td>3,040, Vₘₐₖ 80, 3,150, Vₛₘₖ 82, 3,260, Vₛₘₖ 84, 3,360, 86</td>
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<td></td>
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</tr>
<tr>
<td>3,000</td>
<td>3,110, Vₘₐₖ 80, 3,220, Vₛₘₖ 82, 3,340, Vₛₘₖ 84, 3,440, 86</td>
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<tr>
<td>4,000</td>
<td>3,180, Vₘₐₖ 80, 3,300, Vₛₘₖ 82, 3,410, Vₛₘₖ 84, 3,520, 86</td>
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<tr>
<td>5,000</td>
<td>3,260, Vₘₐₖ 80, 3,380, Vₛₘₖ 82, 3,500, Vₛₘₖ 84, 3,610, 86</td>
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<tr>
<td>6,000</td>
<td>3,330, Vₘₐₖ 80, 3,460, Vₛₘₖ 82, 3,580, Vₛₘₖ 84, 3,700, 86</td>
<td></td>
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<tr>
<td>7,000</td>
<td>3,420, Vₘₐₖ 80, 3,540, Vₛₘₖ 82, 3,670, Vₛₘₖ 84, 3,800, 86</td>
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<tr>
<td>8,000</td>
<td>3,500, Vₘₐₖ 80, 3,630, Vₛₘₖ 82, 3,760, Vₛₘₖ 84, 3,900, 86</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

² For use with Curtiss model C–46 airplanes when approved for this weight.

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.)

<table>
<thead>
<tr>
<th>Standard altitude in feet</th>
<th>Airplane weight in pounds and approach speeds ¹ in knots</th>
<th>40,000</th>
<th>42,000</th>
<th>44,000</th>
<th>46,000</th>
<th>48,000</th>
<th>50,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>S.L</td>
<td>4,710, Vₘₐₖ 86, 4,910, Vₛₘₖ 88, 5,130, Vₛₘₖ 90, 5,230, 91</td>
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<tr>
<td>1,000</td>
<td>4,840, Vₘₐₖ 86, 5,050, Vₛₘₖ 88, 5,270, Vₛₘₖ 90, 5,370, 91</td>
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<tr>
<td>2,000</td>
<td>4,960, Vₘₐₖ 86, 5,180, Vₛₘₖ 88, 5,410, Vₛₘₖ 90, 5,510, 91</td>
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<tr>
<td>3,000</td>
<td>5,090, Vₘₐₖ 86, 5,320, Vₛₘₖ 88, 5,550, Vₛₘₖ 90, 5,660, 91</td>
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<tr>
<td>4,000</td>
<td>5,230, Vₘₐₖ 86, 5,460, Vₛₘₖ 88, 5,700, Vₛₘₖ 90, 5,810, 91</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>5,000</td>
<td>5,360, Vₘₐₖ 86, 5,600, Vₛₘₖ 88, 5,850, Vₛₘₖ 90, 5,960, 91</td>
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<tr>
<td>6,000</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>7,000</td>
<td>5,640, Vₘₐₖ 86, 5,900, Vₛₘₖ 88, 6,170, Vₛₘₖ 90, 6,280, 91</td>
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<td></td>
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</tr>
<tr>
<td>8,000</td>
<td>5,790, Vₘₐₖ 86, 6,050, Vₛₘₖ 88, 6,340, Vₛₘ₆ 90, 6,450, 91</td>
<td></td>
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</tbody>
</table>

¹ Steady approach speed through 50 foot-height-knots TIAS denoted by symbol Vₛₘₖ.

(2) Curtiss C–46 certificated for maximum weight of 48,000 pounds. (0.55 factor.)
## 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 121.299**

### Table: Approach Speeds

<table>
<thead>
<tr>
<th>Standard Altitude in feet</th>
<th>Airplane weight in pounds</th>
<th>Approach Speeds V in knots</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>42,000</td>
<td>44,000</td>
</tr>
<tr>
<td>5,000</td>
<td>4,150</td>
<td>80</td>
</tr>
<tr>
<td>6,000</td>
<td>4,240</td>
<td>80</td>
</tr>
<tr>
<td>7,000</td>
<td>4,350</td>
<td>80</td>
</tr>
<tr>
<td>8,000</td>
<td>4,450</td>
<td>80</td>
</tr>
</tbody>
</table>

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).

---

**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
CURTISS C-46 MODELS
CERTIFIED 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)
RUNWAY GRADIENT CORRECTION
FOR ACCELERATE - STOP DISTANCE

FOR C-46 AIRPLANES UNDER FAR 23.199

FIG. 1(e)
CURTISS C-46 MODELS
ENROUTE LIMITATIONS - ONE ENGINE INOPERATIVE

FAR 121.201

REFERENCE TABLE 2(a)

REFERENCE TABLE 2(b)
C-46 MAX. CERTIFICATED WEIGHT 48,000 LBS.
ENROUTE CLIMB SUMMARY

GEAR UP
FLAP UP
COWLS 20
130 MPH T.I.A.S.
LEFT ENGINE INOPERATIVE,
PROPELLER FEATHERED WITH
2 BLADES UP, 1 DOWN
RIGHT ENGINE OPERATING AT
MAXIMUM CONTINUOUS POWER

STANDARD ALTITUDE - 1000 FEET

RATE OF CLimb
(FT/MIN)

FIG. 2(a)
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. 31(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).

PIL 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)

STANDARD ALTITUDE IN 1,000 FEET

STEADY APPROACH SPEED OF 86 KNOTS (TIAS)
THROUGH 50 FT. HEIGHT AT 48,000 LBS. SEE
TABLE 3 (c)(2) FOR SPEED AT OTHER WEIGHTS

LANDING FIELD LENGTH IN 100 FEET

FIG. 3(c)(2)
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 50 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 section, 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.


