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# SUBCHAPTER F—AIR TRAFFIC AND GENERAL OPERATING RULES

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AUTHORITY: 49 U.S.C. 106(g), 1155, 40103, 40113, 40120, 44101, 44111, 44701, 44704, 44709, 44711, 44712, 44715, 44716, 44717, 44722, 46306, 46315, 46316, 46504, 46506–46507, 47122, 47508, 47528–47531, articles 12 and 29 of the Convention on International Civil Aviation (61 Stat. 1180).

## SPECIAL FEDERAL AVIATION REGULATION NO. 50–2—SPECIAL FLIGHT RULES IN THE VICINITY OF THE GRAND CANYON NATIONAL PARK, AZ

*Section 1. Applicability.* This rule prescribes special operating rules for all persons operating aircraft in the following airspace, designated as the Grand Canyon National Park Special Flight Rules Area:

That airspace extending upward from the surface up to but not including 14,500 feet MSL within an area bounded by a line beginning at lat. 36°09′30″ N., long. 114°03′00″ W.; northeast to lat. 36°14′00″ N., long. 113°09′50″ W.; thence northeast along the boundary of the Grand Canyon National Park to lat. 36°24′47″ N., long. 112°52′00″ W.; to lat. 36°30′30″ N., long. 112°36′15″ W. to lat. 36°21′30″ N., long. 112°00′00″ W. to lat. 36°35′30″ N., long. 111°53′10″ W., to lat. 36°53′00″ N., long. 111°36′45″ W. to lat. 36°53′00″ N., long. 111°33′00″ W.; to lat. 36°19′00″ N., long. 111°50′50″ W.; to lat. 36°17′00″ N., long. 111°42′00″ W.; to lat. 35°59′30″ N., long. 111°42′00″ W.; to lat. 35°57′30″ N., long. 112°03′55″ W.; thence counterclockwise via the 5 statute mile radius of the Grand Canyon Airport airport reference point (lat. 35°57′09″ N., long. 112°08′47″ W.) to lat. 35°57′30″ N., long. 112°14′00″ W.; to lat. 35°57′30″ N., long. 113°11′00″ W.; to lat. 35°42′30″ N., long. 113°11′00″ W.; to 35°38′30″ N.; long. 113°27′30″ W.; thence counterclockwise via the 5 statute mile radius of the Peach Springs VORTAC to lat. 35°41′20″ N., long. 113°36′00″ W.; to lat. 35°55′25″ N., long. 113°49′10″ W.; to lat. 35°57′45″ N., 113°45′20″ W.; thence northwest along the park boundary to lat. 36°02′20″ N., long. 113°50′15″ W.; to 36°00′10″ N., long. 113°53′45″ W.; thence to the point of beginning.

*Section 3. Aircraft operations: general.* Except in an emergency, no person may operate an aircraft in the Special Flight Rules, Area under VFR on or after September 22, 1988, or under IFR on or after April 6, 1989, unless the operation—(a) Is conducted in accordance with the following procedures:

NOTE: The following procedures do not relieve the pilot from see-and-avoid responsibility or compliance with FAR 91.119.

(1) Unless necessary to maintain a safe distance from other aircraft or terrain—

(i) Remain clear of the areas described in Section 4; and

(ii) Remain at or above the following altitudes in each sector of the canyon:

Eastern section from Lees Ferry to North Canyon and North Canyon to Boundary Ridge: as prescribed in Section 5.

Boundary Ridge to Supai Point (Yumtheska Point): 10,000 feet MSL.

Western section from Diamond Creek to the Grant Wash Cliffs: 8,000 feet MSL.

(2) Proceed through the four flight corridors describe in Section 4 at the following altitudes unless otherwise authorized in writing by the Flight Standards District Office:

*Northbound*

11,500 or
13,500 feet MSL

*Southbound*

>10,500 or
>12,500 feet MSL

(b) Is authorized in writing by the Flight Standards District Office and is conducted in compliance with the conditions contained in that authorization. Normally authorization will be granted for operation in the areas described in Section 4 or below the altitudes listed in Section 5 only for operations of aircraft necessary for law enforcement, firefighting, emergency medical treatment/evacuation of persons in the vicinity of the Park; for support of Park maintenance or activities; or for aerial access to and maintenance of other property located within the Special Flight Rules Area. Authorization may be issued on a continuing basis.

(c)(1) Prior to November 1, 1988, is conducted in accordance with a specific authorization to operate in that airspace incorporated in the operator's part 135 operations specifications in accordance with the provisions of SFAR 50–1, notwithstanding the provisions of Sections 4 and 5; and

(2) On or after November 1, 1988, is conducted in accordance with a specific authorization to operate in that airspace incorporated in the operated in the operator's operations specifications and approved by the Flight Standards District Office in accordance with the provisions of SFAR 50–2.

(d) Is a search and rescue mission directed by the U.S. Air Force Rescue Coordination Center.

(e) Is conducted within 3 nautical miles of Whitmore Airstrip, Pearce Ferry Airstrip, North Rim Airstrip, Cliff Dwellers Airstrip, or Marble Canyon Airstrip at an altitudes less than 3,000 feet above airport elevation, for the purpose of landing at or taking off from that facility. Or

(f) Is conducted under an IFR clearance and the pilot is acting in accordance with ATC instructions. An IFR flight plan may not be filed on a route or at an altitude that would require operation in an area described in Section 4.

*Section 4. Flight-free zones.* Except in an emergency or if otherwise necessary for safety of flight, or unless otherwise authorized by the Flight Standards District Office for a purpose listed in Section 3(b), no person may operate an aircraft in the Special Flight Rules Area within the following areas:

(a) Desert View Flight-Free Zone. Within an area bounded by a line beginning at Lat. 35°59′30″ N., Long. 111°46′20″ W. to 35°59′30″ N., Long. 111°52′45″ W.; to Lat. 36°04′50″ N., Long.

111°52′00″ W.; to Lat. 36°06′00″ N., Long. 111°46′20″ W.; to the point of origin; but not including the airspace at and above 10,500 feet MSL within 1 mile of the western boundary of the zone. The area between the Desert View and Bright Angel Flight-Free Zones is designated the ''Zuni Point Corridor.''

(b) Bright Angel Flight-Free Zone. Within an area bounded by a line beginning at Lat. 35°59′30″ N., Long. 111°55′30″ W.; to Lat. 35°59′30″ N., Long. 112°04′00″ W.; thence counterclockwise via the 5 statute mile radius of the Grand Canyon Airport point (Lat. 35°57′09″ N., Long. 112°08′47″ W.) to Lat. 36°01′30″ N., Long. 112°11′00″ W.; to Lat. 36°06′15″ N., Long. 112°12′50″ W.; to Lat. 36°14′40″ N., Long. 112°08′50″ W.; to Lat. 36°14′40″ N., Long. 111°57′30″ W.; to Lat. 36°12′30″ N., Long. 111°53′50″ W.; to the point of origin; but not including the airspace at and above 10,500 feet MSL within 1 mile of the eastern boundary between the southern boundary and Lat. 36°04′50″ N. or the airspace at and above 10,500 feet MSL within 2 miles of the northwest boundary. The area bounded by the Bright Angel and Shinumo Flight-Free Zones is designated the ''Dragon Corridor.''

(c) Shinumo Flight-Free Zone. Within an area bounded by a line beginning at Lat. 36°04′00″ N., Long. 112°16′40″ W.; northwest along the park boundary to a point at Lat. 36°12′47″ N., Long. 112°30′53″ W.; to Lat. 36°21′15″ N., Long. 112°20′20″ W.; east along the park boundary to Lat. 36°21′15″ N., Long. 112°13′55″ W.; to Lat. 36°14′40″ N., Long. 112°11′25″ W.; to the point of origin. The area between the Thunder River/Toroweap and Shinumo Flight Free Zones is designated the ''Fossil Canyon Corridor.''

(d) Toroweap/Thunder River Flight-Free Zone. Within an area bounded by a line beginning at Lat. 36°22′45″ N., Long. 112°20′35″ W.; thence northwest along the boundary of the Grand Canyon National Park to Lat. 36°17′48″ N., Long. 113°03′15″ W.; to Lat. 36°15′00″ N., Long. 113°07′10″ W.; to Lat. 36°10′30″ N., Long. 113°07′10″ W.; thence east along the Colorado River to the confluence of Havasu Canyon (Lat. 36°18′40″ N., Long. 112°45′45″ W.;) including that area within a 1.5 nautical mile radius of Toroweap Overlook (Lat. 36°12′45″ N., Long. 113°03′30″ W.); to the point of origin; but not including the following airspace designated as the ''Tuckup Corridor'': at or above 10,500 feet MSL within 2 nautical miles either side of a line extending between Lat. 36°24′47″ N., Long. 112°48′50″ W. and Lat. 36°17′10″ N., Long. 112°48′50″ W.; to the point of origin.

*Section 5. Minimum flight altitudes.* Except in an emergency or if otherwise necessary for safety of flight, or unless otherwise authorized by the Flight Standards District Office for a purpose listed in Section 3(b), no person may operate an aircraft in the Special Flight Rules Area at an altitude lower than the following:

(a) Eastern section from Lees Ferry to North Canyon: 5,000 feet MSL.

(b) Eastern section from North Canyon to Boundary Ridge: 6,000 feet MSL.

(c) Boundary Ridge to Supai (Yumtheska) Point: 7,500 feet MSL.

(d) Supai Point to Diamond Creek: 6,500 feet MSL.

(e) Western section from Diamond Creek to the Grand Wash Cliffs: 5,000 feet MSL.

*Section 9. Termination date.* Section 1. Applicability, Section 4, Flight-free zones, and Section 5. Minimum flight altitudes, expire on April 19, 2001.

NOTE: [Removed]

[66 FR 1003, Jan. 4, 2001, as amended at 66 FR 16584, Mar. 26, 2001; 72 FR 9846, Mar. 6, 2007]

## SPECIAL FEDERAL AVIATION REGULATION NO. 60—AIR TRAFFIC CONTROL SYSTEM EMERGENCY OPERATION

1. Each person shall, before conducting any operation under the Federal Aviation Regulations (14 CFR chapter I), be familiar with all available information concerning that operation, including Notices to Airmen issued under §91.139 and, when activated, the provisions of the National Air Traffic Reduced Complement Operations Plan available for inspection at operating air traffic facilities and Regional air traffic division offices, and the General Aviation Reservation Program. No operator may change the designated airport of intended operation for any flight contained in the October 1, 1990, OAG.

2. Notwithstanding any provision of the Federal Aviation Regulations to the contrary, no person may operate an aircraft in the Air Traffic Control System:

a. Contrary to any restriction, prohibition, procedure or other action taken by the Director of the Office of Air Traffic Systems Management (Director) pursuant to paragraph 3 of this regulation and announced in a Notice to Airmen pursuant to §91.139 of the Federal Aviation Regulations.

b. When the National Air Traffic Reduced Complement Operations Plan is activated pursuant to paragraph 4 of this regulation, except in accordance with the pertinent provisions of the National Air Traffic Reduced Complement Operations Plan.

3. Prior to or in connection with the implementation of the RCOP, and as conditions warrant, the Director is authorized to:

a. Restrict, prohibit, or permit VFR and/or IFR operations at any airport, Class B airspace area, Class C airspace area, or other class of controlled airspace.

b. Give priority at any airport to flights that are of military necessity, or are medical emergency flights, Presidential flights, and

flights transporting critical Government employees.

c. Implement, at any airport, traffic management procedures, that may include reduction of flight operations. Reduction of flight operations will be accomplished, to the extent practical, on a pro rata basis among and between air carrier, commercial operator, and general aviation operations. Flights cancelled under this SFAR at a high density traffic airport will be considered to have been operated for purposes of part 93 of the Federal Aviation Regulations.

4. The Director may activate the National Air Traffic Reduced Complement Operations Plan at any time he finds that it is necessary for the safety and efficiency of the National Airspace System. Upon activation of the RCOP and notwithstanding any provision of the FAR to the contrary, the Director is authorized to suspend or modify any airspace designation.

5. Notice of restrictions, prohibitions, procedures and other actions taken by the Director under this regulation with respect to the operation of the Air Traffic Control system will be announced in Notices to Airmen issued pursuant to §91.139 of the Federal Aviation Regulations.

6. The Director may delegate his authority under this regulation to the extent he considers necessary for the safe and efficient operation of the National Air Traffic Control System.

Authority: 49 U.S.C. app. 1301(7), 1303, 1344, 1348, 1352 through 1355, 1401, 1421 through 1431, 1471, 1472, 1502, 1510, 1522, and 2121 through 2125; articles 12, 29, 31, and 32(a) of the Convention on International Civil Aviation (61 stat. 1180); 42 U.S.C. 4321 *et seq.;* E.O. 11514, 35 FR 4247, 3 CFR, 1966–1970 Comp., p. 902; 49 U.S.C. 106(g).

[Doc. No. 26351, 55 FR 40760, Oct. 4, 1990, as amended by Amdt. 91–227, 56 FR 65652, Dec. 17, 1991]

## SPECIAL FEDERAL AVIATION REGULATION NO. 77—PROHIBITION AGAINST CERTAIN FLIGHTS WITHIN THE TERRITORY AND AIRSPACE OF IRAQ

1. *Applicability*. This rule applies to the following persons:

(a) All U.S. air carriers or commercial operators;

(b) All persons exercising the privileges of an airman certificate issued by the FAA except such persons operating U.S.-registered aircraft for a foreign air carrier; or

(c) All operators of aircraft registered in the United States except where the operator of such aircraft is a foreign air carrier.

*2. Flight prohibition*. No person may conduct flight operations over or within the territory of Iraq except as provided in paragraphs 3 and 4 of this SFAR or except as follows:

(a) Overflights of Iraq may be conducted above flight level (FL) 200 subject to the approval of, and in accordance with the conditions established by, the appropriate authorities of Iraq.

(b) Flights departing from countries adjacent to Iraq whose climb performance will not permit operation above FL 200 prior to entering Iraqi airspace may operate at altitudes below FL 200 within Iraq to the extent necessary to permit a climb above FL 200, subject to the approval of, and in accordance with the conditions established by, the appropriate authorities of Iraq.

(c) [Reserved]

3. *Permitted operations*. This SFAR does not prohibit persons described in paragraph 1 from conducting flight operations within the territory and airspace of Iraq when such operations are authorized either by another agency of the United States Government with the approval of the FAA or by an exemption issued by the Administrator.

4. *Emergency situations*. In an emergency that requires immediate decision and action for the safety of the flight, the pilot in command of an aircraft may deviate from this SFAR to the extent required by that emergency. Except for U.S. air carriers or commercial operators that are subject to the requirements of 14 CFR parts 119, 121, or 135, each person who deviates from this rule shall, within ten (10) days of the deviation, excluding Saturdays, Sundays, and Federal holidays, submit to the nearest FAA Flight Standards District Office a complete report of the operations of the aircraft involved in the deviation including a description of the deviation and the reasons therefore.

5. *Expiration*. This Special Federal Aviation Regulation will remain in effect until further notice.

[Doc. No. 28691, 61 FR 54021, Oct. 16, 1996, as amended by Doc. No. FAA–2003–14766, 68 FR 17870, Apr. 11, 2003; 68 FR 65382, Nov. 19, 2003]

## SPECIAL FEDERAL AVIATION REGULATION NO. 79—PROHIBITION AGAINST CERTAIN FLIGHTS WITHIN THE FLIGHT INFORMATION REGION (FIR) OF THE DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA (DPRK)

1. *Applicability*. This rule applies to the following persons:

(a) All U.S. air carriers or commercial operators.

(b) All persons exercising the privileges of an airman certificate issued by the FAA, except such persons operating U.S.-registered aircraft for a foreign air carrier.

(c) All operators of aircraft registered in the United States except where the operator of such aircraft is a foreign air carrier.

2. *Flight Prohibition*. Except as provided in paragraphs 3 and 4 of this SFAR, no person described in paragraph 1 may conduct flight operations through the Pyongyang FIR west of 132 degrees east longitude.

3. *Permitted Operations*. This SFAR does not prohibit persons described in paragraph 1 from conducting flight operations within the Pyongyang FIR west of 132 degrees east longitude where such operations are authorized either by exemption issued by the Administrator or by another agency of the United States Government with FAA approval.

4. *Emergency situations*. In an emergency that requires immediate decision and action for the safety of the flight, the pilot in command on an aircraft may deviate from this SFAR to the extent required by that emergency. Except for U.S. air carriers and commercial operators that are subject to the requirements of 14 CFR parts 121, 125, or 135, each person who deviates from this rule shall, within ten (10) days of the deviation, excluding Saturdays, Sundays, and Federal holidays, submit to the nearest FAA Flight Standards District Office a complete report of the operations of the aircraft involved in the deviation, including a description of the deviation and the reasons therefore.

5. *Expiration*. This Special Federal Aviation Regulation No. 79 will remain in effect until further notice.

[Doc. No. 28831, 62 FR 20078, Apr. 24, 1997, as amended at 63 FR 8017, Feb. 17, 1998; 63 FR 19286, Apr. 17, 1998]

## SPECIAL FEDERAL AVIATION REGULATION NO. 87—PROHIBITION AGAINST CERTAIN FLIGHTS WITHIN THE TERRITORY AND AIRSPACE OF ETHIOPIA

1. *Applicability*. This Special Federal Aviation Regulation (SFAR) No. 87 applies to all U.S. air carriers or commercial operators, all persons exercising the privileges of an airman certificate issued by the FAA unless that person is engaged in the operation of a U.S.-registered aircraft for a foreign air carrier, and all operators using aircraft registered in the United States except where the operator of such aircraft is a foreign air carrier.

2. *Flight prohibition*. Except as provided in paragraphs 3 and 4 of this SFAR, no person described in paragraph 1 may conduct flight operations within the territory and airspace of Ethiopia north of 12 degrees north latitude.

3. *Permitted operations*. This SFAR does not prohibit persons described in paragraph 1 from conducting flight operations within the territory and airspace of Ethiopia where such operations are authorized either by exemption issued by the Administrator or by an authorization issued by another agency of the United States Government with the approval of the FAA.

4. *Emergency situations*. In an emergency that requires immediate decision and action for the safety of the flight, the pilot in command of an aircraft may deviate from this SFAR to the extent required by that emergency. Except for U.S. air carriers and commercial operators that are subject to the requirements of 14 CFR 121.557, 121.559, or 135.19, each person who deviates from this rule shall, within ten (10) days of the deviation, excluding Saturdays, Sundays, and Federal holidays, submit to the nearest FAA Flight Standards District Office a complete report of the operations of the aircraft involved in the deviation, including a description of the deviation and the reasons therefor.

5. *Expiration*. This Special Federal Aviation Regulation shall remain in effect until further notice.

[Doc. No. FAA–2000–7360; 65 FR 31215, May 16, 2000]

## SPECIAL FEDERAL AVIATION REGULATION NO. 97—SPECIAL OPERATING RULES FOR THE CONDUCT OF INSTRUMENT FLIGHT RULES (IFR) AREA NAVIGATION (RNAV) OPERATIONS USING GLOBAL POSITIONING SYSTEMS (GPS) IN ALASKA

Those persons identified in Section 1 may conduct IFR en route RNAV operations in the State of Alaska and its airspace on published air traffic routes using TSO C145a/C146a navigation systems as the only means of IFR navigation. Despite contrary provisions of parts 71, 91, 95, 121, 125, and 135 of this chapter, a person may operate aircraft in accordance with this SFAR if the following requirements are met.

### Section 1. *Purpose, use, and limitations*

a. This SFAR permits TSO C145a/C146a GPS (RNAV) systems to be used for IFR en route operations in the United States airspace over and near Alaska (as set forth in paragraph c of this section) at Special Minimum En Route Altitudes (MEA) that are outside the operational service volume of ground-based navigation aids, if the aircraft operation also meets the requirements of sections 3 and 4 of this SFAR.

b. Certificate holders and part 91 operators may operate aircraft under this SFAR provided that they comply with the requirements of this SFAR.

c. Operations conducted under this SFAR are limited to United States Airspace within and near the State of Alaska as defined in the following area description:

From 62°00′00.000″N, Long. 141°00′00.00″W.; to Lat. 59°47′54.11″N., Long. 135°28′38.34″W.; to Lat. 56°00′04.11″N., Long. 130°00′07.80″W.; to

Lat. 54°43′00.00″N., Long. 130°37′00.00″W.; to Lat. 51°24′00.00″N., Long. 167°49′00.00″W.; to Lat. 50°08′00.00″N., Long. 176°34′00.00″W.; to Lat. 45°42′00.00″N., Long. −162°55′00.00″E.; to Lat. 50°05′00.00″N., Long. −159°00′00.00″E.; to Lat. 54°00′00.00″N., Long. −169°00′00.00″E.; to Lat. 60°00 00.00″N., Long. −180°00′ 00.00″E; to Lat. 65°00′00.00″N., Long. 168°58′23.00″W.; to Lat. 90°00′00.00″N., Long. 00°00′0.00″W.; to Lat. 62°00′00.000″N, Long. 141°00′00.00″W.

(d) No person may operate an aircraft under IFR during the en route portion of flight below the standard MEA or at the special MEA unless the operation is conducted in accordance with sections 3 and 4 of this SFAR.

Section 2. *Definitions and abbreviations*

For the purposes of this SFAR, the following definitions and abbreviations apply.

*Area navigation (RNAV).* RNAV is a method of navigation that permits aircraft operations on any desired flight path.

*Area navigation (RNAV) route.* RNAV route is a published route based on RNAV that can be used by suitably equipped aircraft.

*Certificate holder.* A certificate holder means a person holding a certificate issued under part 119 or part 125 of this chapter or holding operations specifications issued under part 129 of this chapter.

*Global Navigation Satellite System (GNSS).* GNSS is a world-wide position and time determination system that uses satellite ranging signals to determine user location. It encompasses all satellite ranging technologies, including GPS and additional satellites. Components of the GNSS include GPS, the Global Orbiting Navigation Satellite System, and WAAS satellites.

*Global Positioning System (GPS).* GPS is a satellite-based radio navigational, positioning, and time transfer system. The system provides highly accurate position and velocity information and precise time on a continuous global basis to properly equipped users.

*Minimum crossing altitude (MCA).* The minimum crossing altitude (MCA) applies to the operation of an aircraft proceeding to a higher minimum en route altitude when crossing specified fixes.

*Required navigation system.* Required navigation system means navigation equipment that meets the performance requirements of TSO C145a/C146a navigation systems certified for IFR en route operations.

*Route segment.* Route segment is a portion of a route bounded on each end by a fix or NAVAID.

*Special MEA.* Special MEA refers to the minimum en route altitudes, using required navigation systems, on published routes outside the operational service volume of ground-based navigation aids and are depicted on the published Low Altitude and High Altitude En Route Charts using the color blue and with the suffix ''G.'' For example, a GPS MEA of 4000 feet MSL would be depicted using the color blue, as 4000G.

*Standard MEA.* Standard MEA refers to the minimum en route IFR altitude on published routes that uses ground-based navigation aids and are depicted on the published Low Altitude and High Altitude En Route Charts using the color black.

*Station referenced.* Station referenced refers to radio navigational aids or fixes that are referenced by ground based navigation facilities such as VOR facilities.

*Wide Area Augmentation System (WAAS).* WAAS is an augmentation to GPS that calculates GPS integrity and correction data on the ground and uses geo-stationary satellites to broadcast GPS integrity and correction data to GPS/WAAS users and to provide ranging signals. It is a safety critical system consisting of a ground network of reference and integrity monitor data processing sites to assess current GPS performance, as well as a space segment that broadcasts that assessment to GNSS users to support en route through precision approach navigation. Users of the system include all aircraft applying the WAAS data and ranging signal.

Section 3. *Operational Requirements*

To operate an aircraft under this SFAR, the following requirements must be met:

a. Training and qualification for operations and maintenance personnel on required navigation equipment used under this SFAR.

b. Use authorized procedures for normal, abnormal, and emergency situations unique to these operations, including degraded navigation capabilities, and satellite system outages.

c. For certificate holders, training of flight crewmembers and other personnel authorized to exercise operational control on the use of those procedures specified in paragraph b of this section.

d. Part 129 operators must have approval from the State of the operator to conduct operations in accordance with this SFAR.

e. In order to operate under this SFAR, a certificate holder must be authorized in operations specifications.

Section 4. *Equipment Requirements*

a. The certificate holder must have properly installed, certificated, and functional dual required navigation systems as defined in section 2 of this SFAR for the en route operations covered under this SFAR.

b. When the aircraft is being operated under part 91, the aircraft must be equipped with at least one properly installed, certificated, and functional required navigation system as defined in section 2 of this SFAR for the en route operations covered under this SFAR.

Section 5. *Expiration date*

This Special Federal Aviation Regulation will remain in effect until rescinded.

[Doc. No. FAA–2003–14305, 68 FR 14077, Mar. 21, 2003]

## SPECIAL FEDERAL AVIATION REGULATION NO. 104—PROHIBITION AGAINST CERTAIN FLIGHTS BY SYRIAN AIR CARRIERS TO THE UNITED STATES

1. *Applicability*. This Special Federal Aviation Regulation (SFAR) No. 104 applies to any air carrier owned or controlled by Syria that is engaged in scheduled international air services.

2. *Special flight restrictions*. Except as provided in paragraphs 3 and 4 of this SFAR No. 104, no air carrier described in paragraph 1 may take off from or land in the territory of the United States.

3. *Permitted operations*. This SFAR does not prohibit overflights of the territory of the United States by any air carrier described in paragraph 1.

4. *Emergency situations*. In an emergency that requires immediate decision and action for the safety of the flight, the pilot in command of an aircraft of any air carrier described in paragraph 1 may deviate from this SFAR to the extent required by that emergency. Each person who deviates from this rule must, within 10 days of the deviation, excluding Saturdays, Sundays, and Federal holidays, submit to the nearest FAA Flight Standards District Office a complete report of the operations or the aircraft involved in the deviation, including a description of the deviation and the reasons therefor.

5. *Duration*. This SFAR No. 104 will remain in effect until further notice.

[Doc. No. FAA–2004–17763, 69 FR 31719, June 4, 2004]

## SPECIAL FEDERAL AVIATION REGULATION NO. 107—PROHIBITION AGAINST CERTAIN FLIGHTS WITHIN THE TERRITORY AND AIRSPACE OF SOMALIA

1. *Applicability*. This rule applies to the following persons:

(a) All U.S. air carriers or commercial operators;

(b) All persons exercising the privileges of an airman certificate issued by the FAA except such persons operating U.S.-registered aircraft for a foreign air carrier; and

(c) All operators of aircraft registered in the United States except where the operator of such aircraft is a foreign air carrier.

2. *Flight prohibition*. Except as provided below, or in paragraphs 3 and 4 of this SFAR, no person described in paragraph 1 may conduct flight operations within the territory and airspace of Somalia below flight level (FL) 200.

(a) Overflights of Somalia may be conducted above FL 200 subject to the approval of, and in accordance with the conditions established by, the appropriate authorities of Somalia.

(b) Flights departing from countries adjacent to Somalia whose climb performance will not permit operation above FL 200 prior to entering Somali airspace may operate at altitudes below FL 200 within Somalia to the extent necessary to permit a climb above FL 200, subject to the approval of, and in accordance with the conditions established by, the appropriate authorities of Somalia.

3. *Permitted operations*. This SFAR does not prohibit persons described in section 1 from conducting flight operations within the territory and airspace below FL 200 of Somalia when such operations are authorized either by another agency of the United States Government with the approval of the FAA or by an exemption issued by the Administrator.

4. *Emergency situations*. In an emergency that requires immediate decision and action for the safety of the flight, the pilot in command of an aircraft may deviate from this SFAR to the extent required by that emergency. Except for U.S. air carriers and commercial operators that are subject to the requirements of Title 14 CFR parts 119, 121, or 135, each person who deviates from this rule must, within 10 days of the deviation, excluding Saturdays, Sundays, and Federal holidays, submit to the nearest FAA Flight Standards District Office a complete report of the operations of the aircraft involved in the deviation, including a description of the deviation and the reasons for it.