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

<table>
<thead>
<tr>
<th>Maneuvers/Procedures</th>
<th>Initial training</th>
<th>Transition training</th>
<th>Upgrade training</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Simulator</td>
<td>Simulator</td>
<td>Simulator</td>
</tr>
<tr>
<td></td>
<td>A/P Inflight</td>
<td>A/P Inflight</td>
<td>A/P Inflight</td>
</tr>
<tr>
<td></td>
<td>Static Visual simulator</td>
<td>Static Visual simulator</td>
<td>Static Visual simulator</td>
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<td>Non-visual simulator</td>
<td>Non-visual simulator</td>
<td>Non-visual simulator</td>
</tr>
<tr>
<td></td>
<td>Training device</td>
<td>Training device</td>
<td>Training device</td>
</tr>
</tbody>
</table>

### As appropriate to the airplane and the operation involved, flight training for pilots must include the following maneuvers and procedures:

<table>
<thead>
<tr>
<th>I. Preflight:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(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 detail of preflight inspection items.</td>
</tr>
<tr>
<td>(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.</td>
</tr>
<tr>
<td>(c) Taxiing, sailing, and docking procedures in compliance with instructions issued by the appropriate Traffic Control Authority or by the person conducting the training.</td>
</tr>
<tr>
<td>(d) Pretakeoff checks that include powerplant checks.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>II. Takeoffs:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Normal takeoffs which, for the purpose of this maneuver, begin when the airplane is taxied into position on the runway to be used.</td>
</tr>
<tr>
<td>(b) Takeoffs with instrument conditions simulated at or before reaching an altitude of 1000’ above the airport elevation.</td>
</tr>
<tr>
<td>(c) Crosswind takeoffs</td>
</tr>
<tr>
<td>(d) Takeoffs with a simulated failure of the most critical powerplant—.</td>
</tr>
</tbody>
</table>
### Flight Training Requirements—Continued

<table>
<thead>
<tr>
<th>Maneuvers/Procedures</th>
<th>Initial training</th>
<th>Transition training</th>
<th>Upgrade training</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A/P Simulator</td>
<td>A/P Simulator</td>
<td>A/P Simulator</td>
</tr>
<tr>
<td></td>
<td>Inflight Static</td>
<td>Inflight Static</td>
<td>Inflight Static</td>
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<tr>
<td></td>
<td>Non-visual simulator</td>
<td>Non-visual simulator</td>
<td>Non-visual simulator</td>
</tr>
<tr>
<td></td>
<td>Training device</td>
<td>Training device</td>
<td>Training device</td>
</tr>
</tbody>
</table>

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.

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.

### Flight Maneuvers and Procedures:

(a) Turns with and without spoilers
(b) Tuck and Mach buffet
(c) Maximum endurance and maximum range procedures.
(d) Operation of systems and controls at the flight engineer station.
(e) Runway and jammed stabilizer.
(f) Normal and abnormal or alternate operation of the following systems and procedures:

1. Pressurization
2. Pneumatic
3. Air conditioning
4. Fuel and oil
5. Electrical
6. Hydraulic
7. Flight control
8. Anti-icing and deicing
9. Auto-pilot
10. Automatic or other approach aids
11. Stall warning devices, stall avoidance devices, and stability augmentation devices.
12. Airborne radar devices
13. Any other systems, devices, or aids available.
14. Electrical, hydraulic, flight control, and flight instrument system malfunction or failure.
15. Landing gear and flap systems failure or malfunction.
16. Failure of navigation or communications equipment.

(g) Flight emergency procedures that include at least the following:

1. Powerplant, heater, cargo compartment, cabin, flight deck, wing, and electrical fires.
2. Smoke control
3. Powerplant failures
4. Fuel jettisoning
5. Any other emergency procedures outlined in the appropriate flight manual.

(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°.

(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.

Training in at least one of the above configurations must be accomplished while in a turn with a bank angle between 15° and 30°.
FLIGHT TRAINING REQUIREMENTS—Continued

<table>
<thead>
<tr>
<th>Maneuvers/Procedures</th>
<th>Initial training</th>
<th>Transition training</th>
<th>Upgrade training</th>
</tr>
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<tbody>
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<td>A/P Simulator</td>
<td>A/P Simulator</td>
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<td></td>
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<td>Non-visual simulator</td>
<td>Inflight Static</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Training device</td>
<td>Non-visual simulator</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Inflight Static</td>
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<td></td>
<td></td>
<td></td>
<td>Non-visual simulator</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Training device</td>
</tr>
<tr>
<td>(j) Recovery from specific flight characteristics that are peculiar to the airplane type.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(k) Instrument procedures that include the following:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1) Area departure and arrival</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2) Use of navigation systems including adherence to assigned radials.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3) Holding</td>
<td></td>
<td></td>
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<tr>
<td>(f) ILS instrument approaches that include the following:</td>
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<tr>
<td>(1) Normal ILS approaches</td>
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<tr>
<td>(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.</td>
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<td>(m) Instrument approaches and missed approaches other than ILS which include the following:</td>
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<tr>
<td>(1) Nonprecision approaches that the trainee is likely to use.</td>
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<tr>
<td>(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.</td>
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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 is turned over to the final approach controller in the case of GCA approach) and ends when the airplane touch-down on the runway or when transition to a missed approach configuration is completed.
(n) Circling approaches which include the following:

1. That portion of the circling approach to the authorized minimum altitude for the procedure being used must be made under simulated instrument conditions.
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 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 stalls only and partial flap approaches is necessary.

(p) Missed approaches which include the following:

1. Missed approaches from ILS approaches.
2. Other missed approaches
3. Missed approaches that include a complete approved missed approach procedure.
### FLIGHT TRAINING REQUIREMENTS—Continued

<table>
<thead>
<tr>
<th>Maneuvers/Procedures</th>
<th>Initial training</th>
<th>Transition training</th>
<th>Upgrade training</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A/P</td>
<td>Simulator</td>
<td>A/P</td>
</tr>
<tr>
<td></td>
<td>Inflight Static</td>
<td>Non-visual simulator</td>
<td>Inflight Static</td>
</tr>
<tr>
<td>(4) Missed approaches that include a powerplant failure.</td>
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</tr>
<tr>
<td>IV. Landings and Approaches to Landings:</td>
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</tr>
<tr>
<td>(a) Normal landings</td>
<td>B</td>
<td></td>
<td>AT</td>
</tr>
<tr>
<td>(b) Landing and go around with the horizontal stabilizer out of trim.</td>
<td>P</td>
<td></td>
<td>AT</td>
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<tr>
<td>(c) Landing in sequence from an ILS instrument approach</td>
<td>B</td>
<td></td>
<td>AT</td>
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<tr>
<td>(d) Cross wind landing</td>
<td>B</td>
<td></td>
<td>AT</td>
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<tr>
<td>(e) Maneuvering to a landing with simulated powerplant failure, as follows:</td>
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<td>AT</td>
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<tr>
<td>(1) Except as provided in subparagraph (5) 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).</td>
<td>P</td>
<td></td>
<td>AT</td>
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<tr>
<td>(2) Except as provided in subparagraph (3) of this paragraph, in the case of other multi-engine 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.</td>
<td>P</td>
<td></td>
<td>AT</td>
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<tr>
<td>(3) Notwithstanding the requirements of subparagraphs (1) and (2) of this paragraph, flight crewmembers who satisfy those requirements in a visual simulator must also:</td>
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<tr>
<td>(i) Take inflight training in one-engine inoperative landings; and</td>
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</table>
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.

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:

(4) Landing under simulated circling approach conditions (exceptions under III(n) applicable to this requirement).

(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.

(h) Zero-flap landings if the Administrator finds that maneuver appropriate for training in the airplane.

(i) Manual reversion (if appropriate) 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.

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.

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<tr>
<th>Maneuvers/Procedures</th>
<th>Required</th>
<th>Permitted</th>
</tr>
</thead>
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<tr>
<td>Simulated instrument conditions</td>
<td>Inflight</td>
<td>Visual simulator</td>
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</table>

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. 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. The equipment examination must cover—
     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 ..........

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— ...........................................................
   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 ........................................
Federal Aviation Administration, DOT  
Pt. 121, App. F

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<th>Maneuvers/Procedures</th>
<th>Required</th>
<th>Permitted</th>
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<td></td>
<td>Simulated instrument conditions</td>
<td>Inflight</td>
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</table>

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) Taxing. This maneuver includes taxing (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

(d) Powerplant checks. As appropriate to the airplane type

II. Takeoff:

(a) Area departure and area arrival. During each of these maneuvers the applicant must—

(b) Instrument. One takeoff with instrument conditions simulated at or before reaching an altitude of 100’ above the airport elevation

(c) Crosswind. One crosswind takeoff, if practicable, under the existing meteorological, airport, and traffic conditions

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—

(1) At a point after V₁, and before V рублей, 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 V₁ when V₁ and V рублей, or V рублей and V₉, 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

III. Instrument procedures:

(a) Area departure and area arrival. During each of these maneuvers the applicant must—

(b) Instrument. One takeoff with instrument conditions simulated at or before reaching an altitude of 100’ above the airport elevation

(c) Crosswind. One crosswind takeoff, if practicable, under the existing meteorological, airport, and traffic conditions

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—

(1) At a point after V₁, and before V рублей, 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 V₁ when V₁ and V рублей, or V рублей and V₉, 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 of the airplane

In an airplane with aft fuselage-mounted engines this maneuver may be performed in a non-visual simulator

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

(c) ILS and other instrument approaches. There must be the following:

(1) At least one normal ILS approach

(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

(3) At least one nonprecision approach procedure that is representative of the nonprecision approach procedures that the certificate holder is likely to use
(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

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—

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 ............................................. B

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° ............................................. B

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 ............................................................. B

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 ............................................. B

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° ............................................. B

(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
Federal Aviation Administration, DOT
Pt. 121, App. F

<table>
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<tr>
<th>Maneuvers/Procedures</th>
<th>Required</th>
<th>Permitted</th>
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</thead>
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<tr>
<td>Simulated instrument conditions</td>
<td>Inflight</td>
<td>Visual simulator</td>
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<tr>
<td>(1) One must be in the takeoff configuration (except where the airplane uses only a zero-flap takeoff configuration)</td>
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<tr>
<td>(2) One in a clean configuration</td>
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<tr>
<td>(3) One in a landing configuration</td>
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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

(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.

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:

(a) Normal landing

(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.

(c) Crosswind landing, if practical under existing meteorological, airport, and traffic conditions

(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

(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.
Each applicant must demonstrate the proper 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 a practical knowledge of the use of the systems and devices appropriate to the airplane type:

(a) Anti-icing and de-icing systems .................................................
(b) Auto-pilot systems .................................................................
(c) Automatic or other approach aid systems .................................
(d) Stall warning devices, stall avoidance devices, and stability augmentation devices .........................................................
(e) Airborne radar devices ..........................................................
(f) Any other systems, devices, or aids available .................................
(g) Hydraulic and electrical system failures and malfunctions ........
(h) Landing gear and flap systems failure or malfunction ..............
(i) Failure of navigation or communications equipment .............

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) Auto-pilot systems .................................................................
(c) Automatic or other approach aid systems .................................
(d) Stall warning devices, stall avoidance devices, and stability augmentation devices .........................................................
(e) Airborne radar devices ..........................................................
(f) Any other systems, devices, or aids available .................................
(g) Hydraulic and electrical system failures and malfunctions ........
(h) Landing gear and flap systems failure or malfunction ..............
(i) Failure of navigation or communications equipment .............

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) Smoke control .................................................................
(c) Rapid decompression ..........................................................
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 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 fails 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

277
Pt. 121, App. H

14 CFR Ch. I (1–1–11 Edition)

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, ADP, 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 the equipment and the feasibility of cockpit navigation in his operation.

(c) As determined by the Administrator for the operator. This program must be approved as a Level B, C, or D simulator.

Each simulator used under this appendix all required simulator approval requirements in § 121.407.

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 ±3° 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.


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).


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 of the 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.


APPENDICES I–J TO PART 121

[RESERVED]

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:
1. 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.

2. Normal category before July 1, 1970, and meets the additional airworthiness standards in SFAR No. 23 of 14 CFR part 23.

3. Normal category, and complies with the additional airworthiness standards in appendix A of part 135 of this chapter.

4. 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 1.a.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(e) and paragraph 1.b 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. 25-45 (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 1 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 1 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 23.63 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.


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 904.
Federal Aviation Administration, DOT
Pt. 121, App. L

800 Independence Avenue SW., Washington, DC.

<table>
<thead>
<tr>
<th>Part 121 section</th>
<th>Applicable aircraft</th>
<th>Provisions: CFR/FR references</th>
</tr>
</thead>
</table>


281
The recorded values must meet the designated range, resolution and accuracy requirements during static and dynamic conditions. Dynamic condition means the parameter is experiencing change at the maximum rate attainable, including the maximum rate of reversal. All data recorded must be correlated in time to within one second.