5. *Expiration*. This Special Federal Aviation Regulation will remain in effect until further notice.

[Doc. No. FAA–2007–27602, 72 FR 16712, Apr. 5, 2007]

## SPECIAL FEDERAL AVIATION REGULATION NO. 108—MITSUBISHI MU–2B SERIES SPECIAL TRAINING, EXPERIENCE, AND OPERATING REQUIREMENTS

1. *Applicability*. After February 5, 2009, this Special Federal Aviation Regulation (SFAR) applies to all persons who operate the Mitsubishi MU–2B series airplane including those who act as pilot-in-command, act as second-in-command, or other persons who manipulate the controls while under the supervision of a pilot-in-command. This SFAR also applies to those persons who provide pilot training for the Mitsubishi MU–2B series airplane. The requirements in this SFAR are in addition to the requirements of 14 CFR parts 61, 91, and 135 of this chapter.

2. *Compliance and Eligibility*. (a) Except as provided in paragraph (b) of this section, no

person may manipulate the controls, act as pilot-in-command, act as second-in-command, or provide pilot training for the Mitsubishi MU–2B series airplane unless that person meets the applicable requirements of this SFAR.

(b) A person, who does not meet the requirements of this SFAR, may manipulate the controls of the Mitsubishi MU–2B series airplane if a pilot-in-command meeting the applicable requirements of this SFAR is occupying a pilot station, and the flight is being conducted for one of the following reasons—

(1) The pilot-in-command is providing pilot training to the manipulator of the controls, and no passengers or cargo are carried on board the airplane;

(2) The pilot-in-command is conducting a maintenance test flight with a second pilot or certificated mechanic, and no passengers or cargo are carried on board the airplane; or

(3) The pilot-in-command is conducting simulated instrument flight and is using a safety pilot other than the pilot-in-command who manipulates the controls for the purposes of 14 CFR 91.109(b), and no passengers or cargo are carried on board the airplane.

(c) A person is required to complete *Initial/transition training* if that person has fewer than—

(1) 50 hours of documented flight time manipulating the controls while serving as pilot-in-command of a Mitsubishi MU–2B series airplane in the preceding 24 months; or

(2) 500 hours of documented flight time manipulating the controls while serving as pilot-in-command of a Mitsubishi MU–2B series airplane.

(d) A person is eligible to receive *Requalification training* in lieu of Initial/transition training if that person has at least—

(1) 50 hours of documented flight time manipulating the controls while serving as pilot-in-command of a Mitsubishi MU–2B series airplane in the preceding 24 months; or

(2) 500 hours of documented flight time manipulating the controls while serving as pilot-in-command of a Mitsubishi MU–2B series airplane.

(e) A person is required to complete *Recurrent training* within the preceding 12 months. Successful completion of Initial/transition or Requalification training within the preceding 12 months satisfies the requirement of Recurrent training. A person must successfully complete Initial/transition training or Requalification training before being eligible to receive Recurrent training.

(f) Successful completion of Initial/transition training or Requalification training is a one-time requirement. A person may elect to retake Initial/transition training or Requalification training in lieu of Recurrent training.

(g) A person is required to complete Differences training if that person operates more than one MU–2B model. Differences training between the K and M models of the MU–2B airplane, and the J and L models of the MU–2B airplane, may be accomplished with Level A training. All other Differences training must be accomplished with Level B training. Persons that are operating two models of the MU–2B airplane are required to receive 1.5 hours of Differences training. Persons that are operating three or more models of the MU–2B airplane are required to receive 3.0 hours of Differences training. An additional 1.5 hours of Differences training is required for each model added at a later date. Differences Training is not a recurring annual requirement. Once a person has received Differences training between the applicable different models, no additional Differences training between those models is required.

3. *Required Pilot Training.* (a) Except as provided in section 2 paragraph (b) of this SFAR, no person may manipulate the controls, act as pilot-in-command, or act as second-in-command of a Mitsubishi MU–2B series airplane for the purpose of flight unless—

(1) The applicable requirements for ground and flight training on Initial/transition, Requalification, Recurrent, and Differences training have been completed, as specified in this SFAR, including Appendices A through D of this SFAR; and

(2) That person's logbook has been endorsed in accordance with paragraph (f) of this section.

(b) No person may manipulate the controls, act as pilot-in-command, or act as second-in-command, of a Mitsubishi MU–2B series airplane for the purpose of flight unless—

(1) That person satisfactorily completes, if applicable, annual Recurrent pilot training on the *Special Emphasis Items*, and all items listed in the *Training Course Final Phase Check* as specified in Appendix C of this SFAR; and

(2) That person's logbook has been endorsed in accordance with paragraph (f) of this section.

(c) Satisfactory completion of the competency check required by 14 CFR 135.293 within the preceding 12 calendar months may not be substituted for the Mitsubishi MU–2B series airplane annual recurrent flight training of this section.

(d) Satisfactory completion of a Federal Aviation Administration sponsored pilot proficiency award program, as described in 14 CFR 61.56(e) may not be substituted for the Mitsubishi MU–2B series airplane annual recurrent flight training of this section.

(e) If a person complies with the requirements of paragraph (a) or (b) of this section in the calendar month before or the calendar month after the month in which compliance with these paragraphs are required, that person is considered to have accomplished the

training requirement in the month the training is due.

(f) The endorsement required under paragraph (a) and (b) of this section must be made by—

(1) A certificated flight instructor meeting the qualifications of section 5 of this SFAR; or

(2) For persons operating the Mitsubishi MU–2B series airplane for a part 119 certificate holder within the last 12 calendar months, the 14 CFR part 119 certificate holder's flight instructor if authorized by the FAA and if that flight instructor meets the requirements of section 5 of this SFAR.

(g) All training conducted for the Mitsubishi MU–2B series airplane must be completed in accordance with the applicable MU–2B series checklist listed in table 1 of this SFAR or an MU–2B series airplane checklist that has been accepted by the Federal Aviation Administration's MU–2B Flight Standardization Board.

TABLE 1 TO SFAR 108—MU–2B SERIES AIRPLANE MANUFACTURER'S CHECKLISTS

| Model | Type certificate | Cockpit checklist | Date the checklist was accepted by the FSB |
|---|---|---|---|
| | | MHI document No. | |
| MU–2B–60 .. | A10SW ..... | YET06220C | 2/12/2007 |
| MU–2B–40 .. | A10SW ..... | YET06256A | 2/12/2007 |
| MU–2B–36A | A10SW ..... | YET06257B | 2/12/2007 |
| MU–2B–36 .. | A2PC ..... | YET06252B | 2/12/2007 |
| MU–2B–35 .. | A2PC ..... | YET06251B | 2/12/2007 |
| MU–2B–30 .. | A2PC ..... | YET06250A | 3/2/2007 |
| MU–2B–26A | A10SW ..... | YET06255A | 2/12/2007 |
| MU–2B–26 .. | A2PC ..... | YET06249A | 3/2/2007 |
| MU–2B–26 .. | A10SW ..... | YET06254A | 3/2/2007 |
| MU–2B–25 .. | A10SW ..... | YET06253A | 3/2/2007 |
| MU–2B–25 .. | A2PC ..... | YET06248A | 3/2/2007 |
| MU–2B–20 .. | A2PC ..... | YET06247A | 2/12/2007 |
| MU–2B–15 .. | A2PC ..... | YET06246A | 3/2/2007 |
| MU–2B–10 .. | A2PC ..... | YET06245A | 3/2/2007 |
| MU–2B ..... | A2PC ..... | YET06244A | 3/2/2007 |

4. *Aeronautical Experience.* No person may act as pilot-in-command of a Mitsubishi MU–2B series airplane for the purpose of flight unless that person holds an airplane category and multi-engine land class rating, and has logged a minimum of 100 flight hours of pilot-in-command time in multi-engine airplanes.

5. *Instruction, Checking and Evaluation.* (a) *Flight Instructor (Airplane).* No flight instructor may provide instruction or conduct a flight review in a Mitsubishi MU–2B series airplane unless that flight instructor meets the requirements of this paragraph.

(1) Each flight instructor who provides flight training in the Mitsubishi MU–2B series airplane must meet the pilot training and documentation requirements of section 3 of this SFAR before giving flight instruction in the Mitsubishi MU–2B series airplane.

(2) Each flight instructor who provides flight training in the Mitsubishi MU–2B series airplane must meet the currency requirements of paragraphs (a) and (c) of section 6 of this SFAR before giving flight instruction in the Mitsubishi MU–2B series airplane.

(3) Each flight instructor who provides flight training in the Mitsubishi MU–2B series airplane must have a minimum total pilot time of 2,000 pilot-in-command hours, 800 pilot-in-command hours in multiengine airplanes.

(4) Each flight instructor who provides flight training in the Mitsubishi MU–2B series airplane must have—

(i) 300 pilot-in-command hours in the Mitsubishi MU–2B series airplane, 50 hours of which must have been within the preceding 12 months; or

(ii) 100 pilot-in-command hours in the Mitsubishi MU–2B series airplane, 25 hours of which must have been within the preceding 12 months, and 300 hours providing instruction in a FAA-approved Mitsubishi MU–2B simulator or FAA-approved Mitsubishi MU–2B flight training device, 25 hours of which must have been within the preceding 12 months.

(b) *Flight Instructor (Simulator/ Flight Training Device).* No flight instructor may provide instruction for the Mitsubishi MU–2B series airplane unless that instructor meets the requirements of this paragraph.

(1) Each flight instructor who provides flight training for the Mitsubishi MU–2B series airplane must meet the pilot training and documentation requirements of section 3 of this SFAR before giving flight instruction for the Mitsubishi MU–2B series airplane.

(2) Each flight instructor who provides flight training for the Mitsubishi MU–2B series airplane must meet the currency requirements of paragraph (c) of section 6 of this SFAR before giving flight instruction for the Mitsubishi MU–2B series airplane.

(3) Each flight instructor who provides flight training for the Mitsubishi MU–2B series airplane must have—

(i) A minimum total pilot time of 2000 pilot-in-command hours and 800 pilot-in-command hours in multiengine airplanes; and

(ii) Within the preceding 12 months, either 50 hours of Mitsubishi MU–2B series airplane pilot-in-command experience or 50 hours providing simulator or flight training device instruction for the Mitsubishi MU–2B.

(c) *Checking and Evaluation.* No person may provide checking or evaluation for the Mitsubishi MU–2B series airplane unless that person meets the requirements of this paragraph.

(1) For the purpose of checking, designated pilot examiners, training center evaluators, and check airmen must have completed the appropriate training in the Mitsubishi MU–

2B series airplane in accordance with section 3 of this SFAR.

(2) For checking conducted in the Mitsubishi MU–2B series airplane, each designated pilot examiner and check airman must have 100 hours pilot-in-command flight time in the Mitsubishi MU–2B series airplane and maintain currency in accordance with section 6 of this SFAR.

6. *Currency Requirements and Flight Review.* (a) The takeoff and landing currency requirements of 14 CFR 61.57 must be maintained in the Mitsubishi MU–2B series airplane. Takeoff and landings in other multiengine airplanes do not meet the takeoff landing currency requirements for the Mitsubishi MU–2B series airplane. Takeoff and landings in either the short-body or long-body Mitsubishi MU–2B model airplane may be credited toward takeoff and landing currency for both Mitsubishi MU–2B model groups.

(b) Instrument experience obtained in other category and class of aircraft may be used to satisfy the instrument currency requirements of 14 CFR 61.57 for the Mitsubishi MU–2B series airplane.

(c) Satisfactory completion of a flight review to satisfy the requirements of 14 CFR 61.56 is valid for operation of a Mitsubishi MU–2B series airplane only if that flight review is conducted in a Mitsubishi MU–2B series airplane. The flight review for Mitsubishi MU–2B series airplanes must include the *Special Emphasis Items,* and all items listed in the *Training Course Final Phase Check* of Appendix C of this SFAR.

(d) A person who successfully completes the Initial/transition, Requalification, or Recurrent training requirements, as described in section 3 of this SFAR, also meets the requirements of 14 CFR 61.56 and need not accomplish a separate flight review provided that at least 1 hour of the flight training was conducted in the Mitsubishi MU–2B series airplane.

7. *Operating Requirements.* (a) Except as provided in paragraph (b) of this section, no person may operate a Mitsubishi MU–2B airplane in single pilot operations unless that airplane has a functional autopilot.

(b) A person may operate a Mitsubishi MU–2B airplane in single pilot operations without a functional autopilot when—

(1) Operating under day visual flight rule requirements; or

(2) Authorized under a FAA approved minimum equipment list for that airplane, operating under instrument flight rule requirements in daytime visual meteorological conditions.

(c) No person may operate a Mitsubishi MU–2B series airplane unless a copy of the appropriate Mitsubishi Heavy Industries MU–2B Airplane Flight Manual is carried on board the airplane and is accessible during each flight at the pilot station.

(d) No person may operate a Mitsubishi MU–2B series airplane unless an MU–2B series airplane checklist, appropriate for the model being operated and accepted by the Federal Aviation Administration MU–2B Flight Standardization Board, is accessible for each flight at the pilot station and is used by the flight crewmembers when operating the airplane.

(e) No person may operate a Mitsubishi MU–2B series airplane contrary to the MU–2B training program in the Appendices of this SFAR.

(f) If there are any differences between the training and operating requirements of this SFAR and the MU–2B Airplane Flight Manual's procedures sections (Normal, Abnormal, and Emergency) and the MU–2B airplane series checklist specified in section 3(g), table 1, the person operating the airplane must operate the airplane in accordance with the training specified in section 3(g), table 1.

8. *Credit for Prior Training.* Initial/transition or requalification training conducted between July 27, 2006, and April 7, 2008, using Mitsubishi Heavy Industries MU–2B Training Program, Part number YET 05301, Revision Original, dated July 27, 2006, or Revision 1, dated September 19, 2006, is considered to be compliant with this SFAR, if the student met the eligibility requirements for the applicable category of training and the student's instructor met the experience requirements of this SFAR.

9. *Incorporation by Reference.* You must proceed in accordance with the Mitsubishi Heavy Industries MU–2B Checklists as listed in Table 1 of this SFAR which are incorporated by reference. The Director of the Federal Register approved this incorporation by reference in accordance with 5 U.S.C. section 552(a) and 1 CFR part 51. The Mitsubishi Heavy Industries MU–2B Checklists are distributed by Turbine Aircraft Services, Inc. You may obtain a copy from Turbine Aircraft Services Inc., 4550 Jimmy Doolittle Drive, Addison, Texas 75001, USA. You may inspect a copy at U.S. Department of Transportation, Docket Management Facility, Room W 12–140, West Building Ground Floor, 1200 New Jersey Ave., SE., Washington, DC 20590–0001, or at the National Archives and Records Administration at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.*

10. *Expiration.* This SFAR will remain in effect until further notice.

## APPENDIX A TO SFAR 108—MU–2B GENERAL TRAINING REQUIREMENTS

(a) The Mitsubishi MU–2B Training Program consists of both ground and flight training. The minimum pilot training requirement hours are shown in Table 1 of this appendix for ground instruction and Table 2

of this appendix for flight instruction. An additional ground training requirement for Differences Training is shown in Table 3.

(b) The MU–2B is certificated by the Federal Aviation Administration (FAA) as a single pilot airplane. No training credit is given for second in command (SIC) training and no credit is given for right seat time under this program. Only the sole manipulator of the controls of the MU–2B airplane, Flight Training Device (FTD), or Level C or D simulator can receive training credit under this program.

(c) The training program references the applicable MU–2B airplane flight manual (AFM) in several sections. There may be differences between sequencing of procedures found in the AFM's procedures sections and the checklists, procedures, and techniques found within this training program. The FAA's Mitsubishi MU–2B SFAR requires that if there are any differences between the AFM's procedures sections (Normal, Abnormal, and Emergency) and the training and operating requirements of the Mitsubishi MU–2B SFAR, the person operating the airplane must operate the airplane in accordance with the training specified in the SFAR and this MU–2B training program.

(d) Minimum Programmed Training Hours

TABLE 1 TO APPENDIX A OF SFAR 108

| Ground instruction | | |
|---|---|---|
| Initial/transition | Requalificaton | Recurrent |
| 20 hours ..... | 12 hours ..... | 8 hours. |

TABLE 2 TO APPENDIX A OF SFAR 108

| Flight instruction | | |
|---|---|---|
| Initial/transition | Requalification | Recurrent |
| 12 hours with a minimum of 6 hours at Level E. | 8 hours Level C or Level E. | 4 hours at Level E, or 6 hours at Level C. |

TABLE 3 TO APPENDIX A OF SFAR 108

| Differences training | |
|---|---|
| 2 models currently .... | 1.5 hours at Level A or B. |
| More than 2 models currently. | 3 hours at Level A or B. |
| Each additional model added. | 1.5 hours at Level A or B. |

(e) Definitions of Levels of Training as Used in This Appendix

(1) LEVEL A Training—Training that is conducted through self instruction by the pilot.

(2) LEVEL B Training—Training that is conducted in the classroom environment with the aid of a qualified instructor who meets the requirements of this SFAR.

(3) LEVEL C Training—Training that is accomplished in an FAA-approved Level 5, 6, or 7 Flight Training Device (FTD). In addition to the basic FTD requirements, the FTD must be representative of the MU–2B cockpit controls and be specifically approved by the FAA for the MU–2B airplane.

(4) LEVEL E Training—Training that must be accomplished in the MU–2B airplane, Level C simulator, or Level D simulator.

APPENDIX B TO SFAR 108—MU–2B GROUND TRAINING CURRICULUM CONTENTS

All items in the ground training curriculum must be covered. The order of presentation is at the discretion of the instructor. The student must satisfactorily complete a written or oral exam given by the training provider based on this MU–2B Training Program.

I. Aircraft General
- A. Introduction
- B. Airplane (Structures/Aerodynamics/Engines) Overview
- 1. Fuselage
- 2. Wing
- 3. Empennage
- 4. Doors
- 5. Windshield and Windows
- C. Airplane Systems
- 1. Electrical Power
- 2. Lighting
- 3. Fuel System
- 4. Powerplant
- 5. Environmental
- 6. Fire Protection
- 7. Ice and Rain Protection
- 8. Landing Gear and Brakes
- 9. Flight Controls and Trim
- 10. Pilot Static System/Flight Instruments
- 11. Oxygen System
- D. Operating Limitations
- 1. Weights
- 2. Center of Gravity and Loading
- 3. Airspeeds
- 4. Maneuvering Load Factors
- 5. Takeoff And Landing Operations
- 6. Enroute Operations
- E. Required Placards
- F. Instrument Markings
- G. Flight Characteristics
- 1. Control System
- 2. Stability and Stall Characteristics
- 3. Single Engine Operation
- 4. Maneuvering and Trim
- 5. Takeoff and Landing

II. Electrical Power
- A. General Description
- B. DC Electrical System
- 1. DC Power Generation
- 2. DC Power Distribution
- 3. Battery System
- 4. External Power System

C. AC Electrical System
1. AC Power Generation
2. Controls and Indicators
3. AC Power Distribution
D. Limitations
1. General Limitations
2. Instrument Markings
III. Lighting
A. Exterior Lighting System
1. Navigation Lights
2. Anti-Collision Lights
3. Wing Inspection Lights
4. Taxi Lights
5. Landing Lights
6. Rotating Beacon
7. Operation
B. Interior Lighting System
1. Flight Compartment Lights
2. Passenger Compartment Lights
C. Emergency Lighting System
1. Cockpit Emergency Lighting
2. Aircraft Emergency Lighting
D. Procedures
1. Normal
2. Abnormal
3. Emergency
IV. Master Caution System
A. System Description and Operation
1. Master Caution Light and Reset Switch
2. Annunciator and Indicator Panels
3. Operation Lights
4. System Tests
B. Procedures
V. Fuel System
A. Fuel Storage
1. Refueling/Balancing
2. De-Fueling and Draining
3. Tank Vent System
B. Fuel Distribution
1. Fuel Transfer
2. Fuel Balancing
3. Boost Pump Operation
C. Fuel Indicating
1. Fuel Quantity
2. Low Fuel Warning
D. Fuel System Limitations
1. Approved Fuels
2. Fuel Anti-Icing Additives
3. Fuel Temperature Limitations
4. Fuel Transfer and Fuel Imbalance
5. Fuel Pumps
6. Refueling
7. Capacity
8. Unusable Fuel
VI. Powerplant
A. Engine Description
1. Major Sections
2. Cockpit Controls
3. Instrumentation
4. Operation
B. Engine Systems
1. Lubrication
2. Fuel
3. Ignition
4. Engine Starting
5. Anti-Ice
C. Propeller System
1. Ground Operations
2. In-Flight Operations
3. Synchronization
4. De-Ice
D. Ground Checks
1. Overspeed Governor
2. SRL and Delta P/P
3. NTS and Feather Valve
4. Supplementary NTS
E. In Flight Post Maintenance Checks
1. NTS In-Flight
2. Flight Idle Fuel Flow
F. Limitations
1. Powerplant
2. Engine Starting Conditions
3. Airstart Envelope
4. Engine Starting
5. Oil
6. Fuel
7. Starter/Generator
8. External Power
9. Instrument Markings (as applicable)
a. TPE331–10–511M
b. TPE331–5/6–252/251M
c. TPE331–1–151M
G. Engine Malfunctions and Failures
1. Propeller Coupling
2. Torque Sensor
3. Engine Overspeed
4. Fuel Control Spline
VII. Fire Protection
A. Introduction
B. Engine Fire Detection
1. System Description
2. Annunciator
C. Portable Fire Extinguishers
VIII. Pneumatics
A. System Description
B. System Operation
1. Air Sources
2. Limitations
C. Wing and Tail De-Ice
1. System Description
2. Controls
D. Entrance and Baggage Door Seal
1. Air Source
2. Operation
IX. Ice and Rain Protection
A. General Description
B. Wing De-Ice
1. System Description
2. Operation
3. Controls and Indications
C. Engine Anti-Ice
1. System Description
2. Operation
3. Controls and Indications
D. Window Defog
1. Controls
2. Operation
E. Tail De-Ice
1. Horizontal Stabilizer De-Ice
2. Vertical Stabilizer De-Ice
F. Pitot Static System Anti-Icing
1. Pitot Tube Heating
2. Static Port Heating
3. AOA Transmitter Heating

G. Windshield De-Ice/Anti-Ice
1. System Description
2. Controls and Indications
H. Windshield Wiper
1. System Description
2. Control and Operation
I. Propeller De-Ice
1. System Description
2. Controls and Indications
J. Ice Detector
1. System Description
2. Controls and Indications
3. Operation
K. Limitations
1. Temperatures
2. Cycling
X. Air Conditioning
A. System Description and Operation
1. Refrigeration Unit (ACM)
2. Air Distribution
3. Ventilation
4. Temperature Control
5. Water Separator
B. Limitations
XI. Pressurization
A. General
B. Component Description
1. Cabin Pressure Controller
2. Altitude Pressure Regulator
3. Ram Air
4. Outflow Safety Valves
5. Air Filters
6. Manual Control Valve
7. Pneumatic Relays
8. Venturi
C. System Operation
1. Ground Operation
2. Takeoff Mode
3. In-Flight Operation
4. Landing Operation
D. Emergency Operation
1. High Altitude
2. Low Altitude
E. Limitations
1. Maximum Differential
2. Landing Limitations
XII. Landing Gear and Brakes
A. General Description
1. Landing Gear Doors
2. Controls and Indicators
3. Warning Systems
4. Emergency Extension
B. Nosewheel Steering
C. Landing Gear/Brakes/Tires
D. Limitations
1. Airspeed (with flaps)
2. Emergency Extension
3. Tire Speed
4. Brake Energy
XIII. Flight Controls
A. Primary Flight Controls (Elevator/Rudder/Spoilers)
1. Description
2. Operations
B. Trim Systems
1. System Description
2. Roll Trim
a. Normal Operation
b. Emergency Operation
3. Rudder Trim
4. Pitch Trim
a. General
b. Operations
c. Trim-in-Motion Alert System
C. Secondary Flight Controls
1. System Description
2. Flaps
D. Limitations
1. Instrument Markings
2. Placards
E. Flight Characteristics
1. Control Systems
2. Stability and Stall Characteristics
3. Single Engine Operation
5. Maneuvering and Trim
6. Takeoff and Landing
XIV. Avionics
A. Pitot-Static System
1. System Description
2. Pilot's System
3. Co-Pilot's System
4. Alternate Static
B. Air Data Computer
C. Attitude Instrument Displays (EFIS and Standard)
1. EADI
2. Standard Attitude Gyro
D. AHRS
1. System Description
2. Controls and Indications
E. Navigation
1. Nav Systems Descriptions
2. Compass System Descriptions
3. Display Systems
4. Terrain Awareness System
5. Traffic Avoidance System
F. Communications
1. VHF Communications Systems
2. Audio Control
G. Standby Flight Instruments
1. System Description
2. Controls and Indications
H. Automatic Flight Control System
1. Controls and Indications
2. Yaw Damper
3. Trim-in-Motion Alert System
4. Autopilot Automatic Disconnect
5. Aural Alert System
I. Angle of Attack (AOA) System
1. System Description
2. Controls and Indications
J. Limitations
XV. Oxygen System
A. System Description
B. Crew Oxygen
1. Oxygen Cylinder Assembly
2. Pressure Gauge
3. Outlet Valves
4. Duration
C. Passenger Oxygen
1. System Description
2. Duration
D. Limitations
XVI. Performance and Planning

A. Takeoff Performance Charts
1. Runway Requirements
2. Normal and with One Engine Inoperative
B. Climb Performance
1. Normal and with One Engine Inoperative
2. Obstacle Clearance
3. Power Assurance Charts
C. Cruise Performance
1. Power Charts
2. Maximum Practical Altitude
3. Cruise Speeds/Engine Health
4. Buffet Boundary
D. Landing Performance
1. Runway Requirements
a. Dry Runway
b. Wet Runway
2. Go-Around
a. One Engine Inoperative
b. All Engines
XVII. Weight and Balance
A. Aircraft Loading Procedures
B. Limitations
1. Weight Limits
2. C.G. Limits
C. Plotter
1. Description
2. Use
D. Calculations
1. AFM Procedures
2. Examples
XVIII. General Subjects
A. Controlled Flight into Terrain Awareness
B. CRM/SPRM
1. Crew Resource Management
2. Single Pilot Resource Management
C. MU–2B Flight Standardization Board Report

APPENDIX C TO SFAR 108—MU–2B FINAL PHASE CHECK AND FLIGHT TRAINING REQUIREMENTS

*(I) MU–2B Final Phase Check Requirements*

(A) Completion of the MU–2B Training Program in this appendix requires successful completion of a final phase check taken in the MU–2B airplane or a Level C or D simulator for Initial/Transition training. The final phase check for Requalification or Recurrent Training may be taken in the MU–2B airplane, a Level C or D simulator, or in a Level 5, 6, or 7 FAA-approved MU–2B Flight Training Device (FTD). The final phase check must be conducted by a qualified flight instructor who meets the requirements of the MU–2B SFAR. Simultaneous training and checking is not allowed for Initial/Transition training.

(B) For pilots operating under 14 CFR part 135, checking must be done in accordance with applicable regulations. For the purpose of recurrent testing in 14 CFR 135.293(b), the MU–2B is considered a separate type of aircraft.

(C) The final phase check must be conducted using the standards contained in the FAA Commercial Pilot—Airplane Multi-Engine Land, and Instrument Rating—Airplane Practical Test Standards (PTS).

(D) The final phase check portion of the training is comprised of the following tasks for *all* airmen (instrument rated and non instrument rated). An (*) indicates those maneuvers for Initial/Transition training which must be completed in the MU–2B airplane, or a Level C or D simulator.

(1) Preflight Check.

(2) Start and Taxi Procedures.

(3) * Normal Takeoff (X-Wind) (Two Engine).

(4) * Takeoff Engine Failure.

(5) Rejected Takeoff.

(6) * Steep Turns.