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Range</th>
<th>Accuracy (sensor input)</th>
<th>Seconds per sampling interval</th>
<th>Resolution</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Time or relative times counts</td>
<td>24 Hrs, 0 to 4095</td>
<td>±0.125% per hour</td>
<td>4</td>
<td>1 sec</td>
<td>UTC time preferred when available. Count increments each 4 seconds of system operation.</td>
</tr>
<tr>
<td>2. Pressure Altitude</td>
<td>−1000 ft to max certificated altitude of aircraft, +5000 ft</td>
<td>±100 to ±700 ft (see table, TSO C124a or TSO C21a)</td>
<td>1</td>
<td>5&quot; to 35&quot;</td>
<td>Data should be obtained from the air data computer when practicable.</td>
</tr>
<tr>
<td>3. Indicated air-speed or Calibrated airspeed</td>
<td>50 KIAS or minimum value to Max $V_{c}$ to 1.2 $V_{c}$</td>
<td>±5% and ±3%</td>
<td>1</td>
<td>1 kt</td>
<td>Data should be obtained from the air data computer when practicable.</td>
</tr>
<tr>
<td>4. Heading (Primary flight crew reference)</td>
<td>0–360° and Discrete “true” or “mag”.</td>
<td>±2°</td>
<td>1</td>
<td>0.5°</td>
<td>When true or magnetic heading can be selected as the primary heading reference, a discrete indicating selection must be recorded.</td>
</tr>
<tr>
<td>5. Normal acceleration (vertical)</td>
<td>−3g to +6g</td>
<td>±1% of max range excluding datum error of ±5%</td>
<td>0.125</td>
<td>0.004g</td>
<td></td>
</tr>
<tr>
<td>6. Pitch Attitude</td>
<td>±75°</td>
<td>±2°</td>
<td>1 or 0.25 for airplanes operated under §121.344(d).</td>
<td>0.5°</td>
<td>A sampling rate of 0.25 is recommended.</td>
</tr>
<tr>
<td>7. Roll attitude</td>
<td>±180°</td>
<td>±2°</td>
<td>1 or 0.5 for airplanes operated under §121.344(d).</td>
<td>0.5°</td>
<td>A sampling rate of 0.5 is recommended.</td>
</tr>
<tr>
<td>8. Manual Radio Transmitter Keying or CVR/DFDR synchronization reference</td>
<td>None</td>
<td></td>
<td>1</td>
<td></td>
<td>Preferably each crew member but one discrete acceptable for all transmission provided the CVR/DFDR system complies with TSO C124a CVR synchronization requirements (paragraph 4.2.1 ED–55).</td>
</tr>
<tr>
<td>9. Thrust/power on each engine—primary flight crew reference</td>
<td>Full range forward</td>
<td>±2% (per engine)</td>
<td>1</td>
<td>0.3% of full range.</td>
<td>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.</td>
</tr>
<tr>
<td>10. Autopilot Engagement</td>
<td>Discrete “on” or “off”.</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Longitudinal Acceleration</td>
<td>±1g</td>
<td>±1.5% max. range excluding datum error of ±5%</td>
<td>0.25</td>
<td>0.004g</td>
<td></td>
</tr>
<tr>
<td>12a. Pitch control(s) position (nonfly-by-wire systems)</td>
<td>Full Range</td>
<td>±2° unless higher accuracy required</td>
<td>0.5 or 0.25 for airplanes operated under §121.344(d).</td>
<td>0.5% of full range.</td>
<td>For airplanes that have a flight control breakaway 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.</td>
</tr>
<tr>
<td>12b. Pitch control(s) position (fly-by-wire systems)</td>
<td>Full Range</td>
<td>±2° unless higher accuracy required</td>
<td>0.5 or 0.25 for airplanes operated under §121.344(d).</td>
<td>0.2% of full range.</td>
<td></td>
</tr>
</tbody>
</table>
The recorded values must meet the designated range, resolution and accuracy requirements during static and dynamic conditions. Dynamic condition means the parameter is experiencing change at the maximum rate attainable, including the maximum rate of reversal. All data recorded must be correlated in time to within one second.

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<tr>
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<th>Accuracy (sensor input)</th>
<th>Seconds per sampling interval</th>
<th>Resolution</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>13a. Lateral control position(s) (nonfly-by-wire).</td>
<td>±2° unless higher accuracy uniquely required.</td>
<td>0.5 or 0.25 for airplanes operated under §121.344(f).</td>
<td>0.2% of full range.</td>
<td>For airplanes that have a flight control breakaway 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.</td>
<td></td>
</tr>
<tr>
<td>13b. Lateral control position(s) (fly-by-wire).</td>
<td>±2° unless higher accuracy uniquely required.</td>
<td>0.5 or 0.25 for airplanes operated under §121.344(f).</td>
<td>0.2% of full range.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14a. Yaw control position(s) (nonfly-by-wire).</td>
<td>±2° unless higher accuracy uniquely required.</td>
<td>0.5</td>
<td>0.3% of full range.</td>
<td>For airplanes that have a flight control breakaway 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.</td>
<td></td>
</tr>
<tr>
<td>14b. Yaw control position(s) (fly-by-wire).</td>
<td>±2° unless higher accuracy uniquely required.</td>
<td>0.5</td>
<td>0.2% of full range.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Pitch control surface(s) position.</td>
<td>±2° unless higher accuracy uniquely required.</td>
<td>0.5 or 0.25 for airplanes operated under §121.344(f).</td>
<td>0.3% of full range.</td>
<td>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 once per second to produce the sampling interval of 0.5 or 0.25, as applicable.</td>
<td></td>
</tr>
<tr>
<td>16. Lateral control surface(s) position.</td>
<td>±2° unless higher accuracy uniquely required.</td>
<td>0.5 or 0.25 for airplanes operated under §121.344(f).</td>
<td>0.3% of full range.</td>
<td>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, as applicable.</td>
<td></td>
</tr>
<tr>
<td>17. Yaw control surface(s) position.</td>
<td>±2° unless higher accuracy uniquely required.</td>
<td>0.5</td>
<td>0.2% of full range.</td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>18. Lateral Acceleration.</td>
<td>±1g</td>
<td>±1.5% max. range excluding datum error of ±3%</td>
<td>0.25</td>
<td>0.004g</td>
<td></td>
</tr>
<tr>
<td>19. Pitch Trim Surface Position.</td>
<td>±3° Unless Higher Accuracy Uniquely Required.</td>
<td>1</td>
<td>0.6% of full range.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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<tbody>
<tr>
<td>20. Trailing Edge Flap or Cockpit Control Selection</td>
<td>Full Range or Each Position (discrete).</td>
<td>±3° or as Pilot’s indicator.</td>
<td>2</td>
<td>0.5% of full range.</td>
<td>Flap position and cockpit control may each be sampled at 4 second intervals, to give a data point every 2 seconds.</td>
</tr>
<tr>
<td>21. Leading Edge Flap or Cockpit Control Selection</td>
<td>Full Range or Each Discrete Position.</td>
<td>±3° or as Pilot’s indicator and sufficient to determine each discrete position.</td>
<td>2</td>
<td>0.5% of full range.</td>
<td>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.</td>
</tr>
<tr>
<td>23. Ground spoiler position or brake selection</td>
<td>Full range or each position (discrete).</td>
<td>±2° Unless higher accuracy uniquely required.</td>
<td>1 or 0.5 for airplanes operated under § 121.344(b).</td>
<td>0.5% of full range.</td>
<td></td>
</tr>
<tr>
<td>24. Outside Air Temperature or Total Air Temperature</td>
<td>−50° C to +90 °C.</td>
<td>±2 °C</td>
<td>2</td>
<td>0.3 °C</td>
<td></td>
</tr>
<tr>
<td>25. Autopilot/Autothrottle/AFCS Mode and Engagement Status.</td>
<td>A suitable combination of discretes.</td>
<td></td>
<td>1</td>
<td></td>
<td>Discretes should show which systems are engaged and which primary modes are controlling the flight path and speed of the aircraft.</td>
</tr>
<tr>
<td>26. Radio Altitude</td>
<td>−20 ft to 2,500 ft.</td>
<td>±2 ft or ±3% whichever is greater below 500 ft and ±5% above 500 ft.</td>
<td>1</td>
<td>1 ft +5% above 500 ft.</td>
<td>For autoland/category 3 operations. Each radio altimeter should be recorded, but arranged so that at least one is recorded each second.</td>
</tr>
<tr>
<td>27. Localizer Deviation, MLS Azimuth, or GPS Latitude Deviation</td>
<td>±400 Microamps or available sensor range as installed.</td>
<td>As installed ±3% recommended.</td>
<td>1</td>
<td>0.3% of full range.</td>
<td>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.</td>
</tr>
<tr>
<td>28. Glide slope Deviation, MLS Elevation, or GPS Vertical Deviation</td>
<td>±400 Microamps or available sensor range as installed.</td>
<td>As installed ±1° or ±3° recommended.</td>
<td>1</td>
<td>0.3% of full range.</td>
<td>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.</td>
</tr>
<tr>
<td>29. Marker Beacon Passage.</td>
<td>Discrete “on” or “off”.</td>
<td></td>
<td>1</td>
<td></td>
<td>A single discrete is acceptable for all markers.</td>
</tr>
<tr>
<td>30. Master Warning</td>
<td>Discrete</td>
<td></td>
<td>1</td>
<td></td>
<td>Record the master warning and record each “red” warning that cannot be determined from other parameters or from the cockpit voice recorder.</td>
</tr>
<tr>
<td>31. Air/ground sensor (primary airplane system reference nose or main gear).</td>
<td>Discrete “air” or “ground”.</td>
<td></td>
<td>1 (0.25 recommended).</td>
<td></td>
<td></td>
</tr>
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</tr>
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<tbody>
<tr>
<td>32. Angle of Attack (if measured directly)</td>
<td>As installed ...... As installed ......</td>
<td>2 or 0.5 for airplanes operated under § 121.344(f).</td>
<td>0.3% of full range.</td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>33. Hydraulic Pressure Low, Each System.</td>
<td>Discrete or available sensor range, &quot;low&quot; or &quot;normal&quot;</td>
<td>≤5%</td>
<td>2</td>
<td>0.5% of full range.</td>
<td></td>
</tr>
<tr>
<td>34. Groundspeed</td>
<td>As installed ...... Most Accurate Systems installed.</td>
<td></td>
<td>1</td>
<td>0.2% of full range.</td>
<td></td>
</tr>
<tr>
<td>35. GPWS (ground proximity warning system)</td>
<td>Discrete &quot;warning&quot; or &quot;off&quot;.</td>
<td></td>
<td>1</td>
<td>A suitable combination of discretes unless recorder capacity is limited in which case a single discrete for all modes is acceptable.</td>
<td></td>
</tr>
<tr>
<td>36. Landing Gear Position or Landing gear cockpit control selection.</td>
<td>Discrete ......</td>
<td></td>
<td>4</td>
<td>A suitable combination of discretes should be recorded.</td>
<td></td>
</tr>
<tr>
<td>37. Drift Angle.</td>
<td>As installed ...... As installed ......</td>
<td>4</td>
<td>0.1°</td>
<td>Provided by the Primary Navigation System Reference. Where capacity permits Latitude/longitude resolution should be 0.0002°.</td>
<td></td>
</tr>
<tr>
<td>38. Wind Speed and Direction.</td>
<td>As installed ...... As installed ......</td>
<td>4</td>
<td>1 knot, and 1.0°.</td>
<td>For airplanes with non-mechanically linked cockpit engine controls.</td>
<td></td>
</tr>
<tr>
<td>39. Latitude and Longitude.</td>
<td>As installed ...... As installed ......</td>
<td>4</td>
<td>0.002°, or as installed.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40. Stick shaker and pusher activation.</td>
<td>Discrete(s) &quot;on&quot; or &quot;off&quot;.</td>
<td></td>
<td>1</td>
<td>A suitable combination of discretes to determine activation.</td>
<td></td>
</tr>
<tr>
<td>41. Windshear Detection.</td>
<td>Discrete &quot;warning&quot; or &quot;off&quot;.</td>
<td></td>
<td>1</td>
<td>For airplanes with non-mechanically linked cockpit engine controls. Where capacity permits, the preferred priority is indicated vibration level, N2, EGT, Fuel Flow, Fuel Cut-off lever position and N3, unless engine manufacturer recommends otherwise.</td>
<td></td>
</tr>
<tr>
<td>42. Throttle/power Lever position.</td>
<td>Full Range ......</td>
<td>≤2%</td>
<td>1 for each lever</td>
<td>2% of full range</td>
<td></td>
</tr>
<tr>
<td>43. Additional Engine Parameters.</td>
<td>As installed ...... As installed ......</td>
<td>Each engine each second.</td>
<td>2% of full range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>44. Traffic Alert and Collision Avoidance System (TCAS).</td>
<td>Discretes ...... As installed ......</td>
<td></td>
<td>1</td>
<td>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.)</td>
<td></td>
</tr>
<tr>
<td>45. DME 1 and 2 Distance.</td>
<td>0–200 NM ...... As installed ......</td>
<td>4</td>
<td>1 NM</td>
<td>1 mile</td>
<td></td>
</tr>
<tr>
<td>46. Nav 1 and 2 Selected Frequency.</td>
<td>Full Range ...... As installed ......</td>
<td>4</td>
<td></td>
<td>Sufficient to determine selected frequency</td>
<td></td>
</tr>
<tr>
<td>47. Selected barometric setting.</td>
<td>Full Range ......</td>
<td>≤5%</td>
<td>(1 per 64 sec.)</td>
<td>0.2% of full range</td>
<td></td>
</tr>
<tr>
<td>48. Selected Altitude.</td>
<td>Full Range ......</td>
<td>≤5%</td>
<td>1</td>
<td>100 ft</td>
<td></td>
</tr>
</tbody>
</table>
The recorded values must meet the designated range, resolution and accuracy requirements during static and dynamic conditions. Dynamic condition means the parameter is experiencing change at the maximum rate attainable, including the maximum rate of reversal. All data recorded must be correlated in time to within one second.