(7) * Approach to Stalls (3) (must include Accelerated Stalls).

(8) * Maneuvering with One Engine Inoperative—Loss of Directional Control ($V_{mc}$).

(9) Abnormal and Emergency Procedures—To include MU–2B operation in icing conditions without the autopilot or without trim-in-motion or automatic autopilot disconnect.

(10) * Precision Approach (One Engine Inoperative).

(11) Go Around/Rejected Landing.

(12) Normal Landing (X-Wind).

(13) * Landing with One Engine Inoperative.

(14) * Landing with Non-Standard Flap Configuration (0 or 5 degrees).

(15) Postflight Procedures.

(E) The following additional tasks are required for those airmen who possess an instrument rating. An (*) indicates those maneuvers for Initial/Transition training which must be completed in the MU–2B airplane, or a Level C or D simulator.

(1) Preflight Check.

(2) Unusual Attitudes.

(3) Abnormal and Emergency Procedures.

(4) Basic Instrument Flight Maneuvers.

(5) Area Arrival and Departure.

(6) Holding.

(7) Precision Approach (Two Engine).

(8) * Non-Precision Approaches (2)—Must include a Non-Precision Approach with One Engine Inoperative.

(9) Missed Approach from either Precision or Non Precision Instrument Approach (Two Engine).

(10) Landing from a Straight-In or Circling Approach.

(11) Circling Approach.

(12) Postflight Procedures.

(F) A form titled ''Training Course Final Phase Check'' has been included in this appendix for use in creating a training and final check record for the student and the training provider.

*(II) MU–2B Required Flight Training Tasks*

(A) General Flight Training Requirements: All flight training maneuvers must be consistent with this training program and the applicable MU–2B checklist accepted by the FAA. The maneuver profiles shown in Appendix D to this SFAR No. 108 are presented to show the required training scenarios. Profiles conducted in flight require planning and care on the part of both the instructor and student in order to provide the highest level of safety possible. The maneuver profiles shown in Appendix D to this SFAR No. 108 do not account for local geographic and flight conditions. The instructor and student must consider local conditions when performing these maneuvers in flight.

(B) Special Emphasis Items: Certain aspects of pilot knowledge, skills and abilities must be emphasized and evaluated during the training and checking process of the MU–2B Training Program.

(1) Accelerated stall awareness and recovery procedures with emphasis on configuration management. Awareness of the margin to stall in all flight operations and configurations must be emphasized throughout training.

(2) $V_{mc}$ awareness and early recognition must be trained and checked. Minimum airspeeds for one engine inoperative must be emphasized in all configurations.

(3) Airspeed management and recognition of airspeed deterioration below recommended speeds and recovery methods in this training program must be emphasized throughout training and checking.

(4) Knowledge of icing conditions and encounters must be emphasized throughout training and checking including: Equipment requirements, certification standards, minimum airspeeds, and the use of the autopilot and other applicable AFM procedures.

(5) Airplane performance characteristics with all engines operating and with one engine inoperative must be emphasized.

(C) MU–2B Flight Training Program Proficiency Standards.

(1) Each pilot, regardless of the level of pilot certificate held, must be trained to and maintain the proficiency standards described below.

(a) General VFR/IFR.

(i) Bank Angle—± 5 degrees of prescribed bank angle

(ii) Heading—± 10 degrees

(iii) Altitude—± 100 feet

(iv) Airspeed—± 10 knots

(b) Instrument Approach—Final Approach Segment.

*Precision Approach*

(i) Heading—± 10 degrees

(ii) Altitude—± 100 feet

(iii) Airspeed—± 10 knots prior to final

(iv) Airspeed—± 10 knots after established on final

(v) Glide Slope (GS)/Localizer Deviation—Within ¾ scale—not below GS

*Non-Precision Approach*

Straight In

(vi) Initial Approach Altitude—± 100 feet

(vii) Heading—± 10 degrees

(viii) Altitude (MDA)—+ 100, −0 feet

(ix) Airspeed—+ 10 knots

(x) Course Deviation Indicator—Within ¾ scale or ± 10 degrees on RMI

Circling Approach

(xi) Maximum Bank—30 degrees

(xii) Heading—Within 10 degrees

(xiii) Altitude—+100, −0 feet

(xiv) Airspeed—Within 10 knots but not less than $V_{ref}$

(c) In all cases, a pilot must show complete mastery of the aircraft with the outcome of each maneuver or procedure never seriously in doubt.

(D) Maneuvers and Procedures. All flight training maneuvers and procedures must be conducted as they are applicable to the MU–2B and each type of operations involved.

*Preflight*

(1) Preflight Inspection—The pilot must—

(a) Conduct an actual visual inspection of the exterior and interior of the airplane, locating each item and explaining briefly the purpose of inspecting it; and

(b) Demonstrate the use of the appropriate checklist, 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.

(2) Taxiing—this maneuver includes taxiing in compliance with instructions issued by the appropriate ATC facility or by the person conducting the check.

(3) Pre-Takeoff Checks—The pilot must satisfactorily complete all pre-takeoff aircraft systems and powerplant checks before takeoff.

*Takeoff and Departure*

(1) Normal—One normal takeoff, which for the purpose of this maneuver, begins when the airplane is taxied into position on the runway to be used.

(2) Instrument Takeoff—Takeoff with simulated instrument conditions at or before reaching an altitude of 200 feet above the airport elevation and visibility of 1800 RVR.

(3) Crosswind—One crosswind takeoff, if practical, under the existing meteorological, airport and traffic conditions.

(4) Powerplant Failure—One takeoff with a simulated failure of the most critical powerplant at a point after Vlof. In the MU–2B airplane, all simulated powerplant failures must only be initiated when the person conducting the training or checking determines that it is safe under the prevailing conditions. The instructor must assure that the power lever does not move beyond the flight idle gate.

(5) Rejected Takeoff—A rejected takeoff performed in an airplane during a normal takeoff run after reaching a reasonable speed determined by giving due consideration to aircraft characteristics, runway length, surface conditions, wind direction and velocity, brake heat energy, and any other pertinent factors that may adversely affect safety or the airplane.

(6) Area departure—Demonstrate adequate knowledge of departure procedures, establishing appropriate ATC communications and following clearances.

*Flight Maneuvers and Procedures*

(1) Steep bank turns—Each steep turn must involve a bank angle of 50 degrees with a heading change of at least 180 degrees but no more than 360 degrees.

(2) Approaches to stalls—Must be performed in each of the following configurations; takeoff, clean, and landing. One approach to a stall must be performed in either the takeoff, clean, or landing configuration while in a turn with a bank angle between 15 degrees and 30 degrees.

(3) Accelerated stalls—must be done in the flaps 20 and flaps 0 configurations.

(4) Recovery procedures must be initiated at the first indication of a stall.

*Normal and Abnormal Procedures and Operations*

(1) Runway trim.

(2) Normal and abnormal operations of the following systems:

(a) Pressurization.

(b) Pneumatic.

(c) Air conditioning.

(d) Fuel.

(e) Electrical.

(f) Flight control.

(g) Anti-icing and de-icing.

(h) Autopilot.

(i) Stall warning devices, as applicable.

(j) Airborne radar and weather detection devices.

(k) Other systems, devices or aids available.

(l) Electrical, flight control and flight instrument system malfunction or failure.

(m) Landing gear and flap system malfunction or failure.

(n) Failure of navigation or communications equipment.

*Flight Emergency Procedures*

(1) Powerplant failure.

(2) Powerplant, cabin, flight deck, wing and electrical fires.

(3) Smoke control.

(4) Fuel jettisoning, as applicable.

(5) Any other emergency procedures outlined in the appropriate AFM or FAA-accepted checklist.

*Instrument Procedures*

(1) Area departure.

(2) Use of navigation systems including adherence to assigned course and/or radial.

(3) Holding procedures.

(4) Aircraft approach category airspeeds.

(5) Approach procedures: Each instrument approach must be performed according to all procedures and limitations approved for that facility. An instrument approach procedure begins when the airplane is over the initial approach fix for the approach procedure being used and ends when the airplane touches down on the runway or when transition to missed approach configuration is completed.

(a) ILS, ILS/DME, approach.

(i) A manually controlled ILS with a powerplant inoperative; occurring before initiating the final approach course and continuing to full stop or through the missed approach procedure.

(ii) A manually controlled ILS utilizing raw data to 200 feet or decision height (DH).

(iii) An ILS with the autopilot coupled.

(b) Non-precision approaches.

(i) NDB, NDB/DME approach, straight in or circle.

(ii) VOR, VOR/DME, straight in or circle.

(iii) LOC, LOC/DME, LOC backcourse.

(iv) GPS approach (If the aircraft/FTD/flight simulator has a GPS installed, the applicant must demonstrate GPS approach proficiency.)

(v) ASR approach.

(c) Missed approach procedure: One missed approach procedure must be a complete approved missed approach procedure as published or as assigned by ATC.

(i) From a precision approach.

(ii) From a non-precision approach.

(iii) With a simulated powerplant failure.

(d) Circling approach.

(i) The circling approach must be made to the authorized MDA and followed by a change in heading and the necessary maneuvering (by visual reference) to maintain a flight path that permits a normal landing on the runway.

(ii) The circling approach must be performed without excessive maneuvering and without exceeding the normal operating limits of the airplane and the angle of bank must not exceed 30°.

*Landings and Approaches to Landings*

(1) Airport orientation.

(2) Normal landings with stabilized approach.

(3) Crosswind landings.

(4) From a precision instrument approach.

(5) From a precision instrument approach with a powerplant inoperative.

(6) From a non-precision instrument approach.

(7) From a non-precision instrument approach with a powerplant inoperative.

(8) From a circling approach or VFR traffic pattern.

(9) Go Around/Rejected landings—a normal missed approach procedure or a visual go-around after the landing is rejected. The landing should be rejected at approximately 50 feet and approximately over the runway threshold.

(10) Zero flap landing.

(a) Runway requirements.

(b) Airspeeds.

| TRAINING COURSE FINAL PHASE CHECK | | | | |
|---|---|---|---|---|
| NAME OF AIRMAN *(last, first, middle initial)* | GRADE OF CERTIFICATE | CERTIFICATE NUMBER | | |
| DATE OF CHECK | LOCATION OF CHECK | TYPE OF CHECK | MU-2B MODEL | FTD MODEL |
| SCHOOL NAME | INSTRUCTOR NAME | CFI NUMBER | EXPIRES | |
| FLIGHT MANEUVERS GRADE *(S-Satisfactory U-Unsatisfactory)* | | | | |

| MANEUVERS REQUIRED FOR ALL AIRMEN | A/C | FTD |
|---|---|---|
| PREFLIGHT CHECK | | |
| START AND TAXI PROCEDURES | | |
| *NORMAL TAKEOFF (X WIND) (TWO ENGINE) | | |
| *TAKEOFF ENGINE FAILURE | | |
| REJECTED TAKEOFF | | |
| *STEEP TURNS | | |
| *APPROACH TO STALL (3) | | |
| *MANEUVERING WITH ONE ENGINE INOP (VMC) | | |
| ABNORMAL AND EMERGENCY PROCEDURES - TO INCLUDE THE MU-2 OPERATIOIN IN ICING CONDITIONS WITHOUT THE AUTOPILOT OR WITHOUT TRIM-IN-MOTION/AUTOMATIC AUTOPILOT DISCONNECT. | | |
| *PRECISION APROACH (ONE ENGINE INOPERATIVE) | | |
| GO AROUND / REJECTED LANDING | | |
| NORMAL LANDING (X WIND) | | |
| *LANDING WITH ONE ENGINE INOPERATIVE | | |
| *LANDING WITH NON-STANDARD FLAP CONFIG | | |
| POST FLIGHT PROCEDURES | | |

| ADDITIONAL MANEUVERS REQUIRED FOR INSTRUMENT RATED AIRMEN | A/C | FTD |
|---|---|---|
| PREFLIGHT CHECK | | |
| UNUSUAL ATTITUDES | | |
| ABNORMAL AND EMERGENCY PROCEDURES | | |
| BASIC INSTRUMENT FLIGHT MANEUVERS | | |
| AREA ARRIVAL AND DEPARTURE | | |
| HOLDING | | |
| PRECISION APPROACH (TWO ENGINE) | | |
| *NON-PRECISION APPROACHES (2) | | |
| MISSED APPROACH FROM EITHER PRECISION OR NON-PRECISION APPROACH (TWO ENGINE) MUST INCLUDE AN APPROACH WITH ONE ENGINE INOP | | |
| LANDING FROM A STRAIGHT-IN/CIRCLING APPROACH | | |
| CIRCLING APPROACH | | |
| POST FLIGHT PROCEDURES | | |

| RESULTS OF CHECK | SATISFACTORY | | FLIGHT TIMES | AIRCRAFT | FTD |
|---|---|---|---|---|---|
| | UNSATISFACTORY | | | | |
| INSTRUCTOR SIGNATURE | | | AIRMAN SIGNATURE | | |

APPENDIX D TO SFAR 108—MU–2B MANEUVER PROFILES

(A) The Maneuver Profiles are provided to develop pilot proficiency with the procedures and techniques contained within this MU–2B Flight Training Program.

(B) Though constructed for use in the airplane they may also be used in the Flight Training Device (FTD). When an FTD is

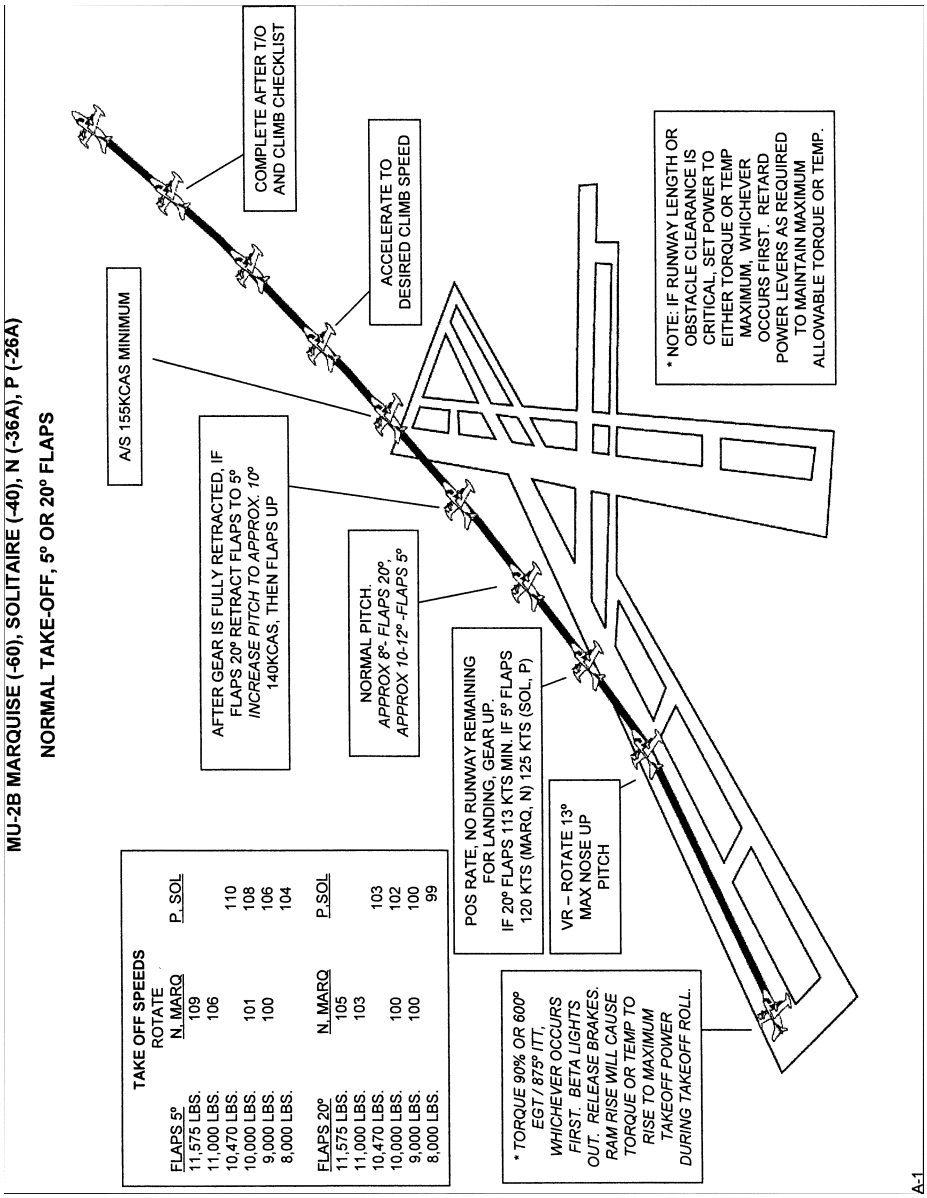
used, a maneuver may be performed at lower altitudes or carried to its completion. When training is conducted in the MU–2B airplane, all maneuvers must be performed in a manner sufficient to evaluate the performance of the student while never jeopardizing the safety of the flight.

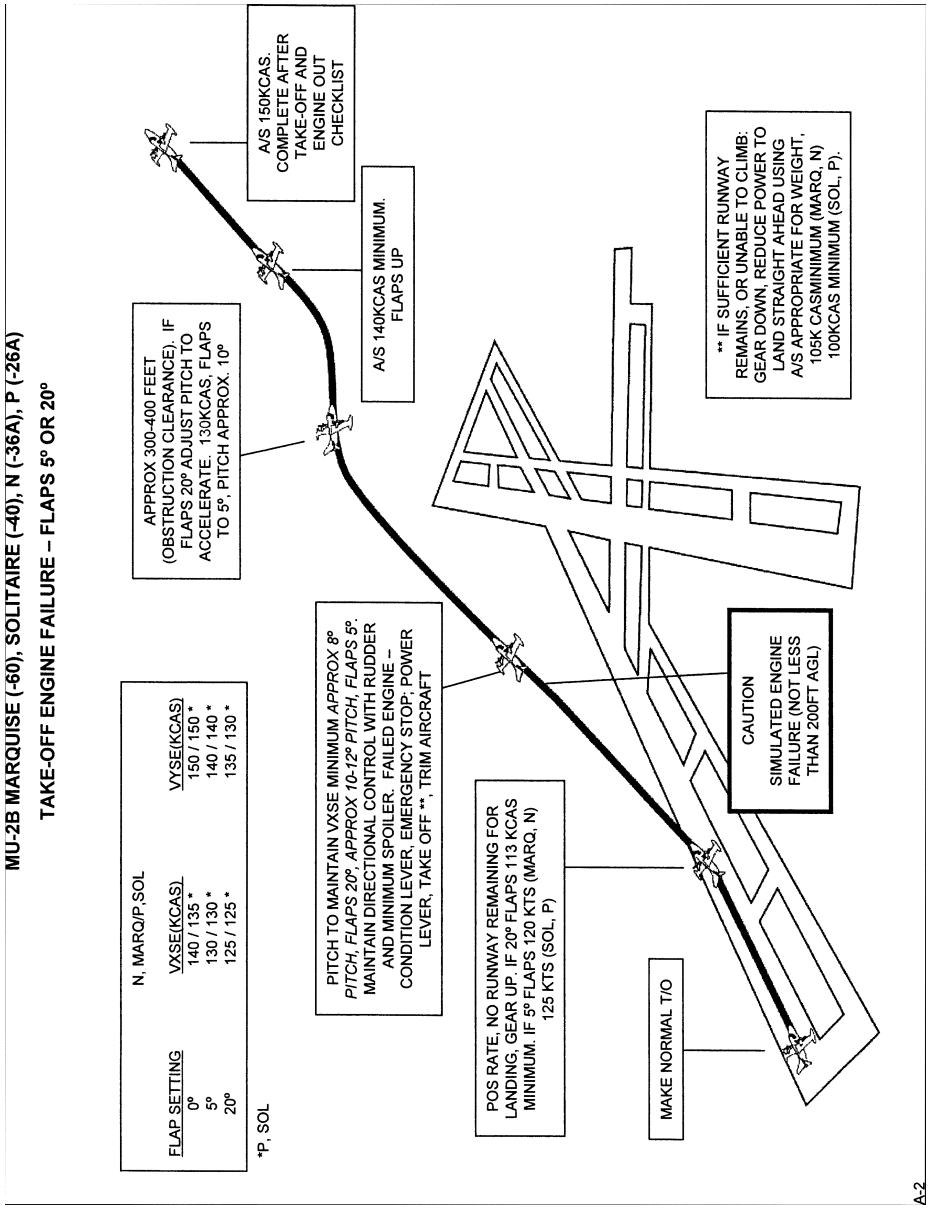
(C) The maneuvers profiles are broken down into three sections by similar aircraft model groups. The three sections of this program are:

(1) Marquise (−60), Solitaire (–40), N (–36A), P (–26A)—Figures A–1 through A–28

(2) J (–35), K (–25), L (–;36), M (–26)—Figures B–1 through B–28

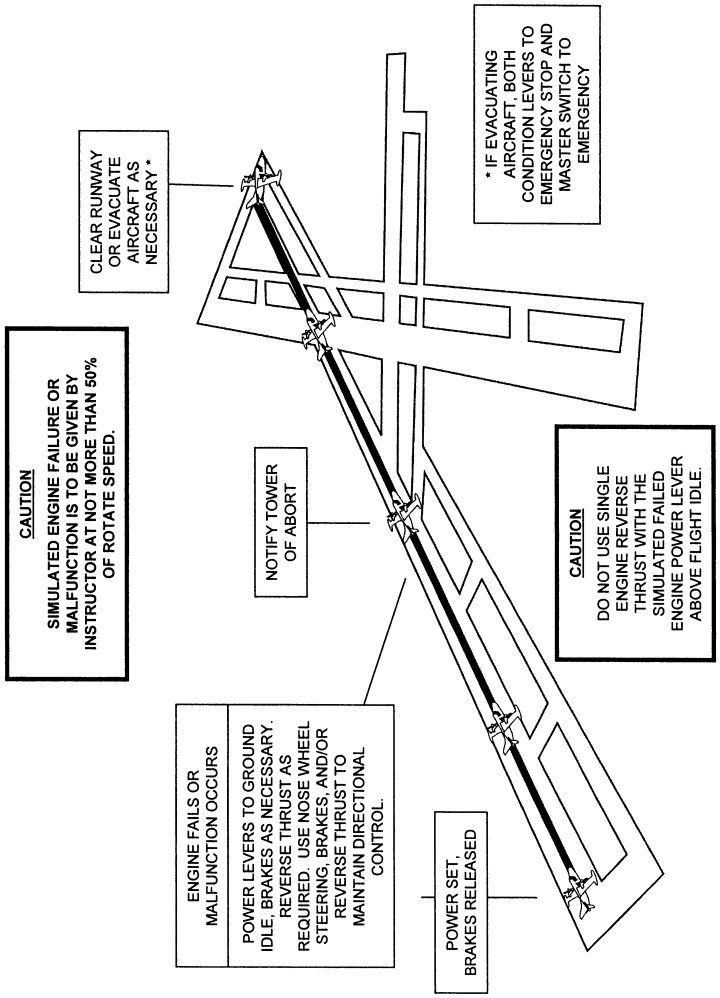
(3) B, D (–10), F (–20), G (–30)—Figures C–1 through C–28


MU-2B MARQUISE (-60), SOLITAIRE (-40), N (-36A), P (-26A)
NORMAL TAKE-OFF, 5° OR 20° FLAPS
TAKE OFF SPEEDS
ROTATE
FLAPS 5° N. MARQ P. SOL
11,575 LBS. 109
11,000 LBS. 106 110
10,470 LBS. 108
10,000 LBS. 101 106
9,000 LBS. 100 104
8,000 LBS.
FLAPS 20° N. MARQ P. SOL
11,575 LBS. 105
11,000 LBS. 103 103
10,470 LBS. 102
10,000 LBS. 100 100
9,000 LBS. 100 100
8,000 LBS. 99
* TORQUE 90% OR 600° EGT / 875° ITT, WHICHEVER OCCURS FIRST. BETA LIGHTS OUT. RELEASE BRAKES. RAM RISE WILL CAUSE TORQUE OR TEMP TO RISE TO MAXIMUM TAKEOFF POWER DURING TAKEOFF ROLL.
POS RATE. NO RUNWAY REMAINING FOR LANDING, GEAR UP.
IF 20° FLAPS 113 KTS MIN. IF 5° FLAPS 120 KTS (MARQ, N) 125 KTS (SOL, P)
VR – ROTATE 13° MAX NOSE UP PITCH
NORMAL PITCH.
APPROX 8°- FLAPS 20°,
APPROX 10-12° -FLAPS 5°
AFTER GEAR IS FULLY RETRACTED, IF FLAPS 20° RETRACT FLAPS TO 5°
INCREASE PITCH TO APPROX. 10°
140KCAS, THEN FLAPS UP
A/S 155KCAS MINIMUM
ACCELERATE TO DESIRED CLIMB SPEED
COMPLETE AFTER T/O AND CLIMB CHECKLIST
* NOTE: IF RUNWAY LENGTH OR OBSTACLE CLEARANCE IS CRITICAL, SET POWER TO EITHER TORQUE OR TEMP MAXIMUM, WHICHEVER OCCURS FIRST. RETARD POWER LEVERS AS REQUIRED TO MAINTAIN MAXIMUM ALLOWABLE TORQUE OR TEMP.
A-1


MU-2B MARQUISE (-60), SOLITAIRE (-40), N (-36A), P (-26A)
TAKE-OFF ENGINE FAILURE – FLAPS 5° OR 20°
N, MARQ/P,SOL
FLAP SETTING VXSE(KCAS) VYSE(KCAS)
0° 140 / 135 * 150 / 150 *
5° 130 / 130 * 140 / 140 *
20° 125 / 125 * 135 / 130 *
*P, SOL
APPROX 300-400 FEET (OBSTRUCTION CLEARANCE). IF FLAPS 20° ADJUST PITCH TO ACCELERATE. 130KCAS, FLAPS TO 5°, PITCH APPROX. 10°
A/S 150KCAS. COMPLETE AFTER TAKE-OFF AND ENGINE OUT CHECKLIST
A/S 140KCAS MINIMUM. FLAPS UP
PITCH TO MAINTAIN VXSE MINIMUM APPROX 8° PITCH, FLAPS 20°, APPROX 10-12° PITCH, FLAPS 5°. MAINTAIN DIRECTIONAL CONTROL WITH RUDDER AND MINIMUM SPOILER. FAILED ENGINE – CONDITION LEVER, EMERGENCY STOP; POWER LEVER, TAKE OFF **, TRIM AIRCRAFT
** IF SUFFICIENT RUNWAY REMAINS, OR UNABLE TO CLIMB: GEAR DOWN, REDUCE POWER TO LAND STRAIGHT AHEAD USING A/S APPROPRIATE FOR WEIGHT, 105K CASMINIMUM (MARQ, N) 100KCAS MINIMUM (SOL, P).
CAUTION SIMULATED ENGINE FAILURE (NOT LESS THAN 200FT AGL)
POS RATE, NO RUNWAY REMAINING FOR LANDING, GEAR UP. IF 20° FLAPS 113 KCAS MINIMUM. IF 5° FLAPS 120 KTS (MARQ, N) 125 KTS (SOL, P)
MAKE NORMAL T/O
A-2