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<tr>
<td>49. Selected speed.</td>
<td>Full Range</td>
<td>±5%</td>
<td>1</td>
<td>1 knot</td>
<td></td>
</tr>
<tr>
<td>50. Selected Mach</td>
<td>Full Range</td>
<td>±5%</td>
<td>1</td>
<td>.01</td>
<td></td>
</tr>
<tr>
<td>51. Selected vertical speed.</td>
<td>Full Range</td>
<td>±5%</td>
<td>1</td>
<td>100 ft/min</td>
<td></td>
</tr>
<tr>
<td>52. Selected heading.</td>
<td>Full Range</td>
<td>±5%</td>
<td>1</td>
<td>1°</td>
<td></td>
</tr>
<tr>
<td>53. Selected flight path.</td>
<td>Full Range</td>
<td>±5%</td>
<td>1</td>
<td>1°</td>
<td></td>
</tr>
<tr>
<td>54. Selected decision height.</td>
<td>Full Range</td>
<td>±5%</td>
<td>64</td>
<td>1 ft</td>
<td></td>
</tr>
<tr>
<td>55. EFIS display format.</td>
<td>Discrete(s)</td>
<td></td>
<td>4</td>
<td></td>
<td>Discretes should show the display system status (e.g., off, normal, fail, composite, sector, plan, nav aids, weather radar, range, copy.</td>
</tr>
<tr>
<td>56. Multi-function/Engine Alerts</td>
<td>Discrete(s)</td>
<td></td>
<td>4</td>
<td></td>
<td>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.</td>
</tr>
<tr>
<td>57. Thrust command.</td>
<td>Full Range</td>
<td>±2%</td>
<td>2</td>
<td>2% of full range.</td>
<td></td>
</tr>
<tr>
<td>58. Thrust target</td>
<td>Full Range</td>
<td>±2%</td>
<td>4</td>
<td>2% of full range.</td>
<td></td>
</tr>
<tr>
<td>59. Fuel quantity in CG trim tank.</td>
<td>Full Range</td>
<td>±5%</td>
<td>(1 per 64 sec.)</td>
<td>1% of full range.</td>
<td></td>
</tr>
<tr>
<td>60. Primary Navigation System</td>
<td>Discrete GPS, INS, VOR/ DME, MLS, Loran C, Omega, Localizer Glide slope</td>
<td>4</td>
<td></td>
<td>A suitable combination of discretes to determine the Primary Navigation System reference.</td>
<td></td>
</tr>
<tr>
<td>61. Ice Detection</td>
<td>Discrete “ice” or “no ice”.</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>62. Engine warning each engine</td>
<td>Discrete</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63. Engine warning each engine</td>
<td>Discrete</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>64. Engine warning each engine</td>
<td>Discrete</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>65. Engine warning each engine</td>
<td>Discrete</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>66. Yaw Trim Surface Position</td>
<td>Full Range</td>
<td>±3% Unless Higher Accuracy Uniquely Required</td>
<td>2</td>
<td>0.3% of full range.</td>
<td></td>
</tr>
<tr>
<td>67. Roll Trim Surface Position</td>
<td>Full Range</td>
<td>±3% Unless Higher Accuracy Uniquely Required</td>
<td>2</td>
<td>0.3% of full range.</td>
<td></td>
</tr>
<tr>
<td>68. Brake Pressure (left and right)</td>
<td>As installed</td>
<td>±5%</td>
<td>1</td>
<td></td>
<td>To determine braking effort applied by pilots or by autobrakes.</td>
</tr>
<tr>
<td>69. Brake Pedal Application (left and right)</td>
<td>Discrete or Analog “applied” or “off”.</td>
<td>4</td>
<td></td>
<td>To determine braking applied by pilots.</td>
<td></td>
</tr>
<tr>
<td>70. Yaw or side-slip angle.</td>
<td>Full Range</td>
<td>±5% (Analog)</td>
<td>1</td>
<td>0.5&quot;</td>
<td></td>
</tr>
<tr>
<td>71. Engine bleed valve position.</td>
<td>Discrete “open” or “closed”.</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>72. De-icing or anti-icing system</td>
<td>Discrete “on” or “off”.</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The recorded values must meet the designated range, resolution and accuracy requirements during static and dynamic conditions. Dynamic condition means the parameter is experiencing change at the maximum rate attainable, including the maximum rate of reversal. All data recorded must be correlated in time to within one second.