**MU-2B MARQUISE (-60), SOLITAIRE (-40), N (-36A), P (-26A)**

**TAKE-OFF ENGINE FAILURE ON RUNWAY**

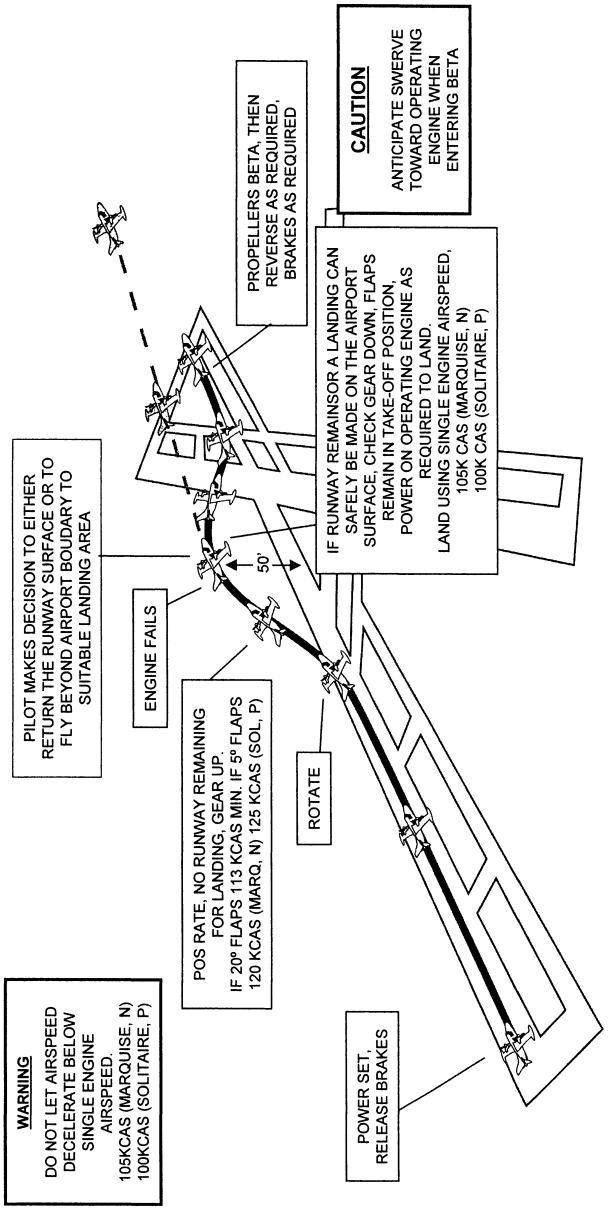



A-3

**MU-2B MARQUISE (-60), SOLITAIRE (-40), N (-36A), P (-26A)**

**TAKE-OFF ENGINE FAILURE - UNABLE TO CLIMB**

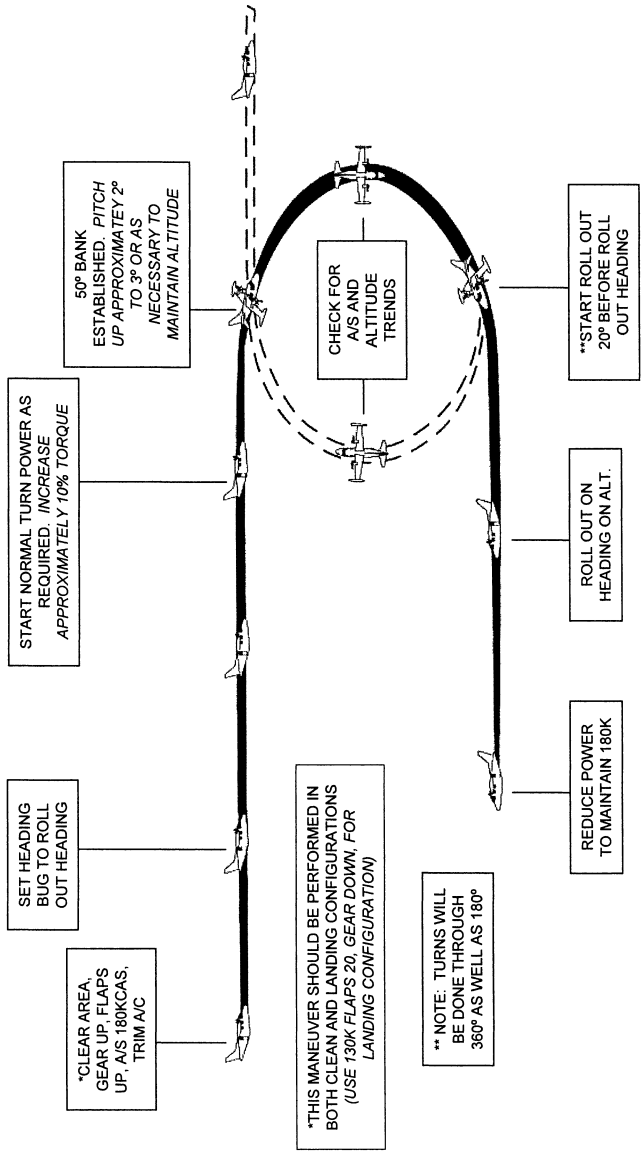
***CLASSROOM DISCUSSION OR FTD USE ONLY***




A-4

**MU-2B MARQUISE (-60), SOLITAIRE (-40), N (-36A), P (-26A)**

**STEEP TURNS**




A-5

## MU-2B MARQUISE (-60), SOLITAIRE (-40), N (-36A), P (-26A)

## SLOW FLIGHT MANEUVERING

## MINIMUM CONTROLLABLE AIRSPEED

SLOW FLIGHT MANEUVERING IS CONDUCTED AS FOLLOWS:

CLEAR THE AREA PRIOR TO BEGINNING THE MANEUVER.

START WITH CLEAN CONFIGURATION AND CHANGE AIRCRAFT CONFIGURATION FROM CLEAN TO FULL FLAP AND GEAR IN STAGES. USE A MAXIMUM OF 15° BANK AND PERFORM HEADING CHANGES OF 90° LEFT AND RIGHT. CONSTANT ALTITUDE IS REQUIRED THROUGHOUT.
MAINTAIN 115KCAS IN ALL CONFIGURATIONS.

**APPROXIMATE POWER SETTINGS ARE:

| | | | |
|---|---|---|---|
| *CLEAN* | *TORQUE* | *(35%) PER ENGINE* | *APPROX PITCH +12* |
| *5° FLAP* | *TORQUE* | *(32%) PER ENGINE* | *APPROX PITCH +8* |
| *5° FLAP & GEAR* | *TORQUE* | *(44%) PER ENGINE* | *APPROX PITCH +9* |
| *20° FLAP & GEAR* | *TORQUE* | *(42%) PER ENGINE* | *APPROX PITCH +4* |
| *40° FLAP & GEAR* | *TORQUE* | *(54%) PER ENGINE* | *APPROX PITCH 0* |

** NOTE: POWER SETTINGS WILL VARY WITH AIRCRAFT WEIGHT AND ALTITUDE.

STALL SPEEDS (APPROXIMATE)
AT MAXIMUM GROSS TAKEOFF WEIGHT
N, MARQUISE / P, SOLITIARE

| ANGLE OF BANK | 0° | 15° |
|---|---|---|
| FLAPS | | |
| UP | 106/104* | 108/106* |
| 5° | 99/ 98* | 100/ 99* |
| 20° | 87/ 88* | 88/ 88* |
| 40° | 81/ 78* | 83/ 79* |

*P, SOL

Vmc FLAPS 5° 99K (MARQ, N), 100KCAS (SOL, P)
FLAPS 20° 99K (MARQ, N), 93KCAS (SOL, P)

CAUTION

STALL WARNING MAY ACTIVATE
4 TO 9 KCAS ABOVE STALL

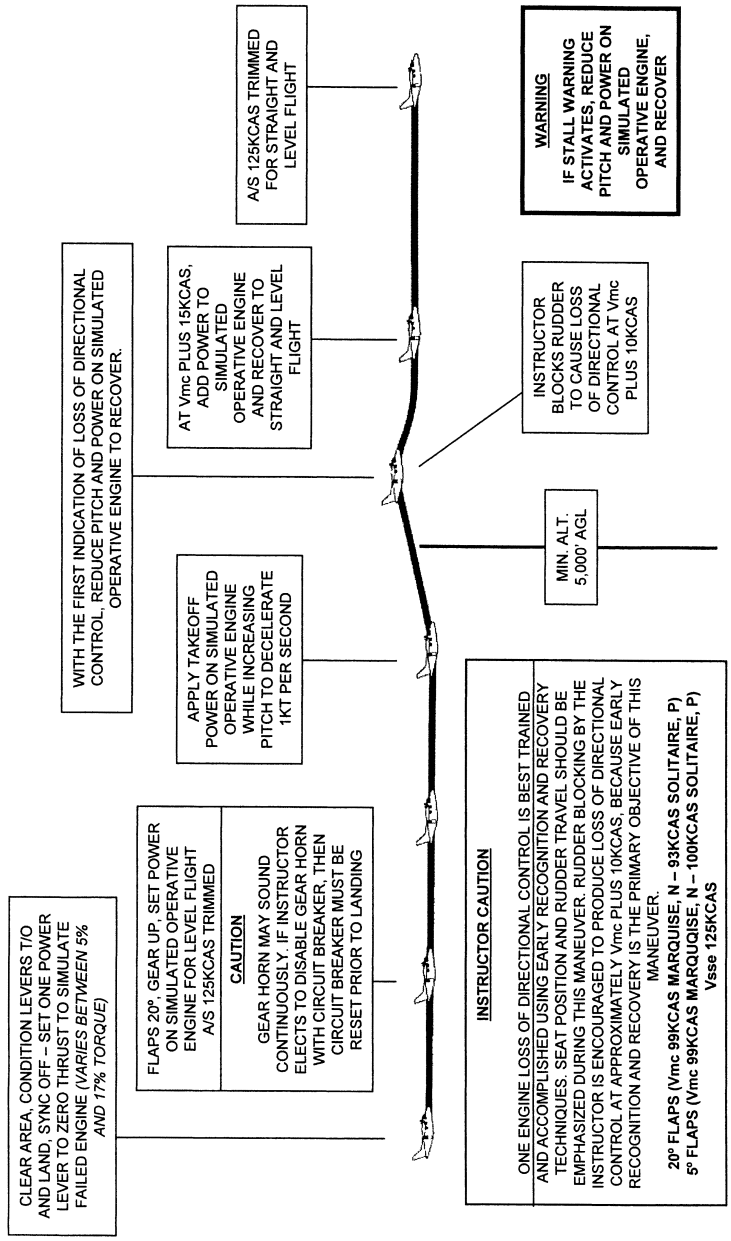
MINIMUM CONTROLLABLE AIRSPEED IS CONDUCTED AS FOLLOWS:

CLEAR THE AREA PRIOR TO BEGINNING THE MANEUVER.

THE MANEUVER MAY BE DONE IN ANY COMBINATION OF GEAR OR FLAP CONFIGURATIONS. IF BANK IS TO BE USED, IT SHOULD BE DONE AT BANK OF NOT MORE THAN 15°. BEGIN THE MANEUVER BY CONFIGURING THE AIRCRAFT IN THE DESIRED GEAR AND FLAP CONFIGURATION. SLOW THE AIRCRAFT UNTIL THE STALL WARNING (STICK SHAKER) IS ACTIVATED AND ADD POWER TO MAINTAIN ALTITUDE AND A SPEED JUST ABOVE AERODYNAMIC STALL. DO NOT ALLOW THE AIRCRAFT TO REACH AERODYNAMIC STALL BUFFET.

**MU-2B MARQUISE (-60), SOLITAIRE (-40), N (-36A), P (-26A)**

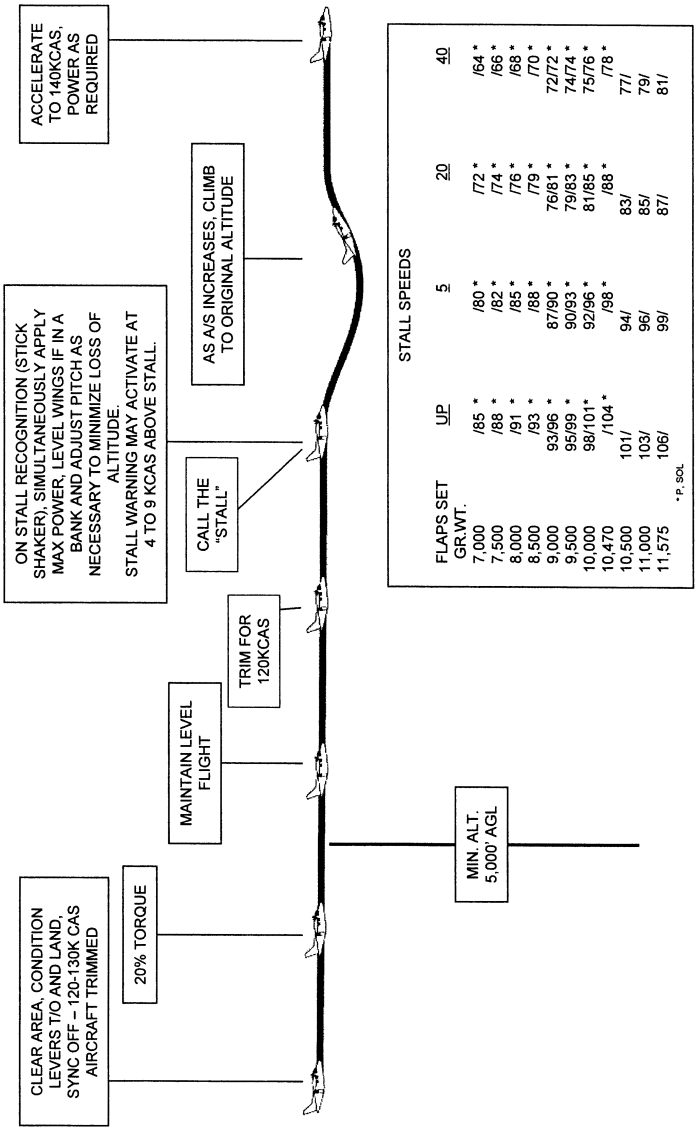
**ONE ENGINE INOPERATIVE MANEUVERING LOSS OF DIRECTIONAL CONTROL**




A-7

**MU-2B MARQUISE (-60), SOLITAIRE (-40), N (-36A), P (-26A)**

**APPROACH TO STALL CLEAN CONFIGURATION / WINGS LEVEL**




STALL SPEEDS

| FLAPS SET GR.WT. | UP | 5 | 20 | 40 |
|---|---|---|---|---|
| 7,000 | /85 * | /80 * | /72 * | /64 * |
| 7,500 | /88 * | /82 * | /74 * | /66 * |
| 8,000 | /91 * | /85 * | /76 * | /68 * |
| 8,500 | /93 * | /88 * | /79 * | /70 * |
| 9,000 | 93/96 * | 87/90 * | 76/81 * | 72/72 * |
| 9,500 | 95/99 * | 90/93 * | 79/83 * | 74/74 * |
| 10,000 | 98/101* | 92/96 * | 81/85 * | 75/76 * |
| 10,470 | /104 * | /98 * | /88 * | /78 * |
| 10,500 | 101/ | 94/ | 83/ | 77/ |
| 11,000 | 103/ | 96/ | 85/ | 79/ |
| 11,575 | 106/ | 99/ | 87/ | 81/ |

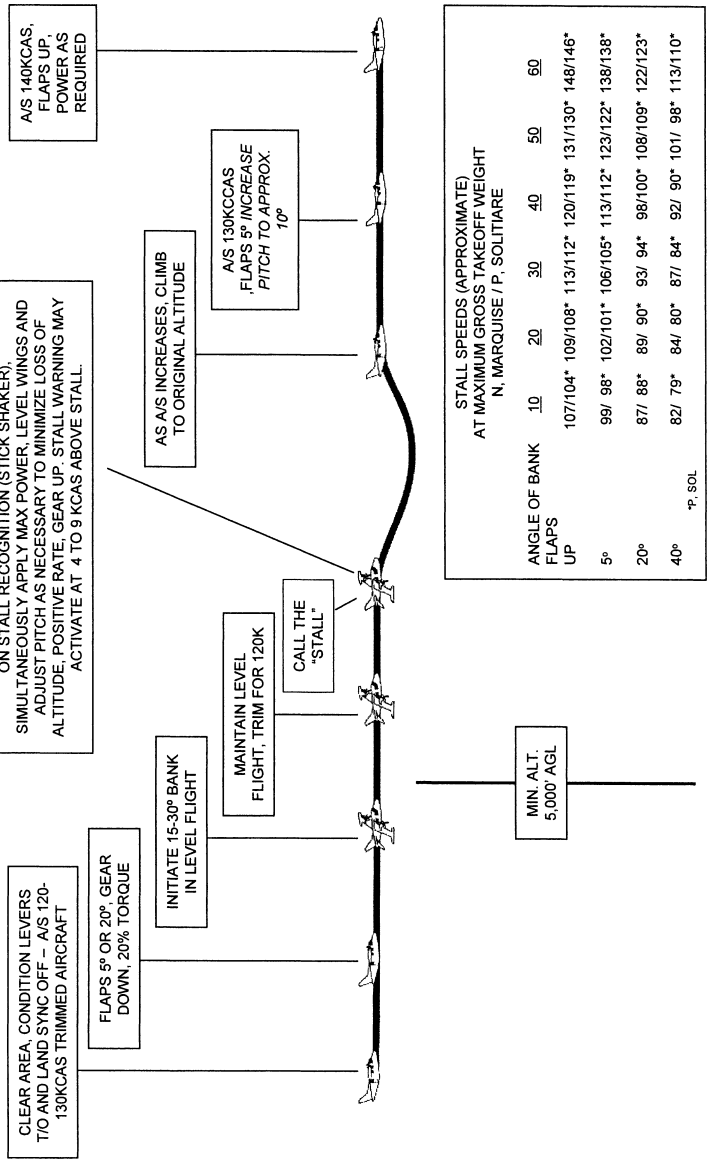
*P, SOL

A-8

**MU-2B MARQUISE (-60), SOLITAIRE (-40), N (-36A), P (-26A)**

**APPROACH TO STALL**

**TAKEOFF CONFIGURATION 15-30° BANK**




STALL SPEEDS (APPROXIMATE)
AT MAXIMUM GROSS TAKEOFF WEIGHT
N, MARQUISE / P, SOLITIARE

| ANGLE OF BANK | 10 | 20 | 30 | 40 | 50 | 60 |
|---|---|---|---|---|---|---|
| FLAPS UP | 107/104* | 109/108* | 113/112* | 120/119* | 131/130* | 148/146* |
| 5° | 99/ 98* | 102/101* | 106/105* | 113/112* | 123/122* | 138/138* |
| 20° | 87/ 88* | 89/ 90* | 93/ 94* | 98/100* | 108/109* | 122/123* |
| 40° | 82/ 79* | 84/ 80* | 87/ 84* | 92/ 90* | 101/ 98* | 113/110* |

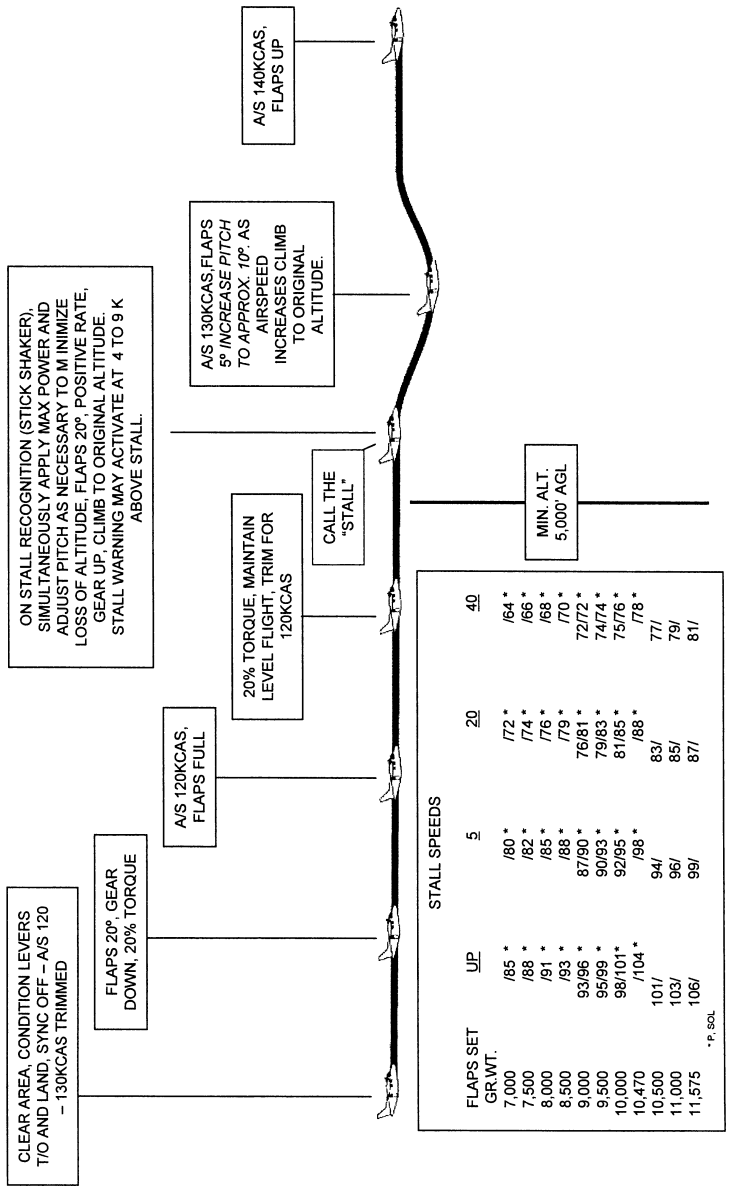
*P, SOL

A-9

**MU-2B MARQUISE (-60), SOLITAIRE (-40), N (-36A), P (-26A)**

**APPROACH TO STALL**

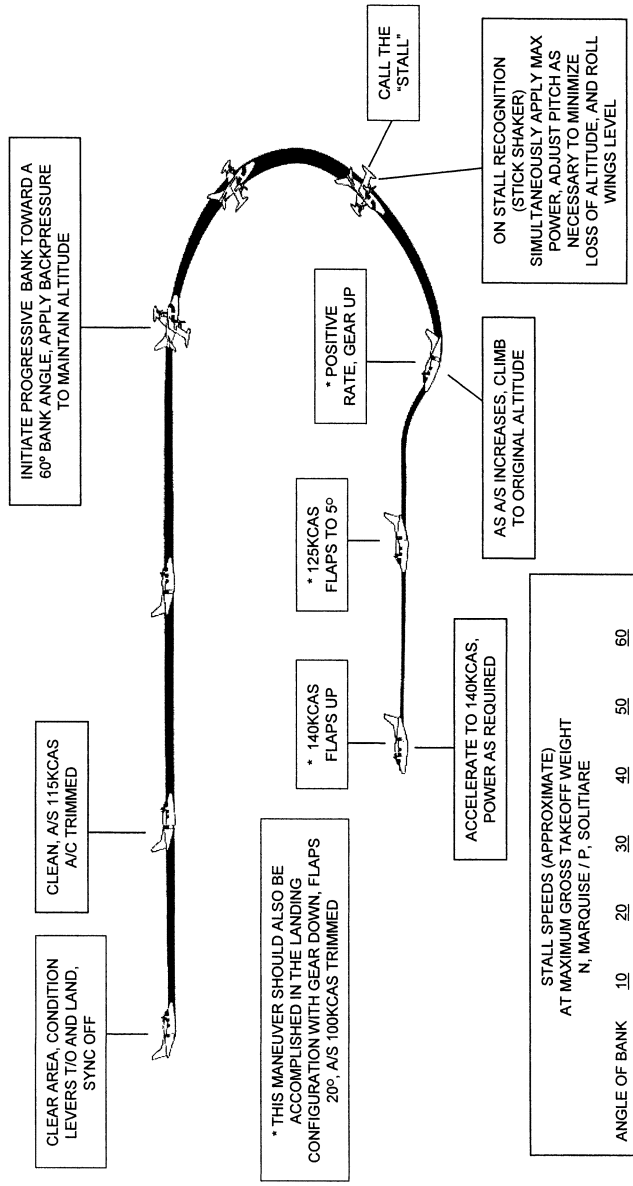
**GEAR DOWN – FULL FLAPS**




A-10

**MU-2B MARQUISE (-60), SOLITAIRE (-40), N (-36A), P (-26A)**

**ACCELERATED STALLS**




STALL SPEEDS (APPROXIMATE)
AT MAXIMUM GROSS TAKEOFF WEIGHT
N, MARQUISE / P, SOLITIARE

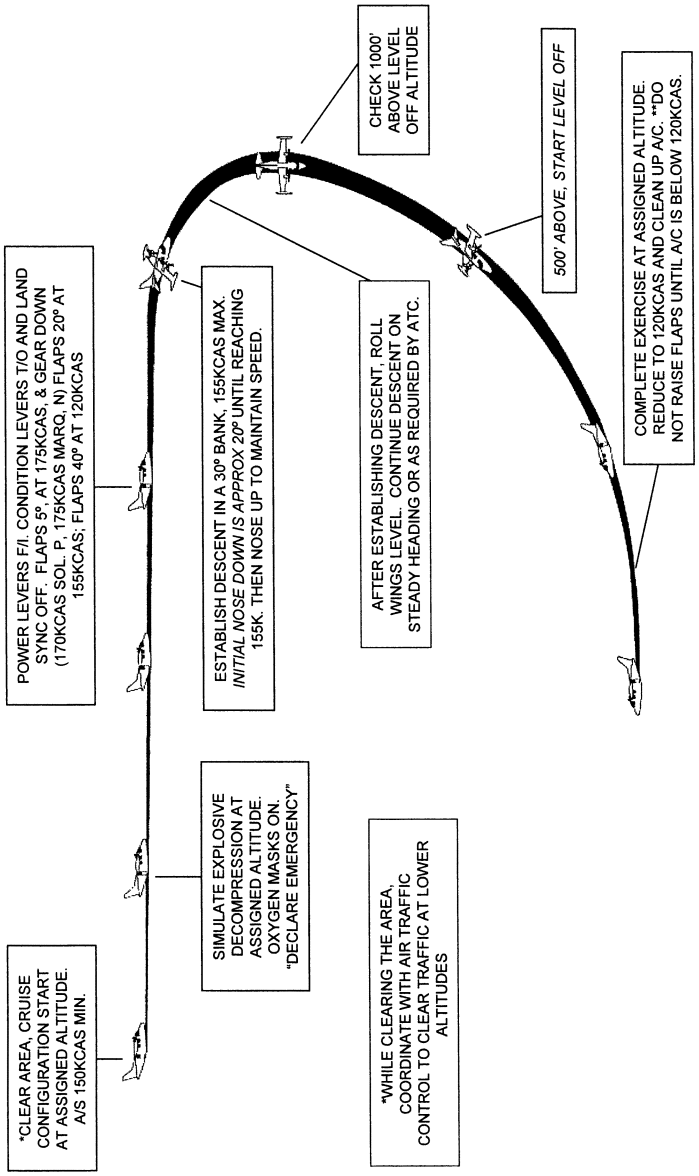
| ANGLE OF BANK | 10 | 20 | 30 | 40 | 50 | 60 |
|---|---|---|---|---|---|---|
| FLAPS UP | 107/104* | 109/108* | 113/112* | 120/119* | 131/130* | 148/146* |
| 5° | 99/ 98* | 102/101* | 106/105* | 113/112* | 123/122* | 138/138* |
| 20° | 87/ 88* | 89/ 90* | 93/ 94* | 98/100* | 108/109* | 122/123* |
| 40° | 82/ 79* | 84/ 80* | 87/ 84* | 92/ 90* | 101/ 98* | 113/110* |