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Range</th>
<th>Accuracy (sensor input)</th>
<th>Seconds per sampling interval</th>
<th>Resolution</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>73. Computed center of gravity.</td>
<td>Full Range ............</td>
<td>±5%</td>
<td>1 per 64 sec.</td>
<td>1% of full range</td>
<td></td>
</tr>
<tr>
<td>74. AC electrical bus status.</td>
<td>Discrete “power” or “off”.</td>
<td>4</td>
<td></td>
<td>Each bus.</td>
<td></td>
</tr>
<tr>
<td>75. DC electrical bus status.</td>
<td>Discrete “power” or “off”.</td>
<td>4</td>
<td></td>
<td>Each bus.</td>
<td></td>
</tr>
<tr>
<td>76 APU bleed valve position.</td>
<td>Discrete “open” or “closed”.</td>
<td>4</td>
<td></td>
<td>Each bus.</td>
<td></td>
</tr>
<tr>
<td>77. Hydraulic Pressure (each system).</td>
<td>Full range ............</td>
<td>±5%</td>
<td>2</td>
<td>100 psi</td>
<td></td>
</tr>
<tr>
<td>78. Loss of cabin pressure.</td>
<td>Discrete “loss” or “normal”.</td>
<td>1</td>
<td></td>
<td>Each bus.</td>
<td></td>
</tr>
<tr>
<td>80. Heads-up display (when an information source is installed).</td>
<td>Discrete(s) “on” or “off”.</td>
<td>4</td>
<td></td>
<td>Each bus.</td>
<td></td>
</tr>
<tr>
<td>81. Para-visual display (when an information source is installed).</td>
<td>Discrete(s) “on” or “off”.</td>
<td>4</td>
<td></td>
<td>Each bus.</td>
<td></td>
</tr>
<tr>
<td>82. Cockpit trim control input position—pitch.</td>
<td>Full Range ............</td>
<td>±5%</td>
<td>1</td>
<td>0.2% of full range</td>
<td>Where mechanical means for control inputs are not available, cockpit display trim positions should be recorded.</td>
</tr>
<tr>
<td>83. Cockpit trim control input position—roll.</td>
<td>Full Range ............</td>
<td>±5%</td>
<td>1</td>
<td>0.7% of full range</td>
<td>Where mechanical means for control inputs are not available, cockpit display trim positions should be recorded.</td>
</tr>
<tr>
<td>84. Cockpit trim control input position—yaw.</td>
<td>Full range ............</td>
<td>±5%</td>
<td>1</td>
<td>0.3% of full range</td>
<td>Where mechanical means for control input are not available, cockpit display trim positions should be recorded.</td>
</tr>
<tr>
<td>85. Trailing edge flap and cockpit flap control position.</td>
<td>Full Range ............</td>
<td>±5%</td>
<td>2</td>
<td>0.5% of full range</td>
<td>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.</td>
</tr>
<tr>
<td>86. Leading edge flap and cockpit flap control position.</td>
<td>Full Range or Discrete.</td>
<td>±5%</td>
<td>1</td>
<td>0.5% of full range</td>
<td></td>
</tr>
<tr>
<td>87. Ground spoiler position and speed brake selection.</td>
<td>Full range or discrete.</td>
<td>±5%</td>
<td>0.5</td>
<td>0.3% of full range</td>
<td></td>
</tr>
</tbody>
</table>
The recorded values must meet the designated range, resolution and accuracy requirements during static and dynamic conditions. Dynamic condition means the parameter is experiencing change at the maximum rate attainable, including the maximum rate of reversal. All data recorded must be correlated in time to within one second.

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Range</th>
<th>Accuracy (sensor input)</th>
<th>Seconds per sampling interval</th>
<th>Resolution</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>88. All cockpit flight control input forces (control wheel, control column, rudder pedal) [1] [2]</td>
<td>Full range</td>
<td>≤5%</td>
<td>1</td>
<td>0.3% of full range.</td>
<td>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 breakaway 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.</td>
</tr>
<tr>
<td>89. Yaw damper status.</td>
<td>Discrete (on/off)</td>
<td>0.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>90. Yaw damper command.</td>
<td>Full range</td>
<td>As installed</td>
<td>0.5</td>
<td>1% of full range.</td>
<td></td>
</tr>
<tr>
<td>91. Standby rudder valve status.</td>
<td>Discrete</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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°).
4. For A318/A319/A320/A321 series airplanes, resolution=0.022% (0.0088° ± 0.008°).
5. For A330/A340 series airplanes, resolution=1.76% (0.0703° ± 0.08°).
6. For A330/A340 series airplanes, resolution=1.18% (0.703° ± 0.12°).
7. For A330/A340 series airplanes, resolution=0.783% (0.352° ± 0.09°).
8. For A330/A340 series airplanes, resolution=0.8% (0.35° ± 0.1°).
9. For A300/A340 series airplanes, aileron resolution = 2.20% (0.703° ± 0.12°).
10. For B–717 series airplanes, resolution = ±0.064°.
11. For A330 series airplanes, spoiler resolution = 1.18% (0.703° ± 0.12°).
12. For A330 series airplanes, spoiler resolution = 0.352° (0.703° ± 0.12°).
13. For Dassault F900C/F900EX airplanes, radio altitude resolution = 1.25 ft.
14. For A318/A319/A320/A321 series airplanes, resolution = 3.27% of full range.
15. For A330/A340 series airplanes, resolution = 0.352° of full range.
16. For A330/A340 series airplanes, resolution = 0.703° of full range.
17. For A330/A340 series airplanes, resolution = 0.352° of full range.
18. For A300 B2/B4 airplanes, resolution = 6 seconds.
19. For A330/A340 series airplanes, resolution = 0.703° of full range.

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APPENDIX N TO PART 121 [RESERVED]

APPENDIX O TO PART 121—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

<table>
<thead>
<tr>
<th>Aspects of transport of hazardous materials by air with which they must be familiar, as a minimum (See note 1)</th>
<th>Shippers (See Note 2) Will-carry</th>
<th>Operators and ground-handling agent’s staff accepting hazardous materials (See Note 3) Will-carry</th>
<th>Operators and ground-handling agents staff responsible for the handling, storing, and loading of cargo and baggage Will-carry</th>
<th>Passenger-handling staff Will-carry</th>
<th>Flight crew members and load planners Will-carry</th>
<th>Crew members (other than flight crew members) Will-carry</th>
</tr>
</thead>
<tbody>
<tr>
<td>General philosophy ..........</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Limitations ..................</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>General requirements for shippers ..........</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Classification ................</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>List of hazardous materials ........</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>General packing requirements ..........</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Labeling and marking ..........</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Hazardous materials transport document and other relevant documentation ..........</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Acceptance procedures ..........</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Recognition of undeclared hazardous materials ..........</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Storage and loading procedures ..........</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Pilots’ notification ..........</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Provisions for passengers and crew ..........</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Emergency procedures ..........</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

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 certificate holder transfers hazardous materials to another certificate holder, 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.
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 1. 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 §121.635 for time-limited system planning.