*P, SOL

A-11

**MU-2B MARQUISE (-60), SOLITAIRE (-40), N (-36A), P (-26A)**

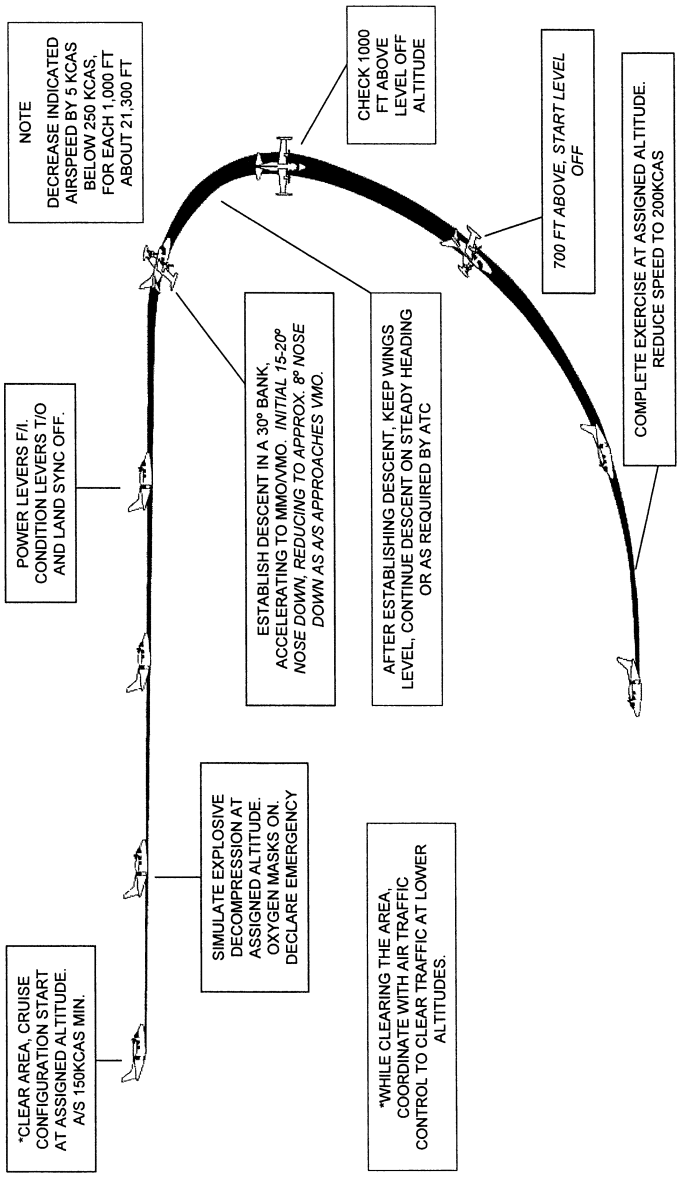
**EMERGENCY DESCENT (LOW SPEED)**




A-12

**MU-2B MARQUISE (-60), SOLITAIRE (-40), N (-36A), P (-26A)**

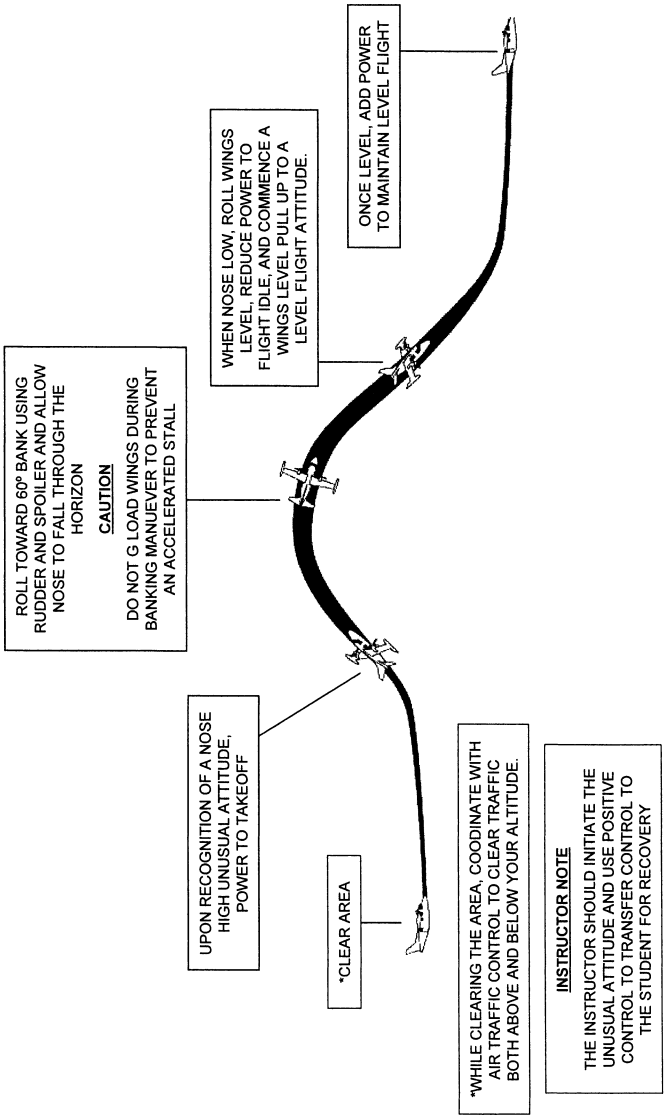
**EMERGENCY DESCENT (HIGH SPEED)**




A-13

**MU-2B MARQUISE (-60), SOLITAIRE (-40), N (-36A), P (-26A)**

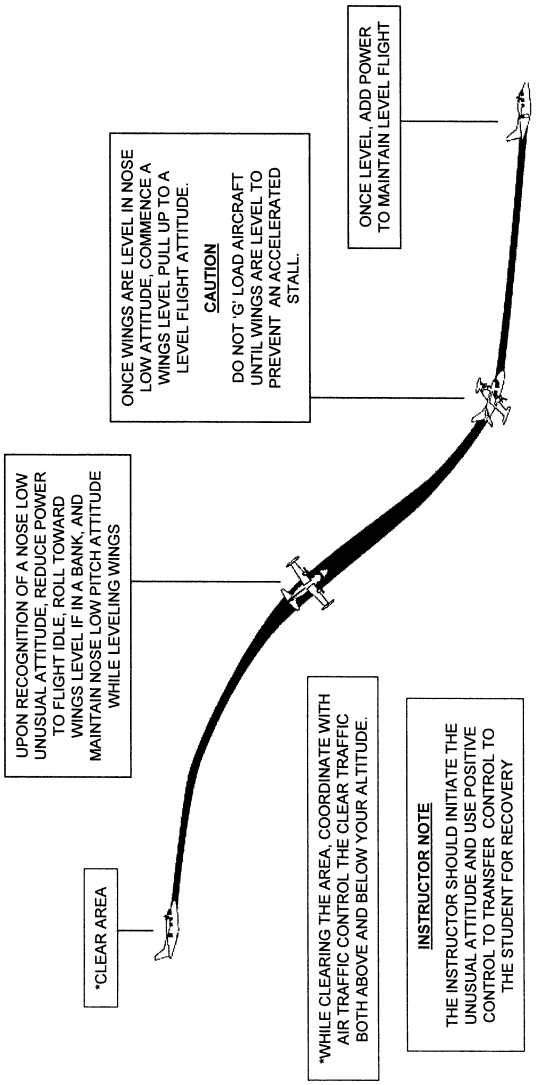
**UNUSUAL ATTITUDE RECOVERY (NOSE HIGH)**




A-14

**MU-2B MARQUISE (-60), SOLITAIRE (-40), N (-36A), P (-26A)**

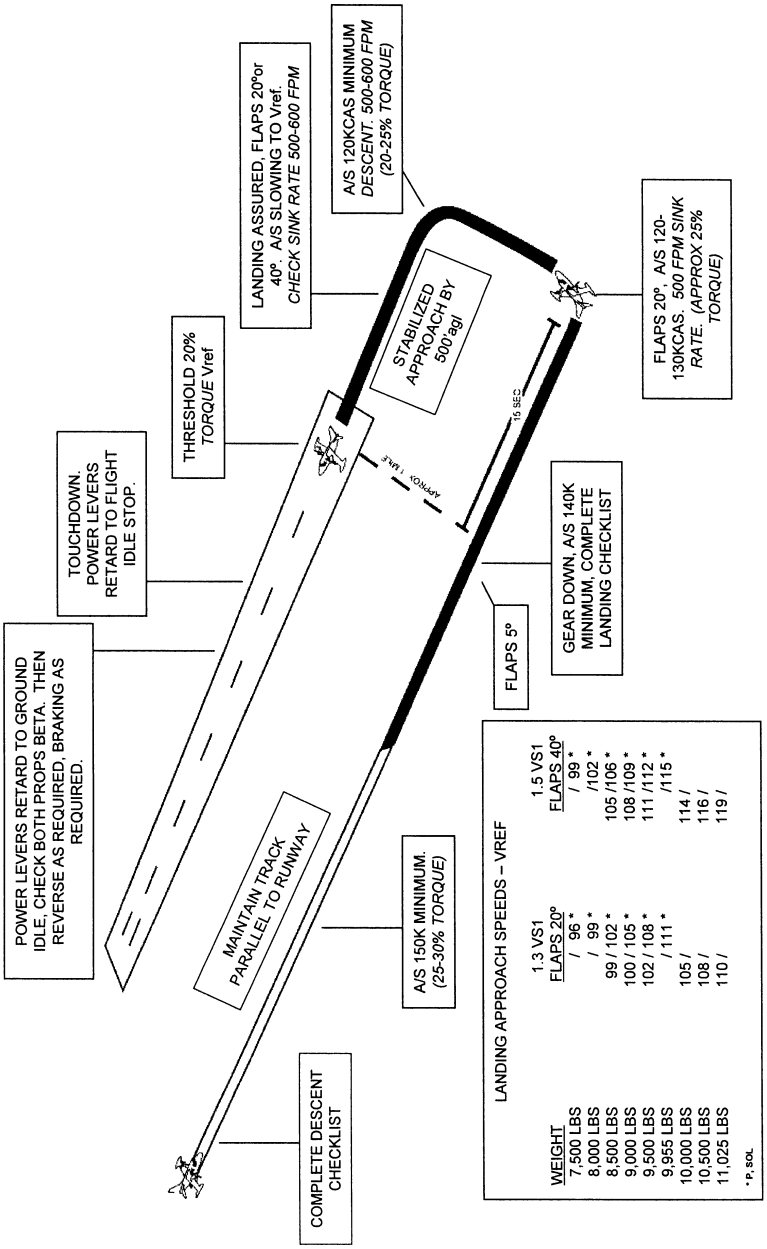
**UNUSUAL ATTITUDE RECOVERY (NOSE LOW)**




A-15

**MU-2B MARQUISE (-60), SOLITAIRE (-40), N (-36A), P (-26A)**

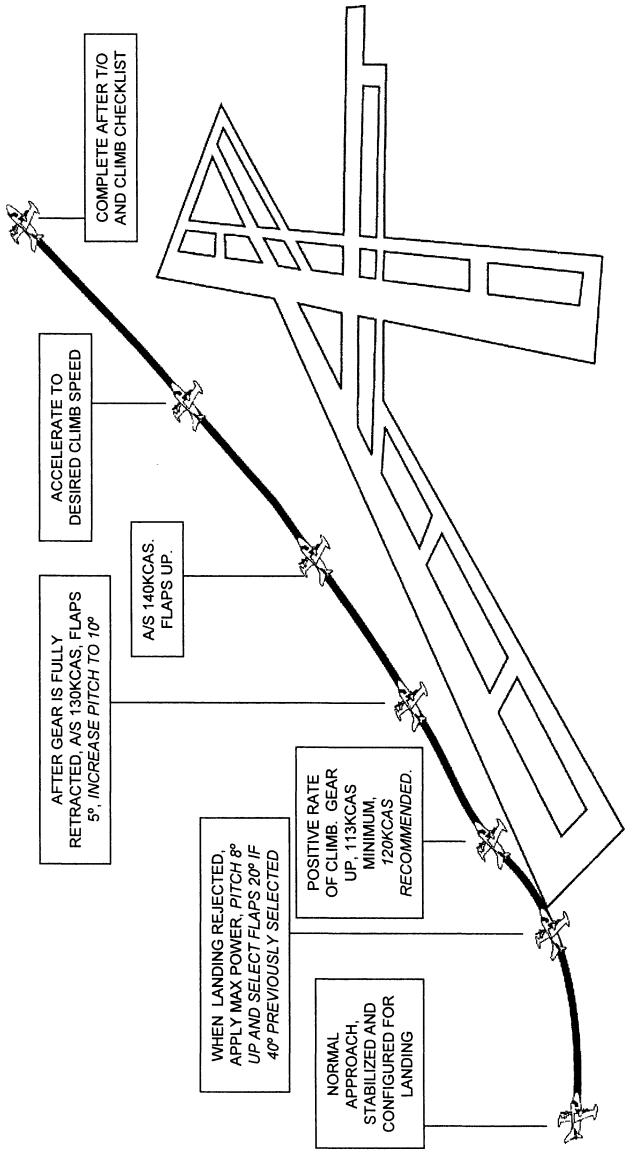
**NORMAL LANDING (20°or 40° FLAPS)**




A-16

**MU-2B MARQUISE (-60), SOLITAIRE (-40), N (-36A), P (-26A)**

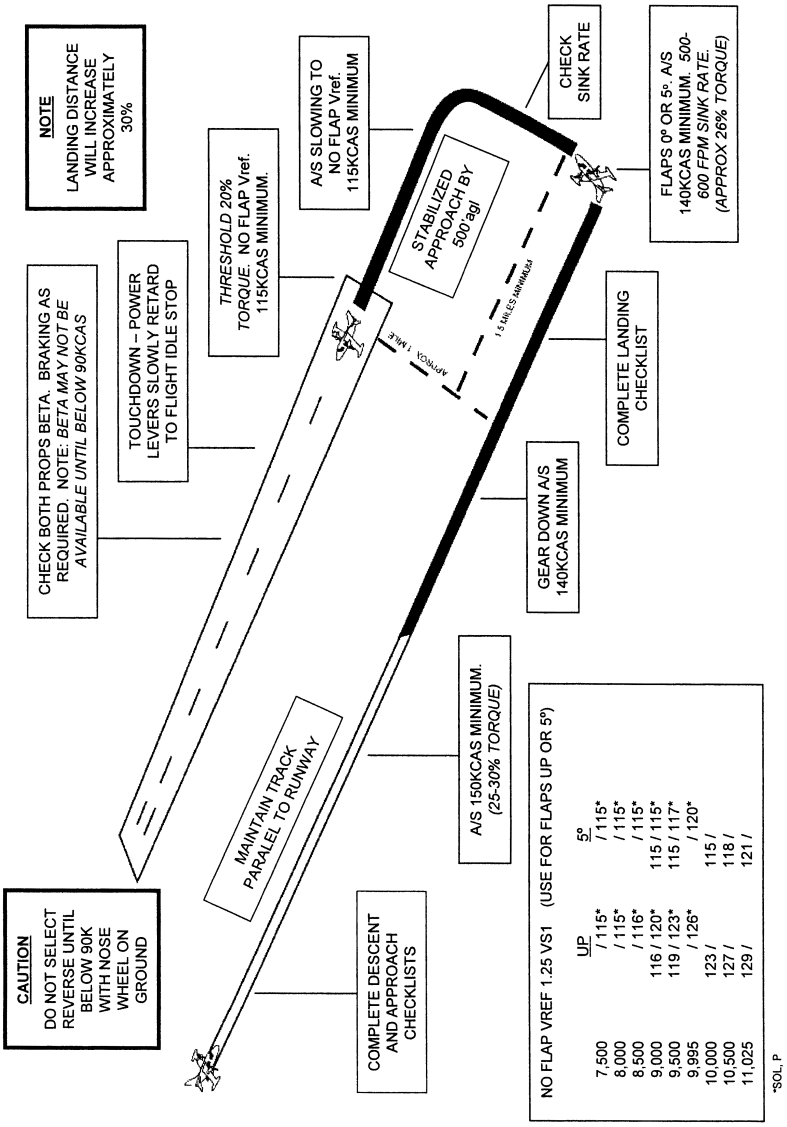
**GO AROUND - REJECTED LANDING**




A-17

**MU-2B MARQUISE (-60), SOLITAIRE (-40), N (-36A), P (-26A)**

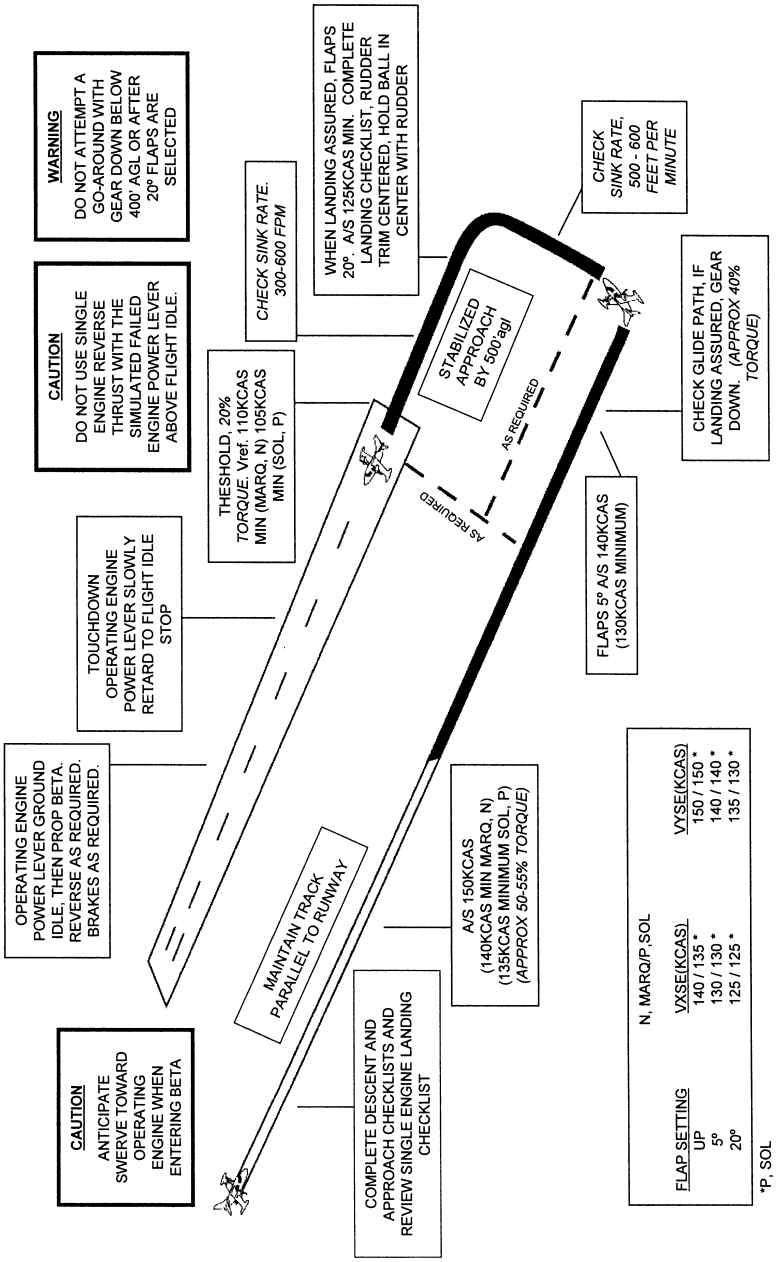
**NO FLAP OR 5° FLAP LANDING**




A-18

**MU-2B MARQUISE (-60), SOLITAIRE (-40), N (-36A), P (-26A)**

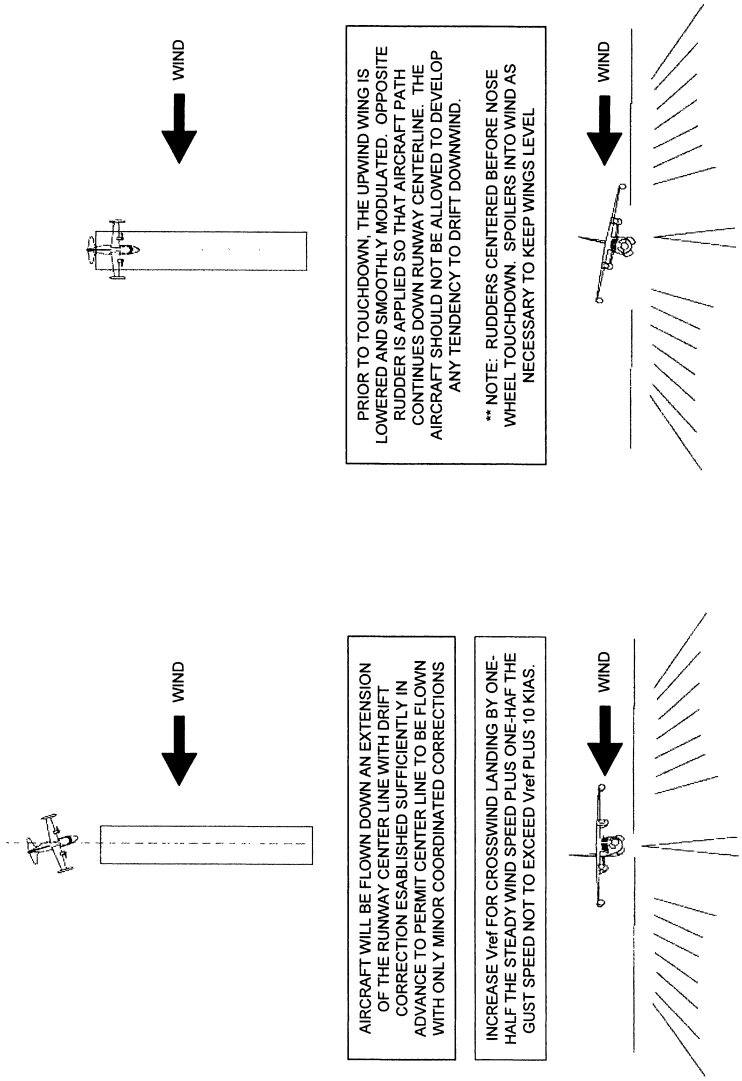
**ONE ENGINE INOPERATIVE LANDING**




A-19

**MU-2B MARQUISE (-60), SOLITAIRE (-40), N (-36A), P (-26A)**

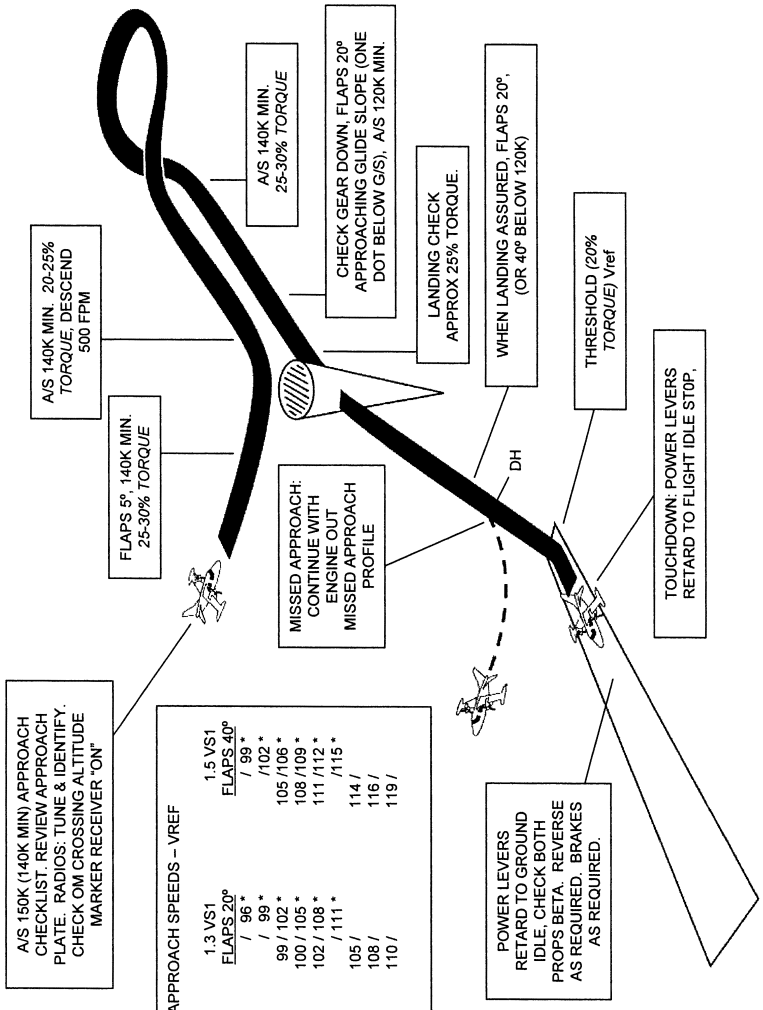
**CROSSWIND LANDING**




A-20

**MU-2B MARQUISE (-60), SOLITAIRE (-40), N (-36A), P (-26A)**

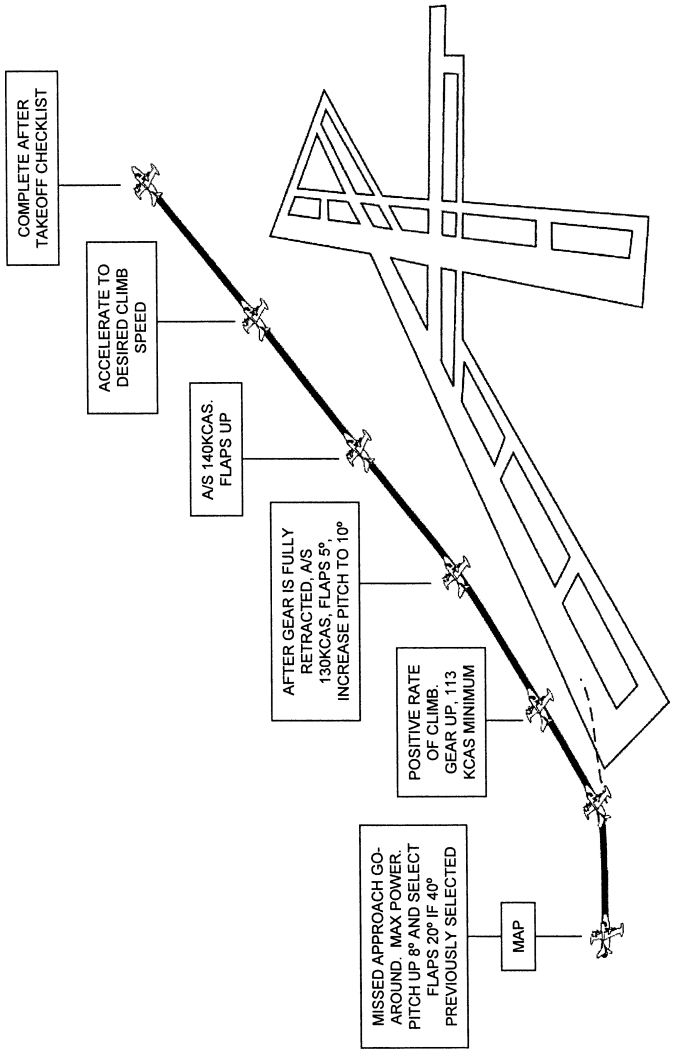
**ILS AND MISSED APPROACH**




A-21

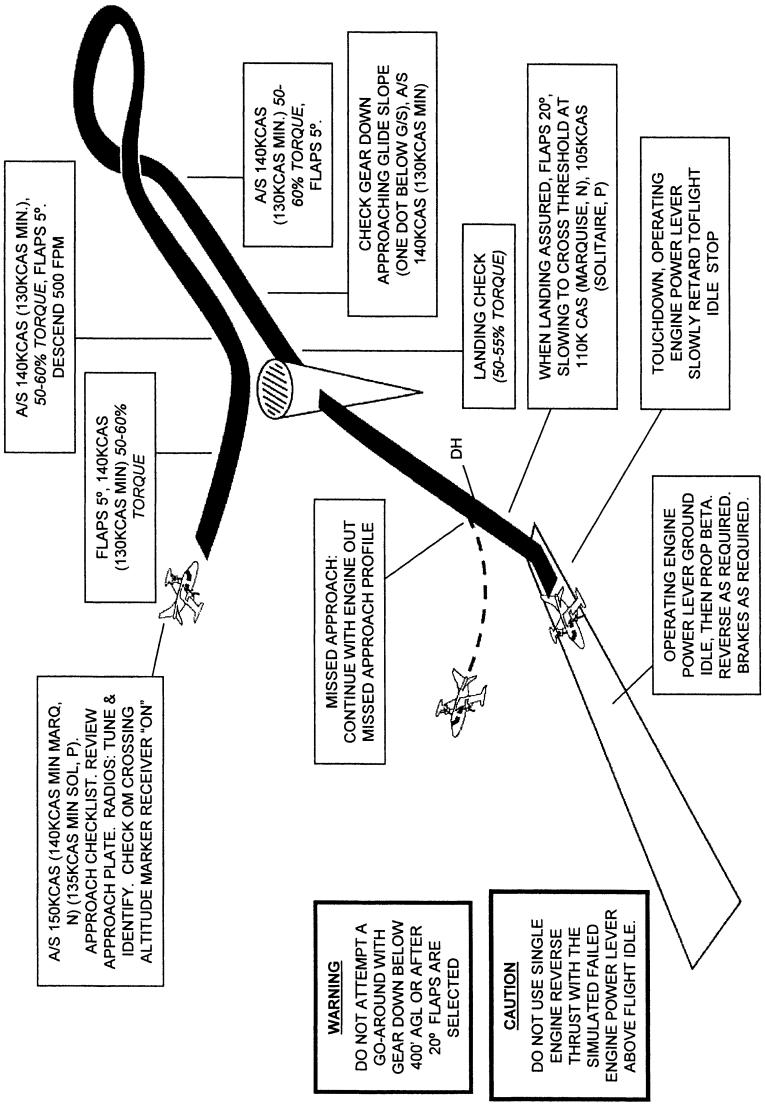
**MU-2B MARQUISE (-60), SOLITAIRE (-40), N (-36A), P (-26A)**

**TWO ENGINE MISSED APPROACH**




A-22

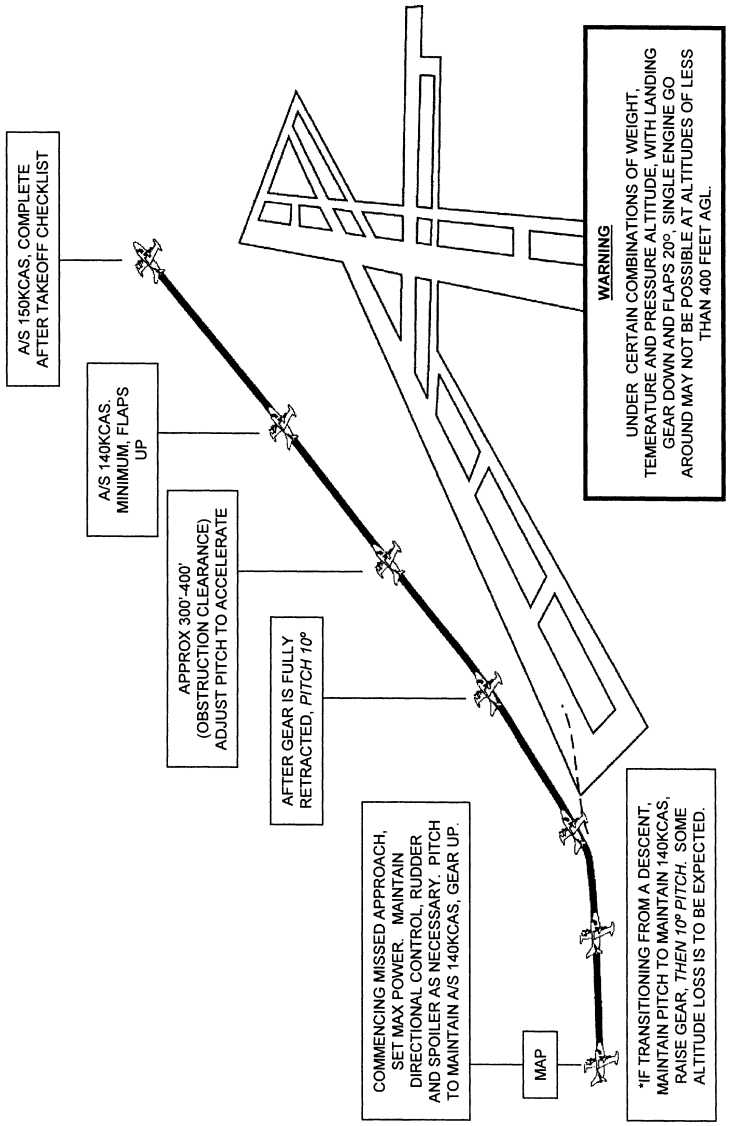
**MU-2B MARQUISE (-60), SOLITAIRE (-40), N (-36A), P (-26A)**
**ONE ENGINE INOPERATIVE ILS AND MISSED APPROACH**




A-23

**MU-2B MARQUISE (-60), SOLITAIRE (-40), N (-36A), P (-26A)**

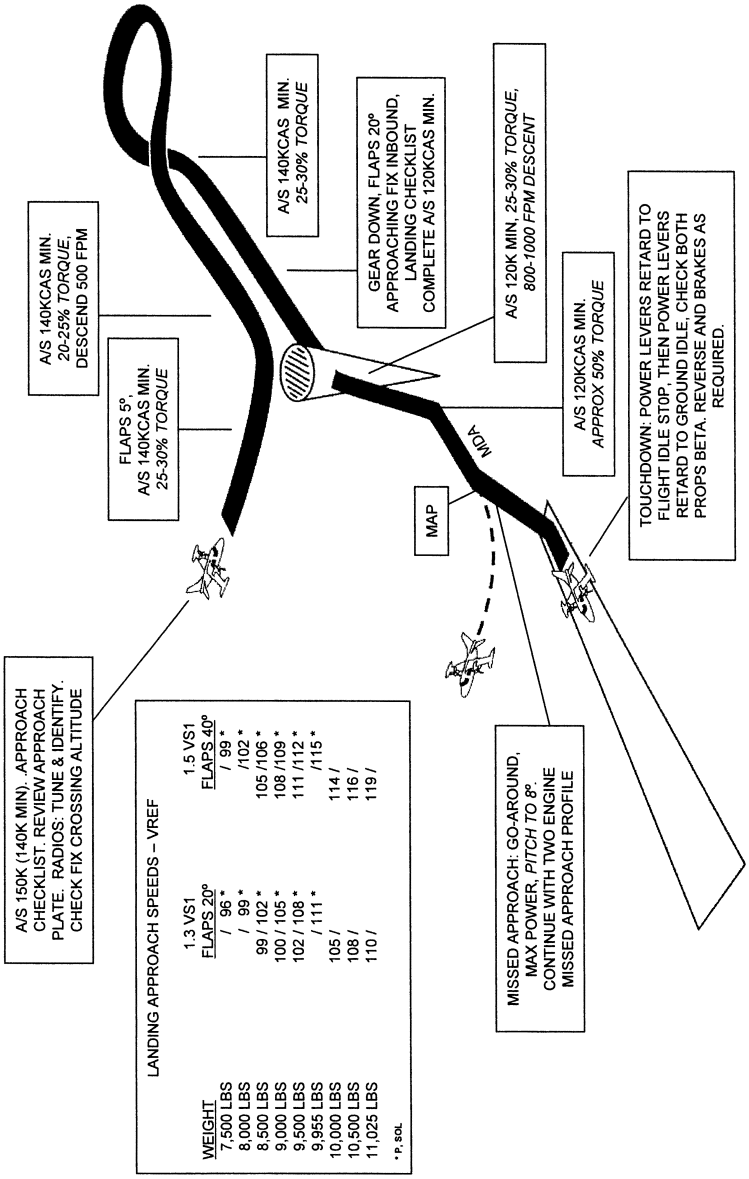
**ONE ENGINE INOPERATIVE MISSED APPROACH**




A-24

**MU-2B MARQUISE (-60), SOLITAIRE (-40), N (-36A), P (-26A)**

**NON-PRECISION AND MISSED APPROACH**




LANDING APPROACH SPEEDS – VREF

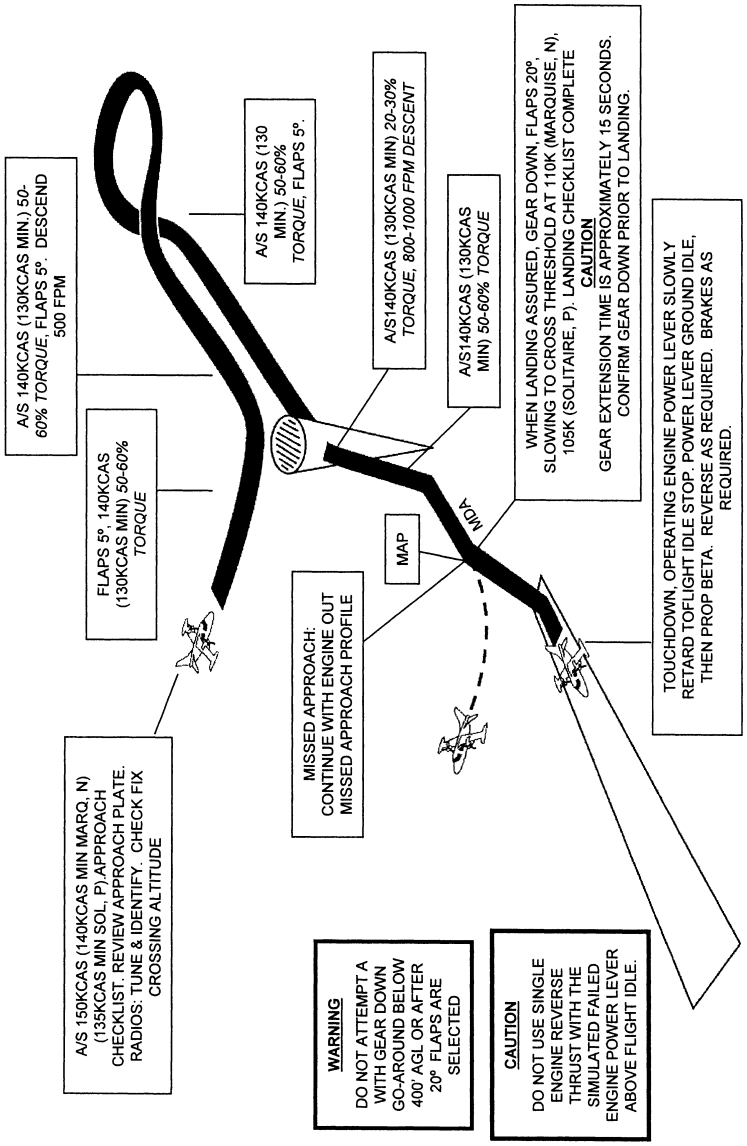
| WEIGHT | 1.3 VS1 FLAPS 20° | 1.5 VS1 FLAPS 40° |
|---|---|---|
| 7,500 LBS | / 96* | / 99* |
| 8,000 LBS | / 99* | /102* |
| 8,500 LBS | 99 / 102* | 105 /106* |
| 9,000 LBS | 100 / 105* | 108 /109* |
| 9,500 LBS | 102 / 108* | 111 /112* |
| 9,955 LBS | / 111* | /115* |
| 10,000 LBS | 105 / | 114 / |
| 10,500 LBS | 108 / | 116 / |
| 11,025 LBS | 110 / | 119 / |

*P, SOL

A-25

**MU-2B MARQUISE (-60), SOLITAIRE (-40), N (-36A), P (-26A)**

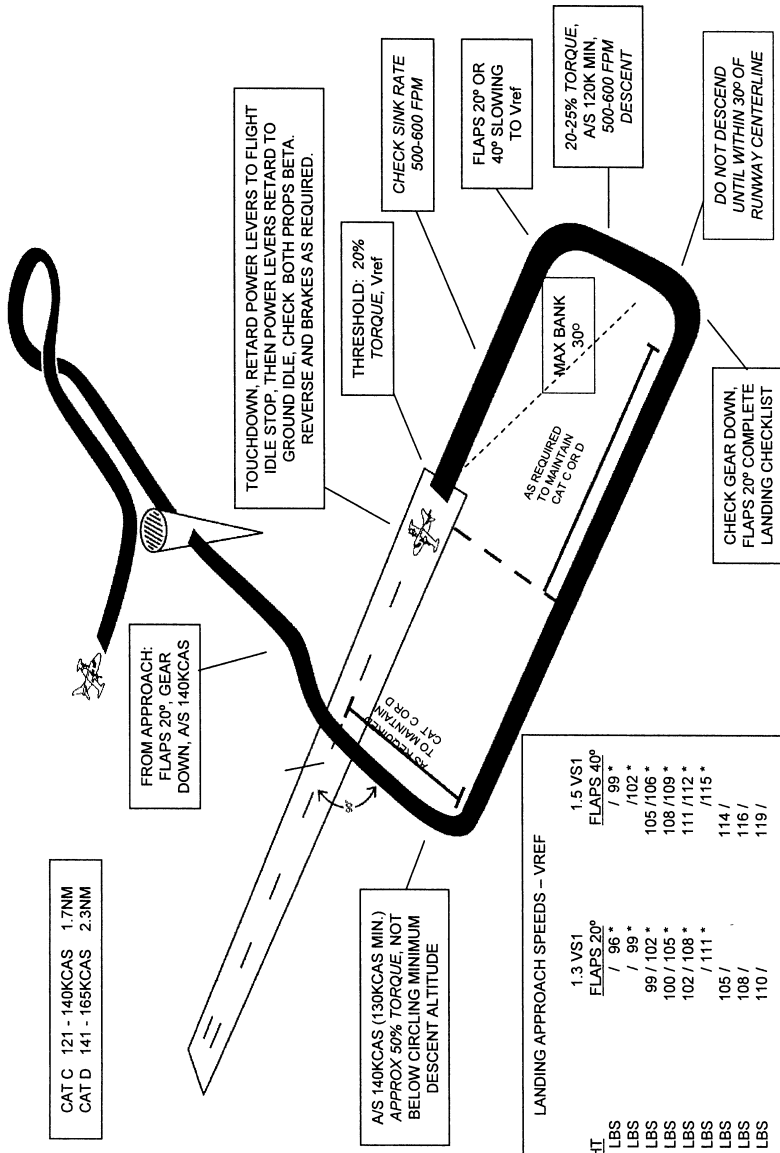
**ONE ENGINE INOPERATIVE NON-PRECISION AND MISSED APPROACH**




A-26

**MU-2B MARQUISE (-60), SOLITAIRE (-40), N (-36A), P (-26A)**

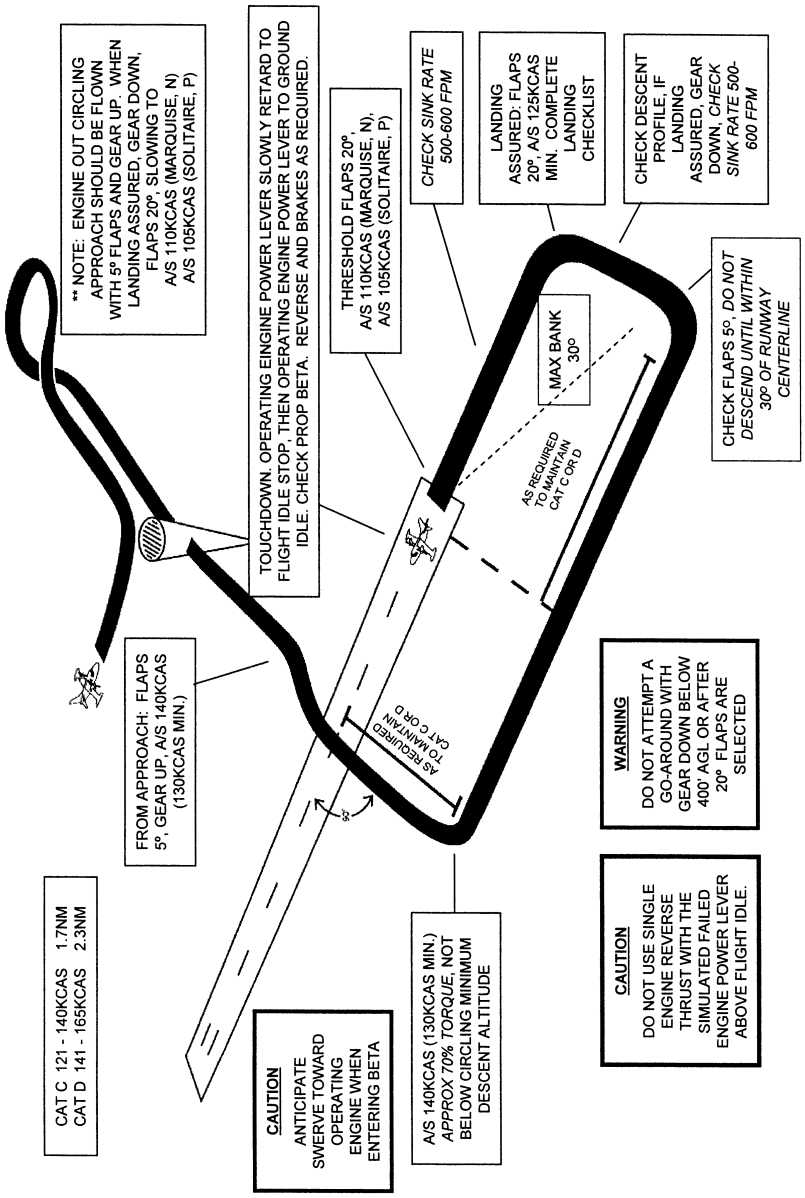
**CIRCLING APPROACH AT WEATHER MINIMUMS**




A-27

**MU-2B MARQUISE (-60), SOLITAIRE (-40), N (-36A), P (-26A)**

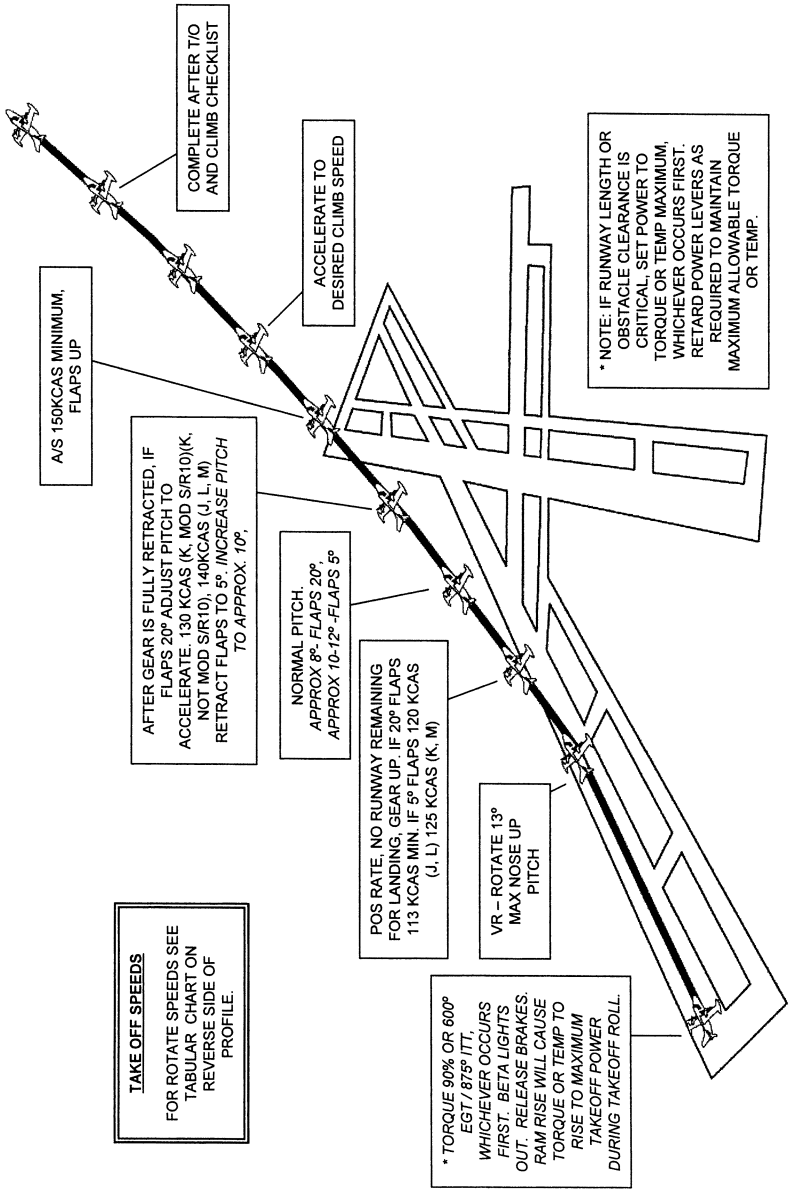
**ONE ENGINE INOPERATIVE CIRCLING APPROACH AT WEATHER MINIMUMS**




A-28

**MU-2B J (-35), K (-25), L (-36), M (-26)**

**NORMAL TAKE-OFF, 5° OR 20° FLAPS**




B-1

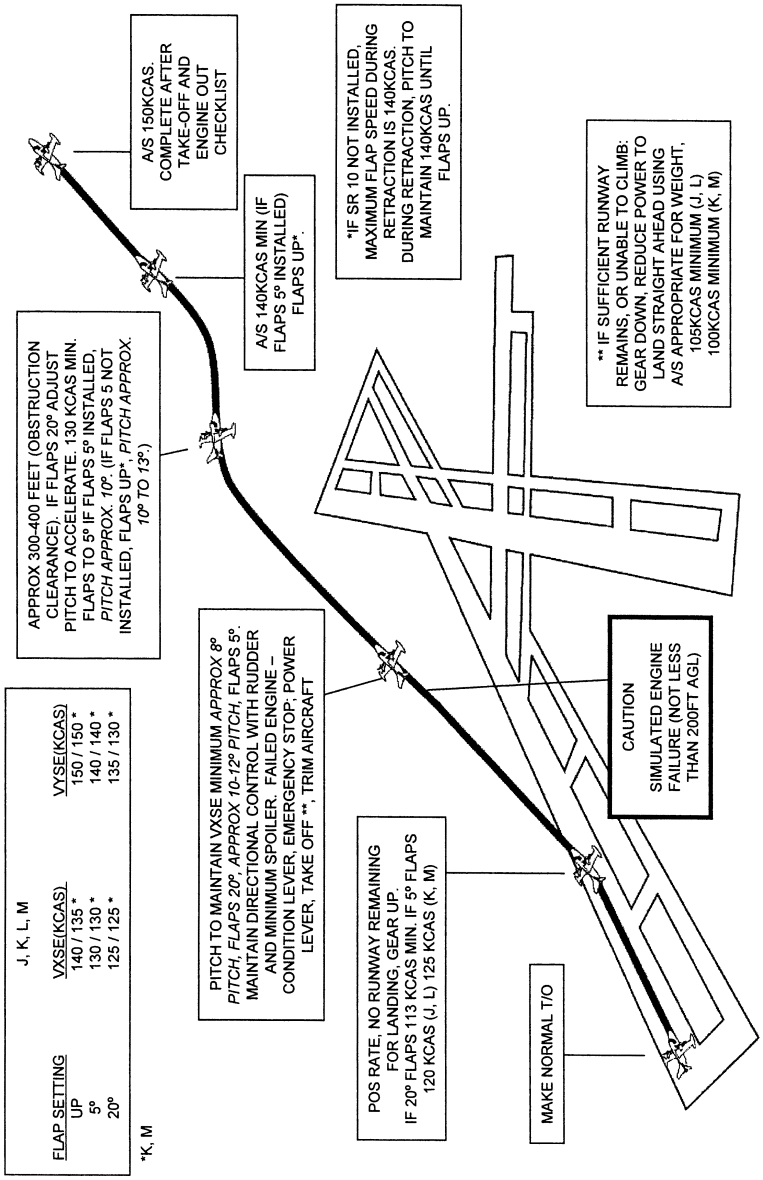
**TAKE OFF SPEEDS**
ROTATE

| FLAPS 5° | K | M | J | L |
|---|---|---|---|---|
| 11,575 LBS | | | | 109 |
| 11,000 LBS | | | | 106 |
| 10,800 LBS | | | 109 | 105 |
| 10,470 LBS | | 110 | | 104 |
| 10,000 LBS | | 108 | 105 | 101 |
| 9,920 LBS | 108 | | | 101 |
| 9,500 LBS | 107 | 107 | 103 | 101 |
| 9,000 LBS | 106 | 106 | 101 | 100 |
| 8,000 LBS | 104 | 104 | 100 | |
| 7,500 LBS | 102 | | | |

| FLAPS 20° | K | M | J | L |
|---|---|---|---|---|
| 11,575 LBS | | | | 105 |
| 11,000 LBS | | | | 103 |
| 10,800 LBS | | | 105 | |
| 10,470 LBS | | 103 | | |
| 10,000 LBS | | 102 | 102 | 100 |
| 9,920 LBS | 102 | | | |
| 9,500 LBS | 101 | 101 | 101 | 100 |
| 9,000 LBS | 100 | 100 | 100 | 100 |
| 8,000 LBS | 99 | 99 | 100 | |
| 7,500 LBS | 98 | | | |

**MU-2B J (-35), K (-25), L (-36), M (-26)**

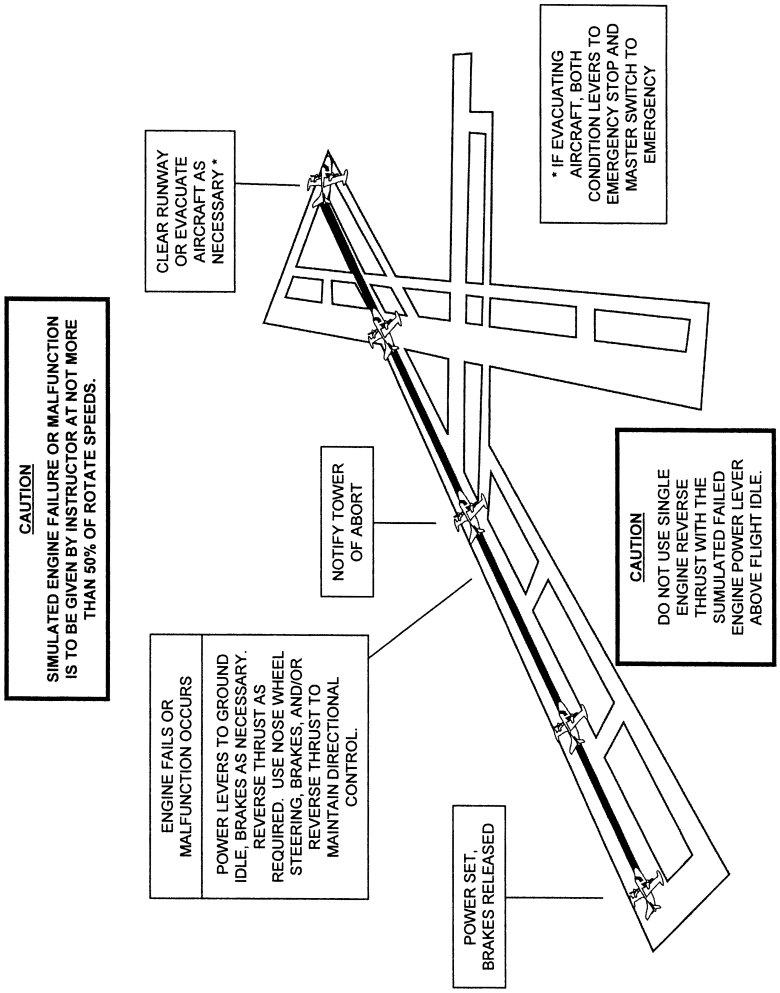
**TAKE-OFF ENGINE FAILURE – FLAPS 5° OR 20°**