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 as required by §121.374(i) for the specified transport document.

Note 3—When an operator, its subsidiary, or an agent of the operator is undertaking the responsibilities of acceptance staff, then that person must be properly trained. All shippers of hazmat must be trained under 49 CFR. The shipper functions as required by §121.374(i) for the specified transport document.

APPENDIX P TO PART 121—REQUIREMENTS FOR ETOPS AND POLAR OPERATIONS

TABLE 2—OPERATORS THAT DO NOT TRANSPORT HAZARDOUS MATERIALS—WILL-NOT-CARRY CERTIFICATE HOLDERS

<table>
<thead>
<tr>
<th>Aspects of transport of hazardous materials by air with which they must be familiar, as a minimum (See Note 1)</th>
<th>Operators and ground-handling agent’s staff accepting cargo other than hazardous materials (See Note 2) Will-not-carry</th>
<th>Operators and ground-handling agent’s staff responsible for the handling, storage, and loading of cargo and baggage Will-not-carry</th>
<th>Passenger-handling staff Will-not-carry</th>
<th>Flight crew members and load planners Will-not-carry</th>
<th>Crew members (other than flight crew members) Will-not-carry</th>
</tr>
</thead>
<tbody>
<tr>
<td>General philosophy</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Limitations</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>General requirements for shippers</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Classification</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>List of hazardous materials</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>General packing requirements</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Labeling and marking</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Hazardous materials transport document and other relevant documentation</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Acceptance procedures</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Recognition of undeclared hazardous materials</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Storage and loading procedures</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Pilots’ notification</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Provisions for passengers and Crew</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Emergency procedures</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

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 as required by §121.374(i) for the specified transport document.

Note 3—When an operator, its subsidiary, or an agent of the operator is undertaking the responsibilities of acceptance staff, then that person must be properly trained. All shippers of hazmat must be trained under 49 CFR. The shipper functions as required by §121.374(i) for the specified transport document.

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 1. 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 §121.635 for time-limited system planning.

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 as required by §121.374(i) for the specified transport document.

Note 3—When an operator, its subsidiary, or an agent of the operator is undertaking the responsibilities of acceptance staff, then that person must be properly trained. All shippers of hazmat must be trained under 49 CFR. The shipper functions as required by §121.374(i) for the specified transport document.

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 1. ETOPS Approvals: Airplanes with Two engines.

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(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 §121.635 for time-limited system planning.

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 as required by §121.374(i) for the specified transport document.

Note 3—When an operator, its subsidiary, or an agent of the operator is undertaking the responsibilities of acceptance staff, then that person must be properly trained. All shippers of hazmat must be trained under 49 CFR. The shipper functions as required by §121.374(i) for the specified transport document.
(ii) 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-reliability appropriate for 75-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.
   (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.

(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.
   (2) The certificate holder must operate in accordance with the ETOPS authority as contained in its operations specifications.

(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.

(f) Operators with existing 180-minute ETOPS approval. The FAA grants approvals to conduct 138-minute ETOPS (without the limitation in paragraph (e)(1)(ii) 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.

(g) 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.

(h) Operators with existing 180-minute ETOPS approval. The FAA grants approvals to conduct 138-minute ETOPS (without the limitation in paragraph (e)(1)(ii) 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.

(i) 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) Other Areas. The FAA grants approvals to conduct ETOPS with maximum diversion times up to 90 minutes as follows:
   (i) The airplane-engine combination must be type-design approved for ETOPS.
   (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 maintenance program requirements for 120-minute ETOPS.

(v) The certificate holder must comply with the maintenance program requirements for 120-minute ETOPS.

(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.

(3) Other Areas. The FAA grants approvals to conduct ETOPS with maximum diversion times up to 120 minutes as follows:
   (i) The airplane-engine combination must be type-design approved for ETOPS.
   (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 maintenance program requirements for 120-minute ETOPS.

(v) The certificate holder must comply with the maintenance program requirements for 120-minute ETOPS.

(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.

(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.”

(5) The certificate holder must comply with the MEL requirements for ETOPS greater than 180 minutes. The following are requirements for all operations greater than 180 minutes.

(a) ETOPS Alternate Airport is not available within 180 minutes for reasons such as political conditions and other weather related events. The nearest available ETOPS Alternate Airport within 207 minutes diversion time must be specified in the dispatch or flight release.

(b) In conducting such a flight the certificate holder must consider Air Traffic Service’s preferred track.

(c) 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.

(d) The certificate holder must track how many times 207-minute authority is used.

(e) The airplane-engine combination must be type-design-approved for ETOPS of greater than 180 minutes.

(f) The certificate holder must operate in accordance with the ETOPS authority as contained in its operations specifications.

(g) The certificate holder must have previous ETOPS experience satisfactory to the Administrator.

(h) 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 1 of this appendix are met.

(i) 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.

(j) In addition to the equipment specified in the certificate holder’s MEL for 180-minute ETOPS, the following systems must be operational for dispatch:

(1) The fuel quantity indicating system.

(2) The APU (including electrical and pneumatic supply and operating to the APU’s designed capability).

(3) The auto throttle system.

(4) The communication system required by §121.99(d) or §121.122(c), as applicable.

(5) One-engine-inoperative auto-land capability, if flight planning is predicated on its use.

(k) The certificate holder must operate in accordance with the ETOPS authority as contained in its operations specifications.

(l) The certificate holder must comply with the maintenance program requirements of §121.374.

(m) 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.

(n) The nearest available ETOPS Alternate Airport within 207 minutes diversion time must be specified in the dispatch or flight release.

(o) In conducting such a flight the certificate holder must consider Air Traffic Service’s preferred track.

(p) 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.

(q) The certificate holder must track how many times 207-minute authority is used.

(r) 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.

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 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 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.