B-2

**MU-2B J (-35), K (-25), L (-36), M (-26)**

**TAKE-OFF ENGINE FAILURE ON RUNWAY**

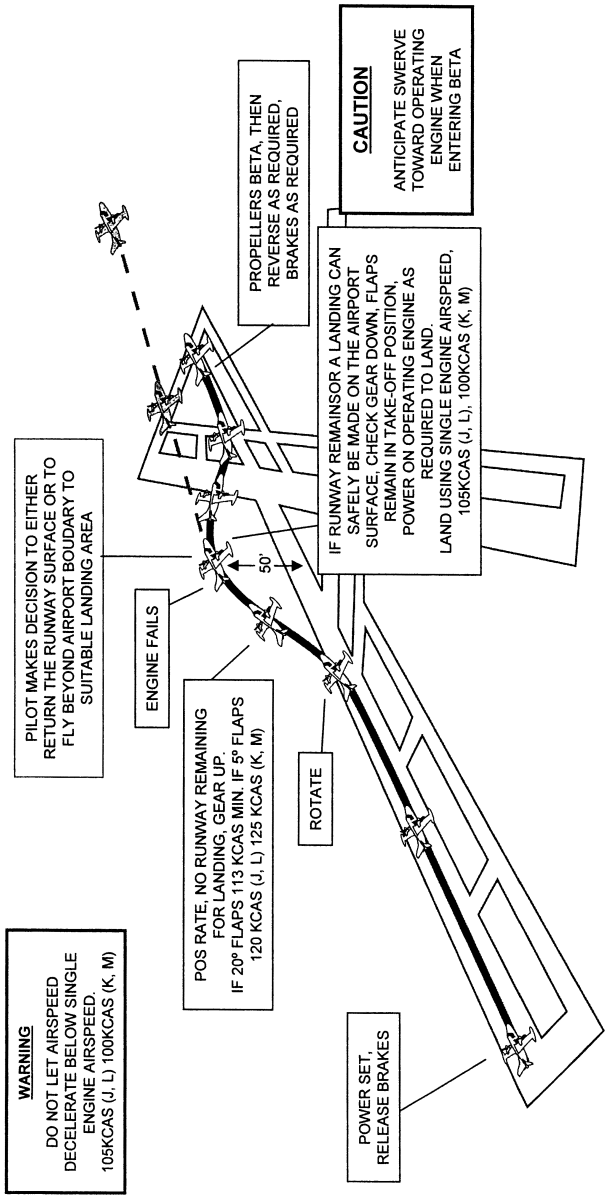



B-3

**MU-2B J (-35), K (-25), L (-36), M (-26)**

**TAKE-OFF ENGINE FAILURE - UNABLE TO CLIMB**

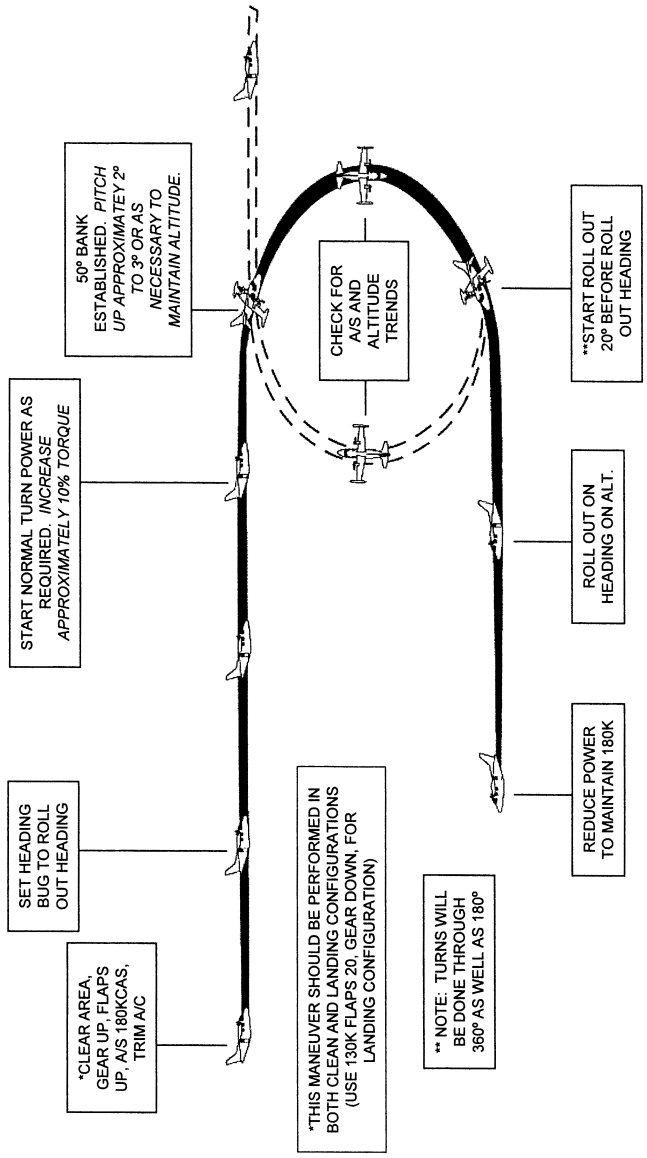
***CLASSROOM DISCUSSION OR FTD USE ONLY***




B-4

**MU-2B J (-35), K (-25), L (-36), M (-26)**

**STEEP TURNS**




B-5

**MU-2B J (-35), K (-25), L (-36), M (-26)**

**SLOW FLIGHT MANEUVERING**

**MINIMUM CONTROLLABLE AIRSPEED**

SLOW FLIGHT MANEUVERING IS CONDUCTED AS FOLLOWS:

CLEAR THE AREA PRIOR TO BEGINNING THE MANEUVER.

START WITH CLEAN CONFIGURATION AND CHANGE AIRCRAFT CONFIGURATION FROM CLEAN TO FULL FLAP AND GEAR IN STAGES. USE A MAXIMUM OF 15° BANK AND PERFORM HEADING CHANGES OF 90° LEFT AND RIGHT. CONSTANT ALTITUDE IS REQUIRED THROUGHOUT.
MAINTAIN 115KCAS IN ALL CONFIGURATIONS.

**APPROXIMATE POWER SETTINGS ARE:

| | | |
|---|---|---|
| *CLEAN* | *TORQUE (35%) PER ENGINE* | *APPROX PITCH +12* |
| *5° FLAP* | *TORQUE (32%) PER ENGINE* | *APPROX PITCH +8* |
| *5° FLAP & GEAR* | *TORQUE (44%) PER ENGINE* | *APPROX PITCH +9* |
| *20° FLAP & GEAR* | *TORQUE (42%) PER ENGINE* | *APPROX PITCH +4* |
| *40° FLAP & GEAR* | *TORQUE (54%) PER ENGINE* | *APPROX PITCH 0* |

** NOTE: POWER SETTINGS WILL VARY WITH AIRCRAFT WEIGHT AND ALTITUDE.

STALL SPEEDS (APPROXIMATE)
AT MAXIMUM GROSS TAKEOFF WEIGHT
J, K, L, M

| ANGLE OF BANK | J / L / K / M 0° | J / L / K / M 15° |
|---|---|---|
| FLAPS | | |
| UP | 104/106/101/104 | 107/108/103/106 |
| 5° | 98/ 99/ 95/ 98 | 100/101/ 97/100 |
| 20° | 86/ 87/ 85/ 87 | 88/ 89/ 87/ 89 |
| 40° | 79/ 81/ 76/ 78 | 82/ 83/ 78/ 80 |

Vmc FLAPS 5° 99KCAS (J, L), 100KCAS (K, M)
FLAPS 20° 90KCAS (J), 99KCAS (L), 93KCAS (K, M)

CAUTION

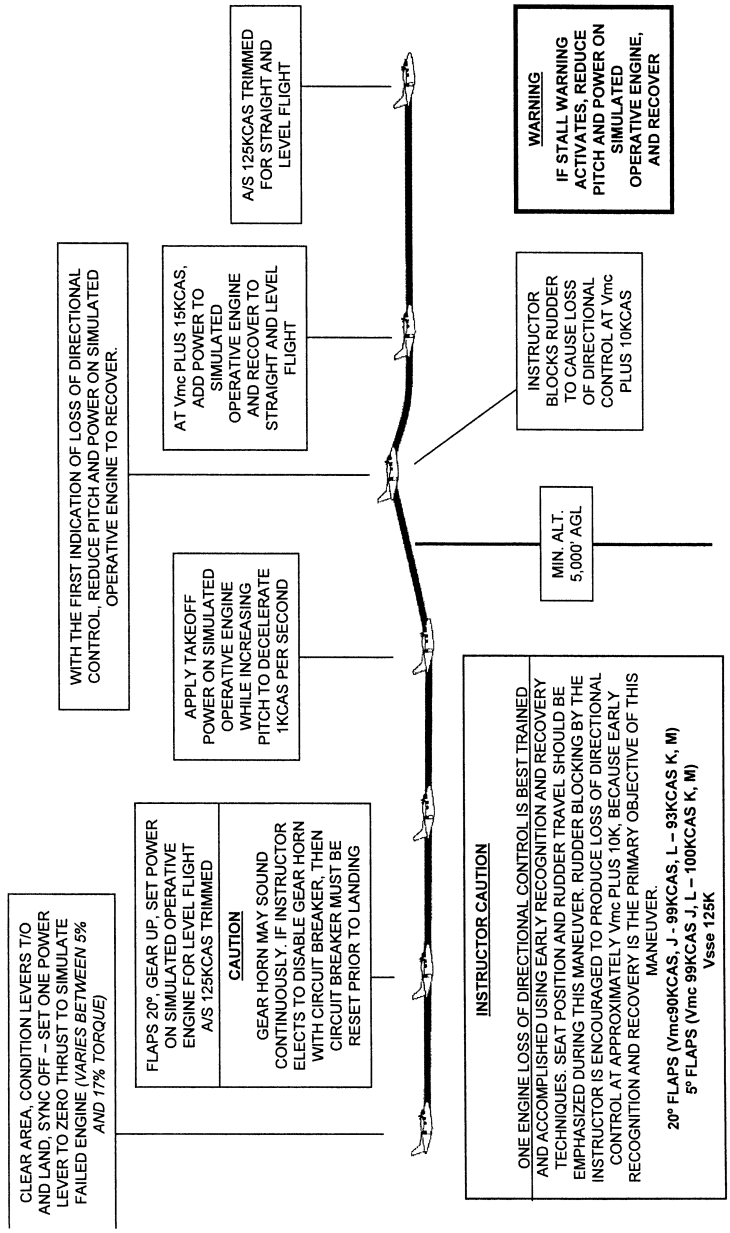
STALL WARNING MAY ACTIVATE
4 TO 9 KTS ABOVE STALL

MINIMUM CONTROLLABLE AIRSPEED IS CONDUCTED AS FOLLOWS:

CLEAR THE AREA PRIOR TO BEGINNING THE MANEUVER.

THE MANEUVER MAY BE DONE IN ANY COMBINATION OF GEAR OR FLAP CONFIGURATIONS. IF BANK IS TO BE USED, IT SHOULD BE DONE AT BANK OF NOT MORE THAN 10°. BEGIN THE MANEUVER BY CONFIGURING THE AIRCRAFT IN THE DESIRED GEAR AND FLAP CONFIGURATION. SLOW THE AIRCRAFT UNTIL THE STALL WARNING (STICK SHAKER) IS ACTIVATED AND ADD POWER TO MAINTAIN ALTITUDE AND A SPEED JUST ABOVE AERODYNAMIC STALL. DO NOT ALLOW THE AIRCRAFT TO REACH AERODYNAMIC STALL BUFFET.

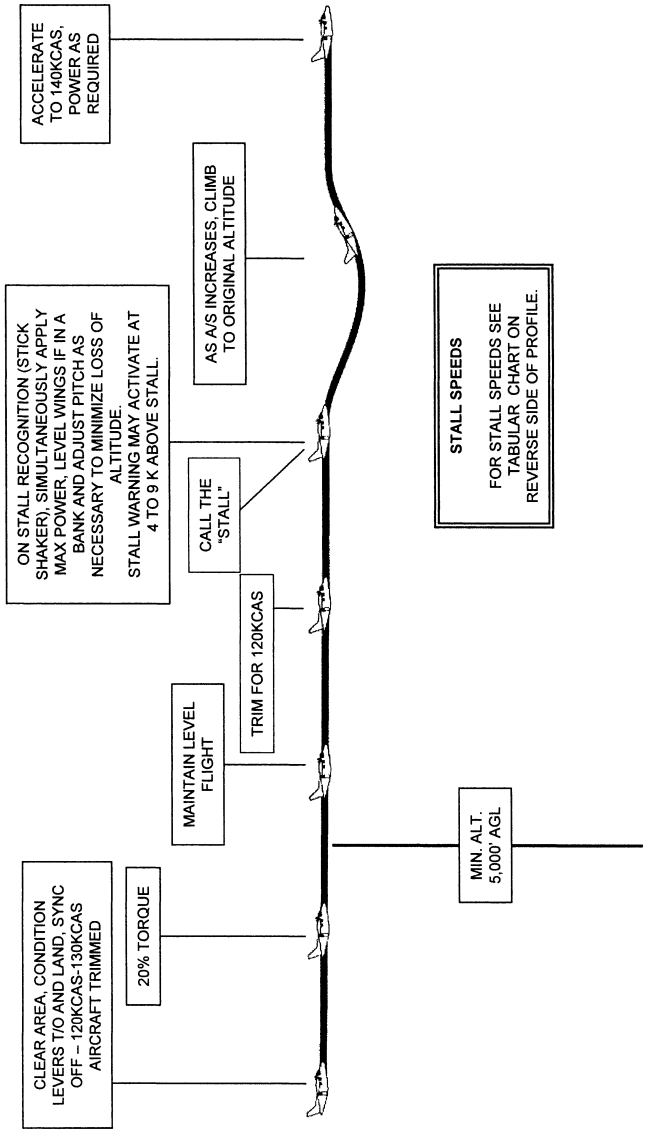
**MU-2B J (-35), K (-25), L (-36), M (-26)**
**ONE ENGINE INOPERATIVE MANEUVERING**
**LOSS OF DIRECTIONAL CONTROL**




B-7

**MU-2B J (-35), K (-25), L (-36), M (-26)**

**APPROACH TO STALL CLEAN CONFIGURATION / WINGS LEVEL**

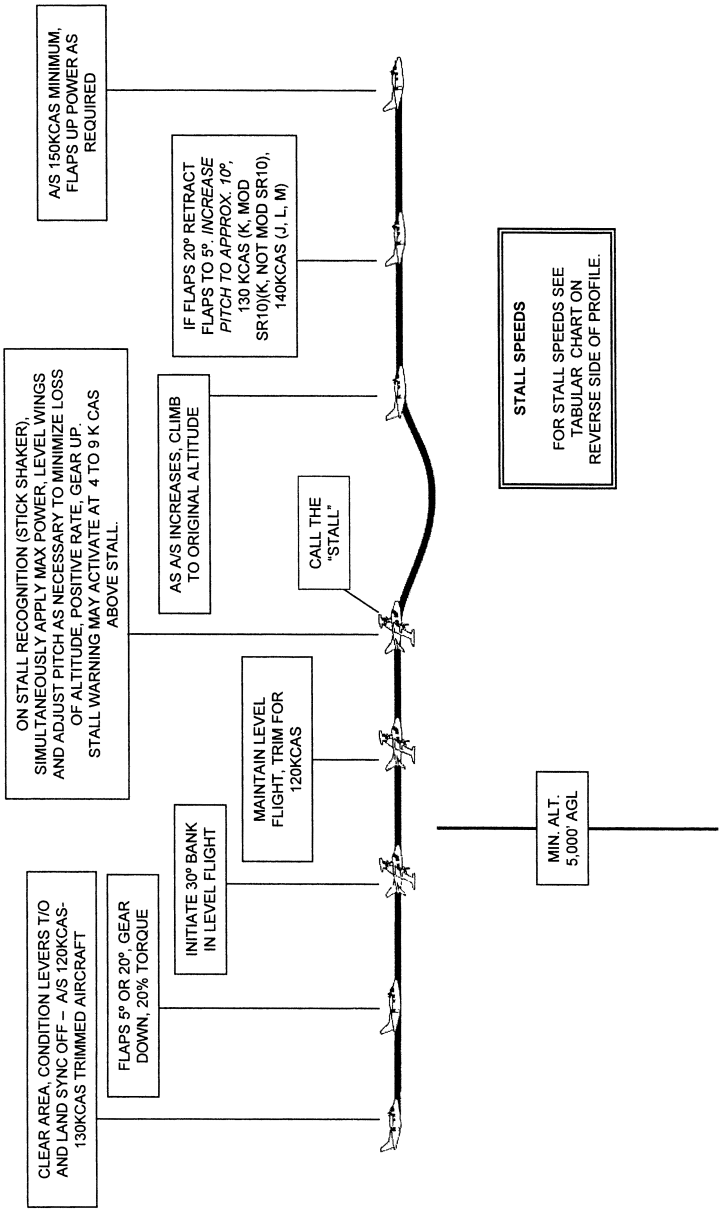



B-8

STALL SPEEDS

| FLAPS SET | 0 | 5 | 20 | 40 |
|---|---|---|---|---|
| GR.WT. | K / M / J / L | K / M / J / L | K / M / J / L | K / M / J / L |
| 7,000 | 85/ 85/ | 80/ 80/ | 72/ 72/ | 64/ 64/ |
| 7,500 | 88 / 88/ | 83/ 83/ | 74/ 75/ | 67/ 66/ |
| 8,000 | 91/ 91/ 90/ | 86/ 85/ 84/ | 77/ 77/ 74/ | 69/ 68/ 69 |
| 8,500 | 94/ 94/ 93/ | 89/ 88/ 87/ | 79/ 79/ 77/ | 71/ 70/ 71/ |
| 9,000 | 97/ 96/ 95/ 93 | 91/ 91/ 89/ 88 | 82/ 81/ 79/ 77 | 73/ 72/ 73/ 72 |
| 9,500 | 99 /99/ 98/ 96 | 93/ 93/ 92/ 90 | 84/ 83/ 81/ 79 | 75/ 74/ 75/ 74 |
| 9,920 | 101/ | 95/ | 85/ | 76/ |
| 10,000 | /102/100/ 98 | / 96/ 94/ 92 | / 86/ 84/ 81 | / 76/ 77/ 76 |
| 10,470 | /104/ | / 98/ | / 88/ | / 78/ |
| 10,500 | /103/101 | / 96/ 94 | / 85/ 83 | / 79/ 77 |
| 10,800 | /104/ | / 98/ | / 86/ | / 80/ 78 |
| 11,000 | /103 | / 97 | / 85 | / 79 |
| 11,500 | /106 | / 99 | / 87 | / 81 |

**MU-2B J (-35), K (-25), L (-36), M (-26)**
**APPROACH TO STALL**
**TAKEOFF CONFIGURATION 15-30° BANK**




B-9

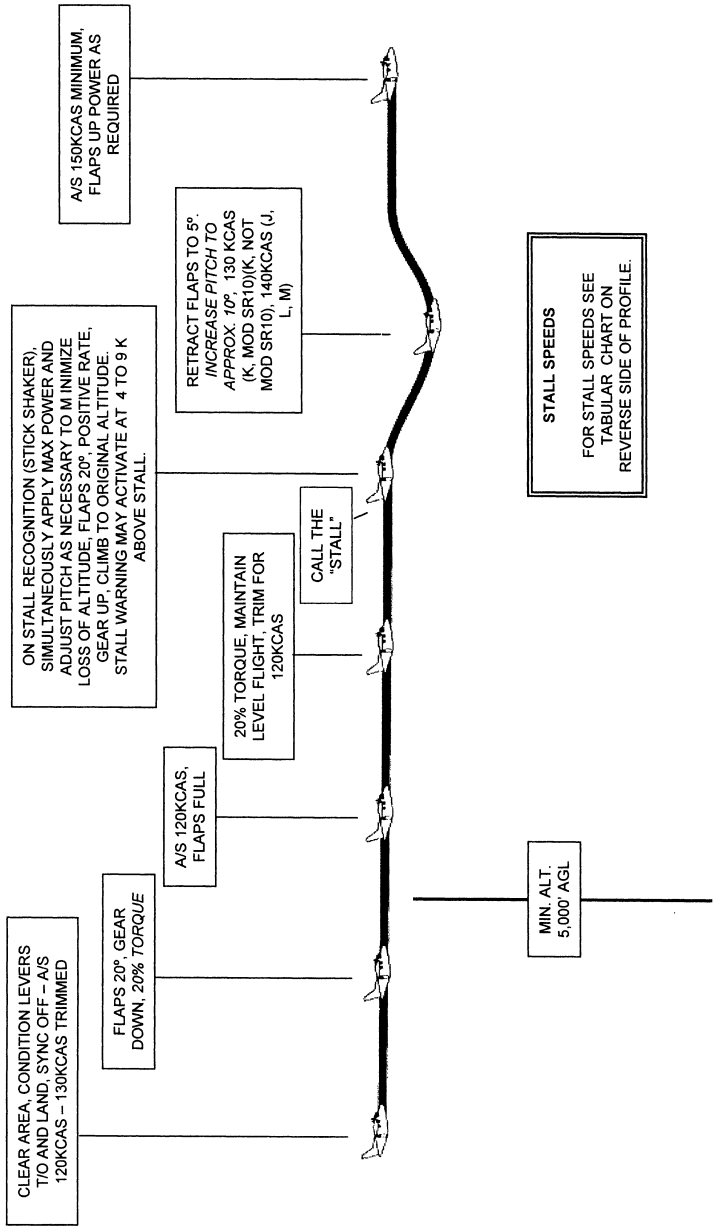
STALL SPEEDS (APPROXIMATE)
AT MAXIMUM GROSS TAKEOFF WEIGHT
J, K, L, M

| BANK ANGLE | 10 | 20 | 30 | 40 | 50 | 60 |
|---|---|---|---|---|---|---|
| FLAPS | J / L / K / M | J / L / K / M | J / L / K / M | J / L / K / M | J / L / K / M | J / L / K / M |
| UP | 106/107/102/105 | 108/109/105/108 | 112/114/109/112 | 120/121/116/120 | 130/132/126/130 | 148/150/143/147 |
| 5° | 99/100/ 96/ 98 | 101/102/ 98/101 | 105/107/102/105 | 112/113/109/112 | 122/123/119/122 | 138/140/134/138 |
| 20° | 87/ 88/ 86/ 88 | 89/ 90/ 88/ 90 | 92 /94/ 92/ 94 | 98/100/ 97/100 | 108/109/107/109 | 122/123/120/123 |
| 40° | 81/ 82/ 77/ 79 | 83/ 84/ 79/ 81 | 86/ 87/ 82/ 84 | 92/ 93/ 87/ 90 | 100/102/ 96/ 98 | 112/115/108/110 |

**MU-2B J (-35), K (-25), L (-36), M (-26)**

**APPROACH TO STALL**

**GEAR DOWN – FULL FLAPS**



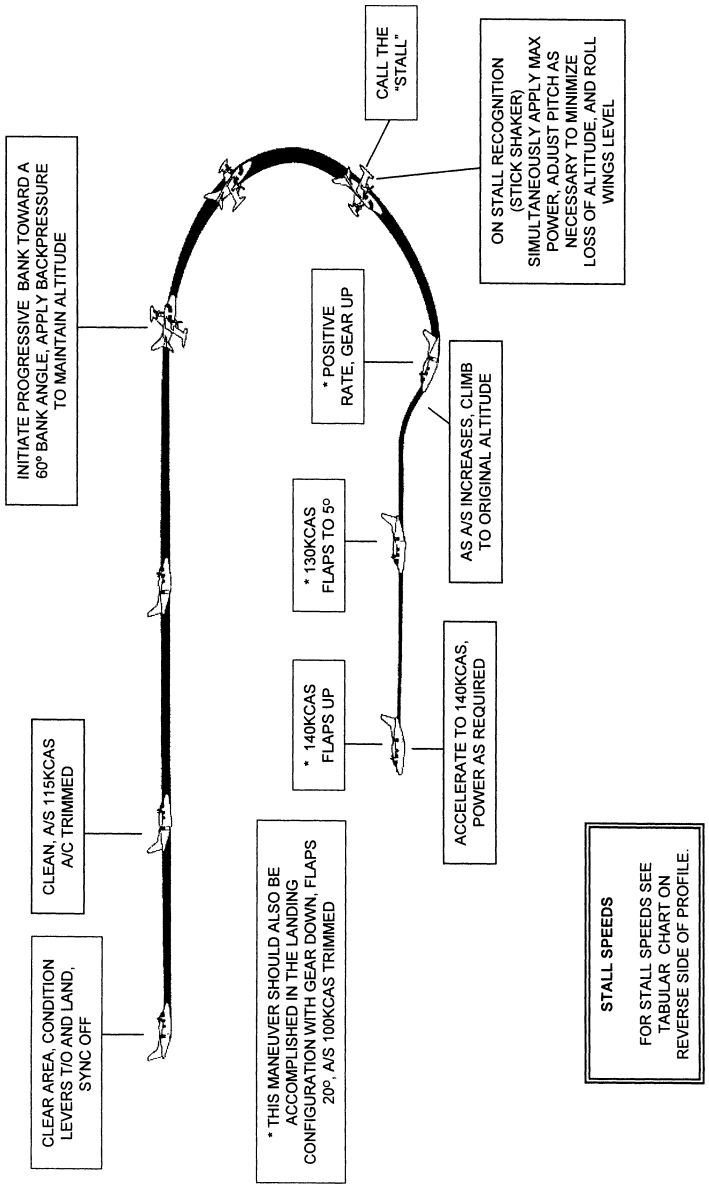

B-10

STALL SPEEDS

| FLAPS SET | 0 | 5 | 20 | 40 |
|---|---|---|---|---|
| GR.WT. | K / M / J / L | K / M / J / L | K / M / J / L | K / M / J / L |
| 7,000 | 85/ 85/ | 80/ 80/ | 72/ 72/ | 64/ 64/ |
| 7,500 | 88 / 88/ | 83/ 83/ | 74/ 75/ | 67/ 66/ |
| 8,000 | 91/ 91/ 90/ | 86/ 85/ 84/ | 77/ 77/ 74/ | 69/ 68/ 69 |
| 8,500 | 94/ 94/ 93/ | 89/ 88/ 87/ | 79/ 79/ 77/ | 71/ 70/ 71/ |
| 9,000 | 97/ 96/ 95/ 93 | 91/ 91/ 89/ 88 | 82/ 81/ 79/ 77 | 73/ 72/ 73/ 72 |
| 9,500 | 99 /99/ 98/ 96 | 93/ 93/ 92/ 90 | 84/ 83/ 81/ 79 | 75/ 74/ 75/ 74 |
| 9,920 | 101/ | 95/ | 85/ | 76/ |
| 10,000 | /102/100/ 98 | / 96/ 94/ 92 | / 86/ 84/ 81 | / 76/ 77/ 76 |
| 10,470 | /104/ | / 98/ | / 88/ | / 78/ |
| 10,500 | /103/101 | / 96/ 94 | / 85/ 83 | / 79/ 77 |
| 10,800 | /104/ | / 97/ | / 86/ | / 80/ 78 |
| 11,000 | /103 | / 97 | / 85 | / 79 |
| 11,500 | /106 | / 99 | / 87 | / 81 |

**MU-2B J (-35), K (-25), L (-36), M (-26)**

**ACCELERATED STALLS**

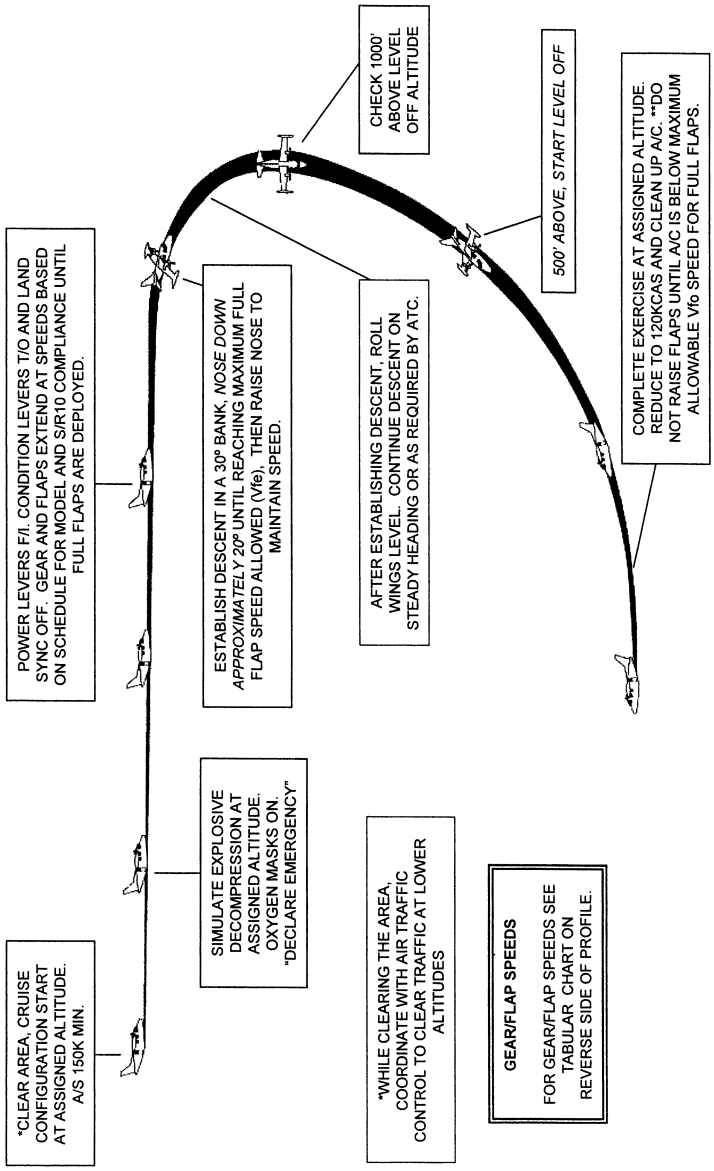



B-11

STALL SPEEDS (APPROXIMATE)
AT MAXIMUM GROSS TAKEOFF WEIGHT
J, K, L, M

| BANK ANGLE | 10 | 20 | 30 | 40 | 50 | 60 |
|---|---|---|---|---|---|---|
| FLAPS | J / L / K / M | J / L / K / M | J / L / K / M | J / L / K / M | J / L / K / M | J / L / K / M |
| UP | 106/107/102/105 | 108/109/105/108 | 112/114/109/112 | 120/121/116/120 | 130/132/126/130 | 148/150/143/147 |
| 5° | 99/100/ 96/ 98 | 101/102/ 98/101 | 105/107/102/105 | 112/113/109/112 | 122/123/119/122 | 138/140/134/138 |
| 20° | 87/ 88/ 86/ 88 | 89/ 90/ 88/ 90 | 92 /94/ 92/ 94 | 98/100/ 97/100 | 108/109/107/109 | 122/123/120/123 |
| 40° | 81/ 82/ 77/ 79 | 83/ 84/ 79/ 81 | 86/ 87/ 82/ 84 | 92/ 93/ 87/ 90 | 100/102/ 96/ 98 | 112/115/108/110 |

**MU-2B J (-35), K (-25), L (-36), M (-26)**
**EMERGENCY DESCENT (LOW SPEED)**



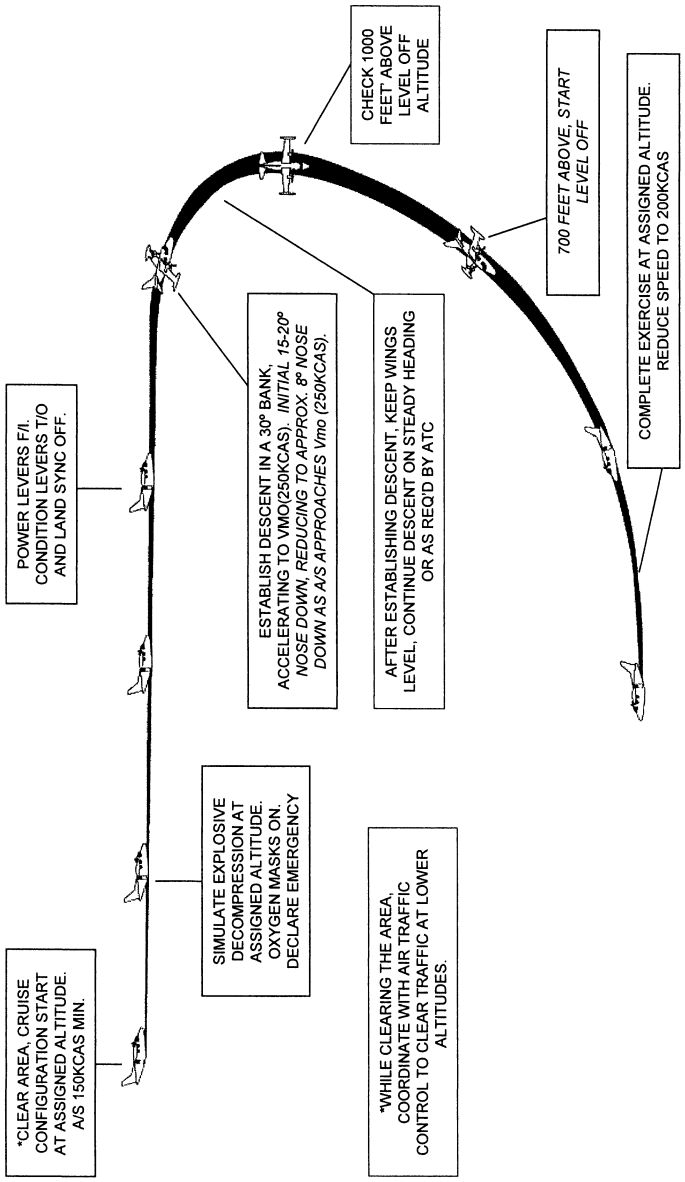

B-12

**GEAR AND FLAP EXTEND SCHEDULE**

**(K+ AND J+ ARE MODIFIED BY S/R10)**

| | | | |
|---|---|---|---|
| **GEAR** | | | |
| **K, K+:** | **160KCAS** | | |
| **M, J, J+:** | **170KCAS** | | |
| **L:** | **175KCAS** | | |
| **FLAPS** | **5°** | **20°** | **40°** |
| **J: S/N 548 – 609 NOT MODIFIED BY S/R10** | **146KCAS** | **146KCAS** | **120KCAS** |
| **J+: S/N 548 – 609 MODIFIED BY S/R10 AND S/N 610 - 654** | **175KCAS** | **146KCAS** | **120KCAS** |
| **K: S/N 239 – 279 NOT MODIFIED BY S/R10** | **140KCAS** | **140KCAS** | **120KCAS** |
| **K+: S/N 239 – 279 MODIFIED BY S/R10 AND S/N 280 - 318** | **175KCAS** | **140KCAS** | **120KCAS** |
| **L / M** | **175KCAS** | **155KCAS** | **120KCAS** |

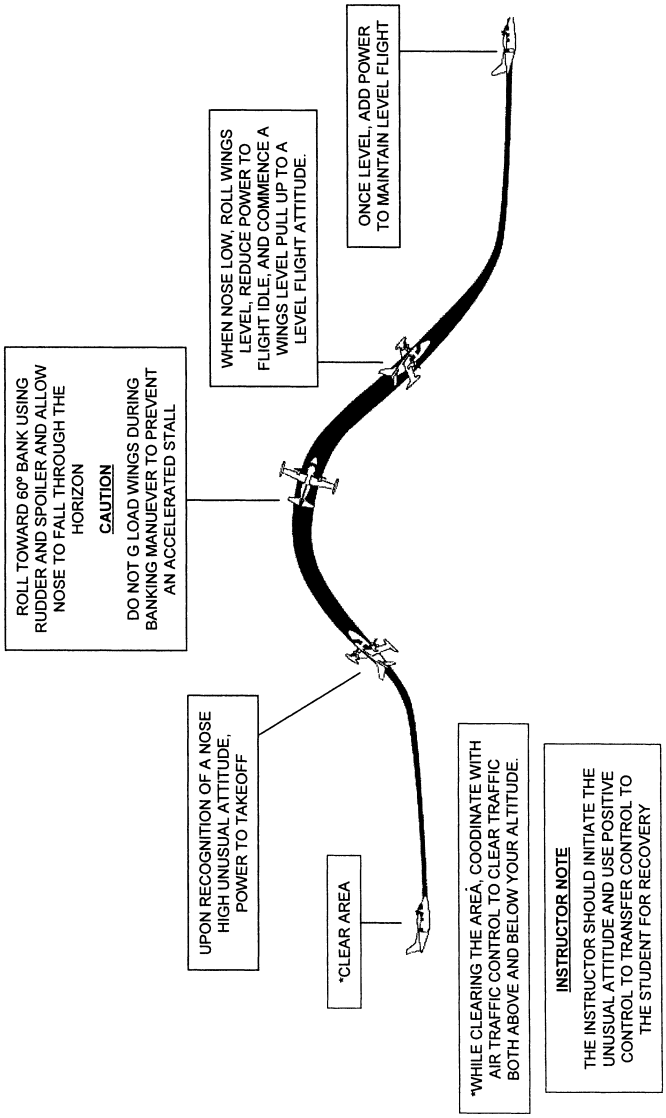
**MU-2B J (-35), K (-25), L (-36), M (-26)**
**EMERGENCY DESCENT (HIGH SPEED)**




B-13

**MU-2B J (-35), K (-25), L (-36), M (-26)**

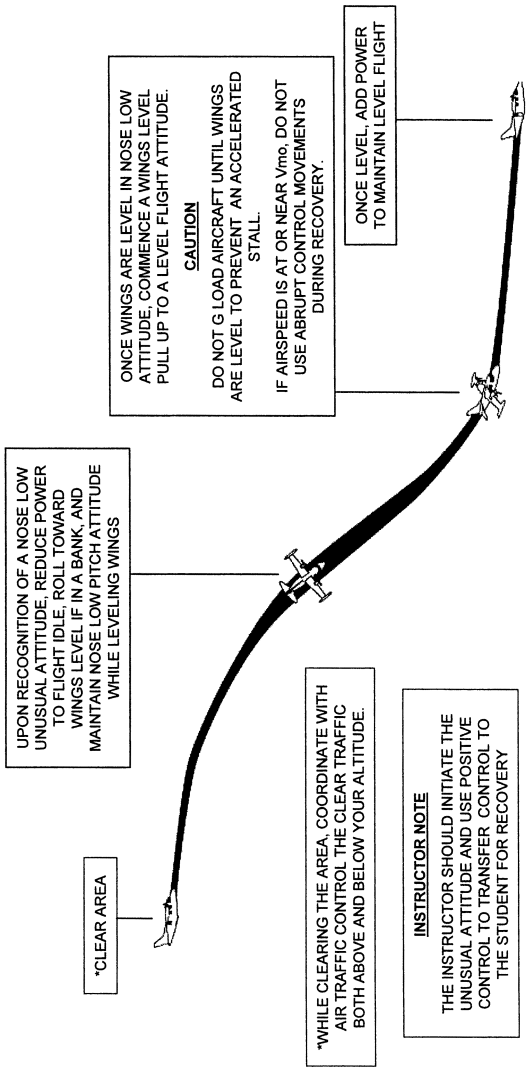
**UNUSUAL ATTITUDE RECOVERY (NOSE HIGH)**




B-14

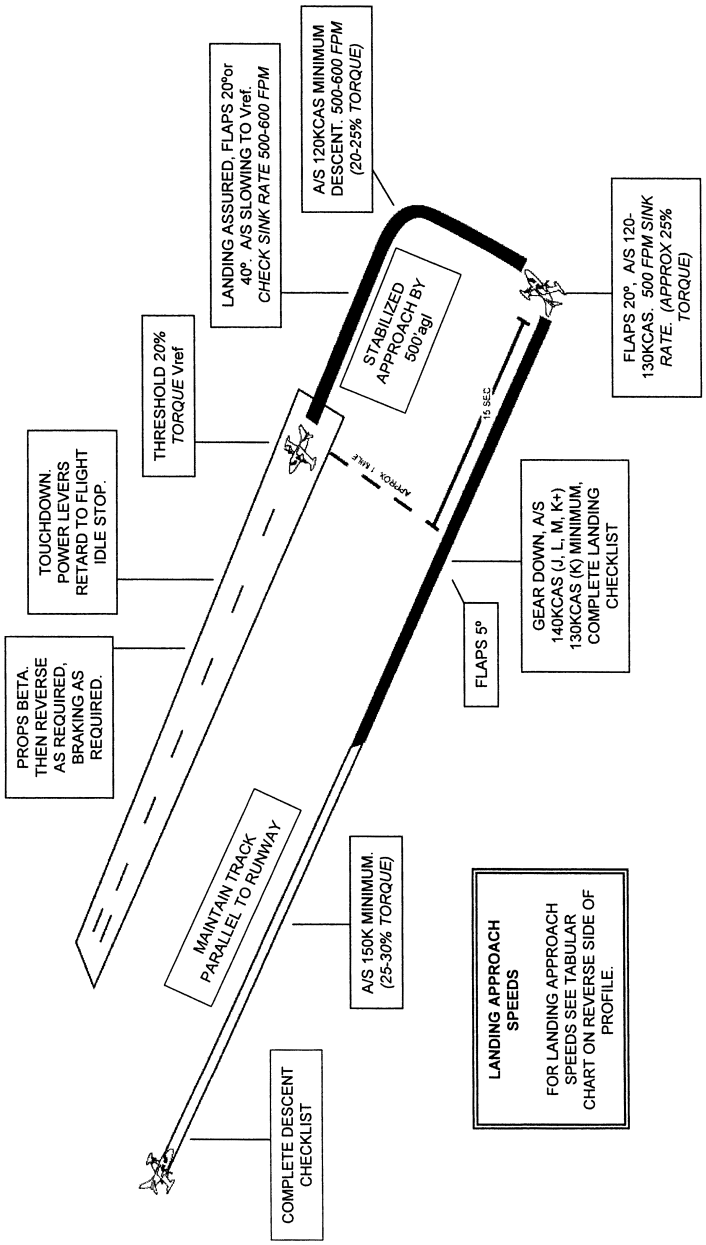
**MU-2B J (-35), K (-25), L (-36), M (-26)**

**UNUSUAL ATTITUDE RECOVERY (NOSE LOW)**




B-15

**MU-2B J (-35), K (-25), L (-36), M (-26)**
**NORMAL LANDING (20°or 40° FLAPS)**



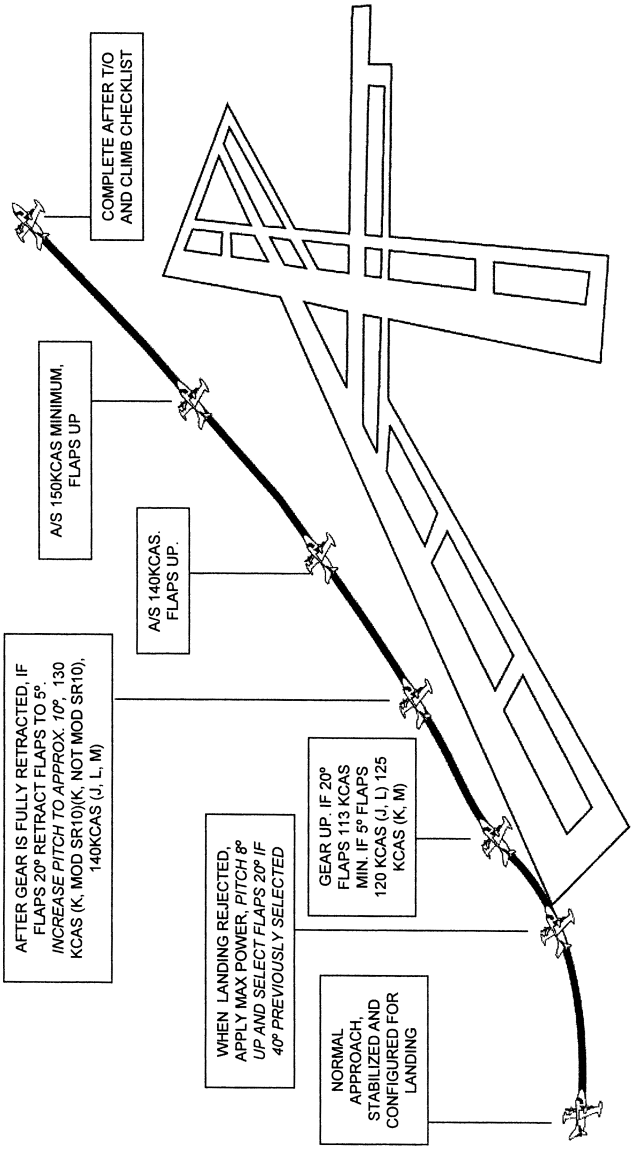

B-16

LANDING APPROACH SPEEDS Vref
J, K, L, M

| | FLAPS 20° (1.3 VS1) | | | | FLAPS 40° (1.5 VS1) | | | |
|---|---|---|---|---|---|---|---|---|
| WEIGHT | K | M | J | L | K | M | J | L |
| 7,000 | 93 | 96 | | | | 96 | | |
| 7,500 | 96 | 100 | 93 | | 99 | 100 | 100 | |
| 8,000 | 100 | 103 | 96 | | 103 | 103 | 103 | |
| 8,500 | 103 | 106 | 100 | 99 | 106 | 106 | 106 | 105 |
| 9,000 | 106 | 109 | 103 | 99 | 109 | 109 | 109 | 108 |
| 9,435 | 108 | | | | 112 | | | |
| 9,500 | | 112 | 106 | 103 | | 112 | 112 | 111 |
| 9,955 | | 115 | | | | 115 | | |
| 10,000 | | | 109 | 105 | | | 115 | 114 |
| 10,260 | | | 110 | | | | 117 | |
| 10,500 | | | | 108 | | | | 117 |
| 11,000 | | | | 110 | | | | 119 |
| 11,025 | | | | 110 | | | | 119 |

**MU-2B J (-35), K (-25), L (-36), M (-26)**

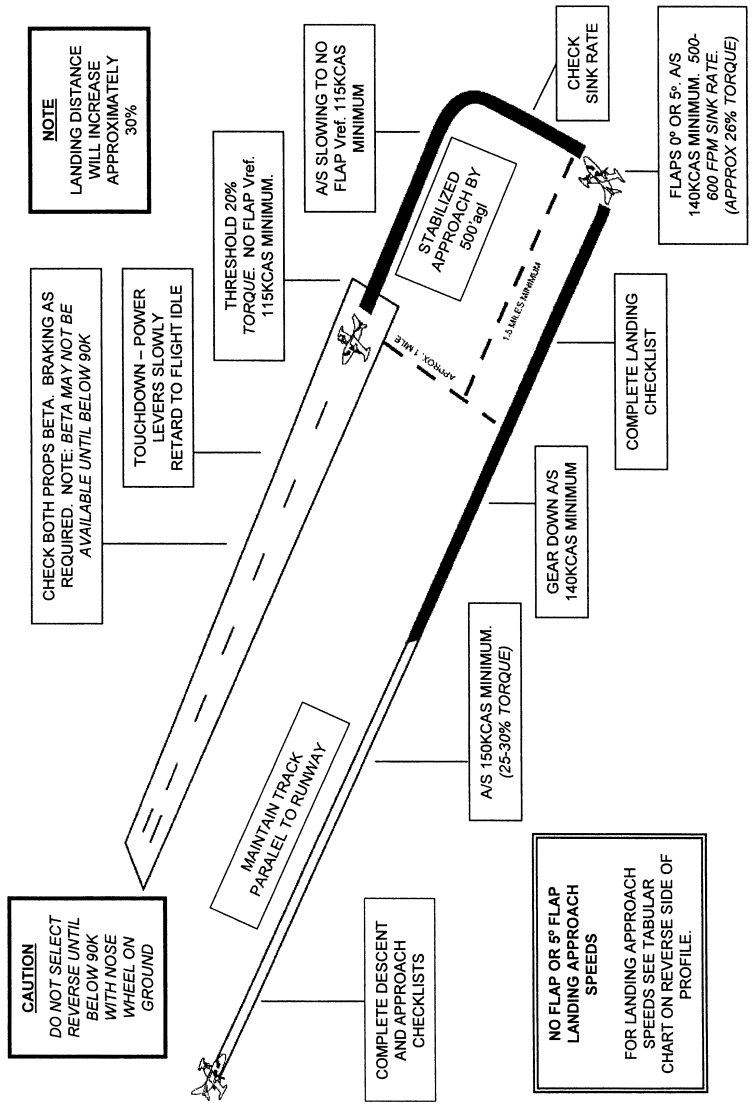
**GO AROUND - REJECTED LANDING**




B-17

**MU-2B J (-35), K (-25), L (-36), M (-26)**

**NO FLAP OR 5° FLAP LANDING**



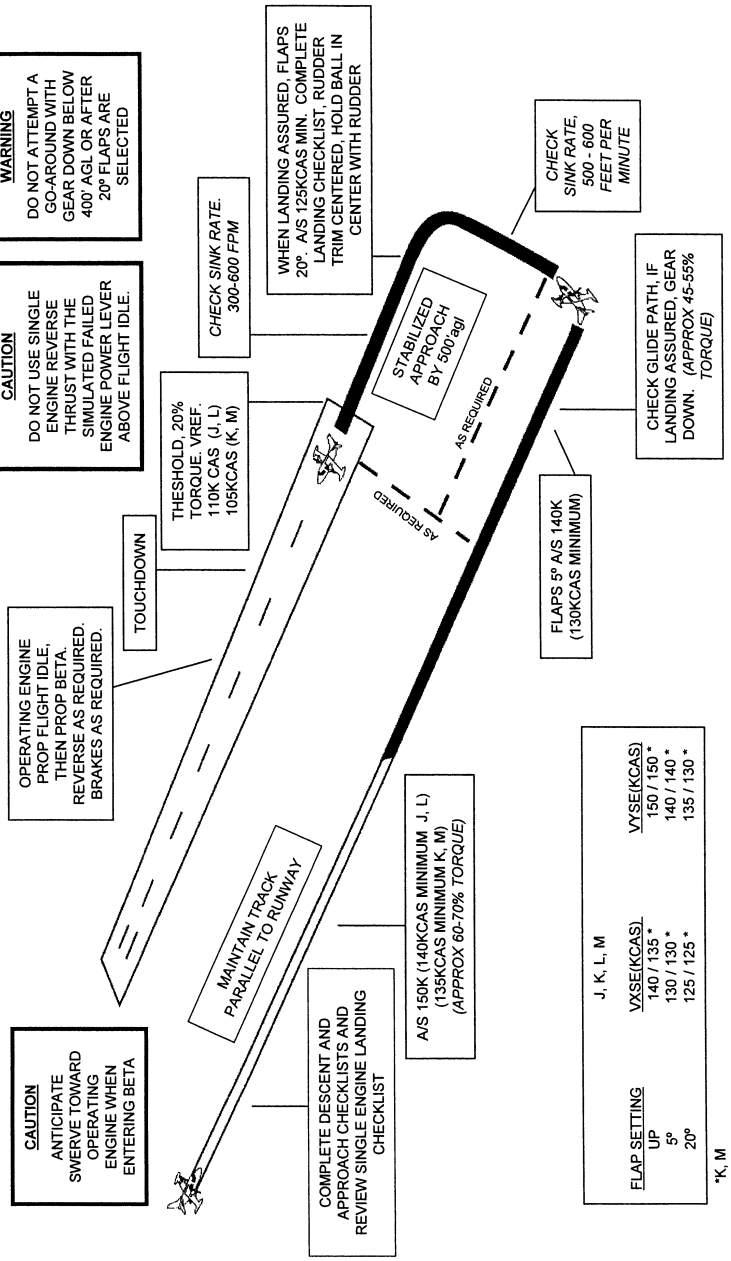

B-18

NO FLAP Vref 1.25 VS1
(BUT NOT BELOW 115KCAS)
USE FOR FLAP UP OR 5°

J, K, L, M

| | FLAPS UP | | | | FLAPS 5° | | | |
|---|---|---|---|---|---|---|---|---|
| WEIGHT | J | K | L | M | J | K | L | M |
| 7,500 | | 115 | | | | 115 | | |
| 8.000 | 115 | 115 | | 115 | 115 | 115 | | 115 |
| 8.500 | 117 | 118 | | 118 | 115 | 115 | | 115 |
| 9.000 | 119 | 122 | 117 | 120 | 115 | 115 | 115 | 115 |
| 9,435 | | 124 | | | | 117 | | |
| 9.500 | 123 | | 120 | 124 | 115 | | 115 | 117 |
| 9.955 | | | | 127 | | | | 119 |
| 10.000 | 125 | | 123 | | 118 | | 115 | |
| 10.260 | 128 | | | | | | | |
| 10.500 | | | 127 | | | | 118 | |
| 11,000 | | | 129 | | | | 124 | |
| 11.025 | | | 129 | | | | 124 | |

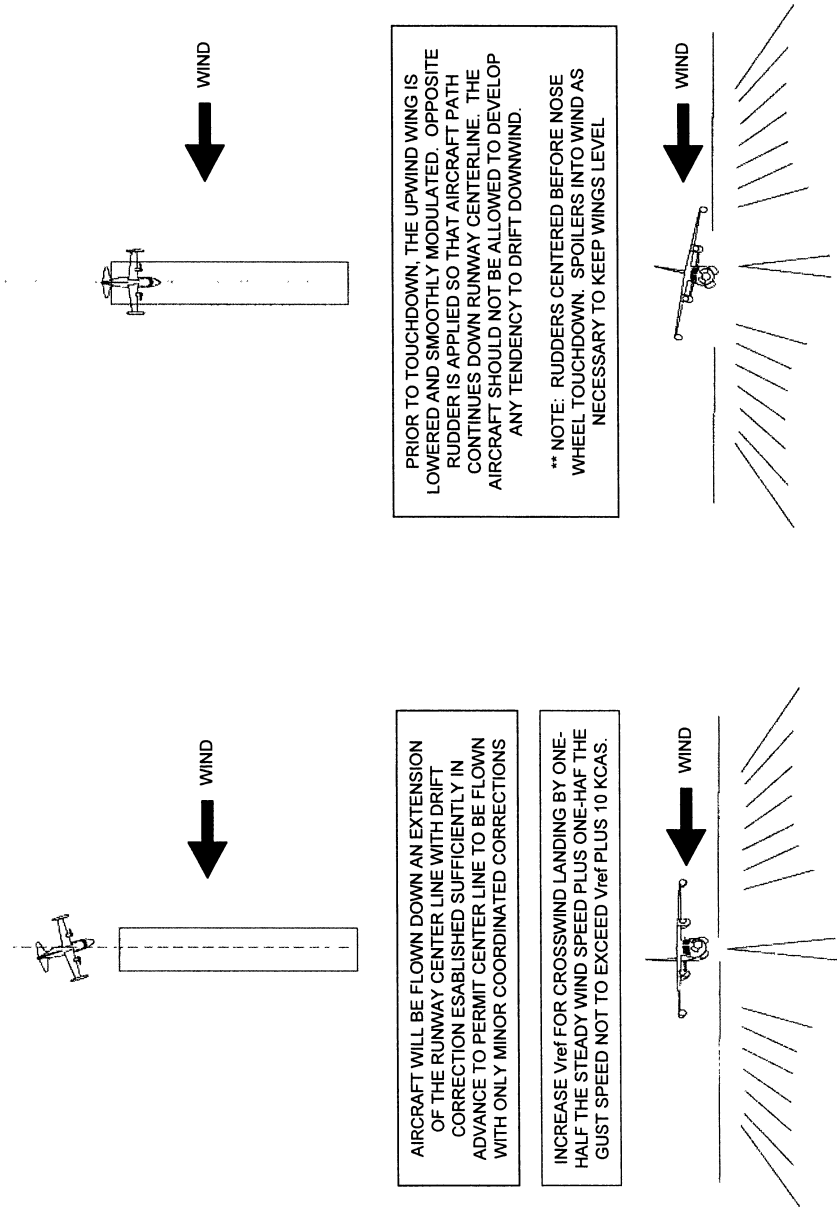
**MU-2B J (-35), K (-25), L (-36), M (-26)**
**ONE ENGINE INOPERATIVE LANDING**




B-19

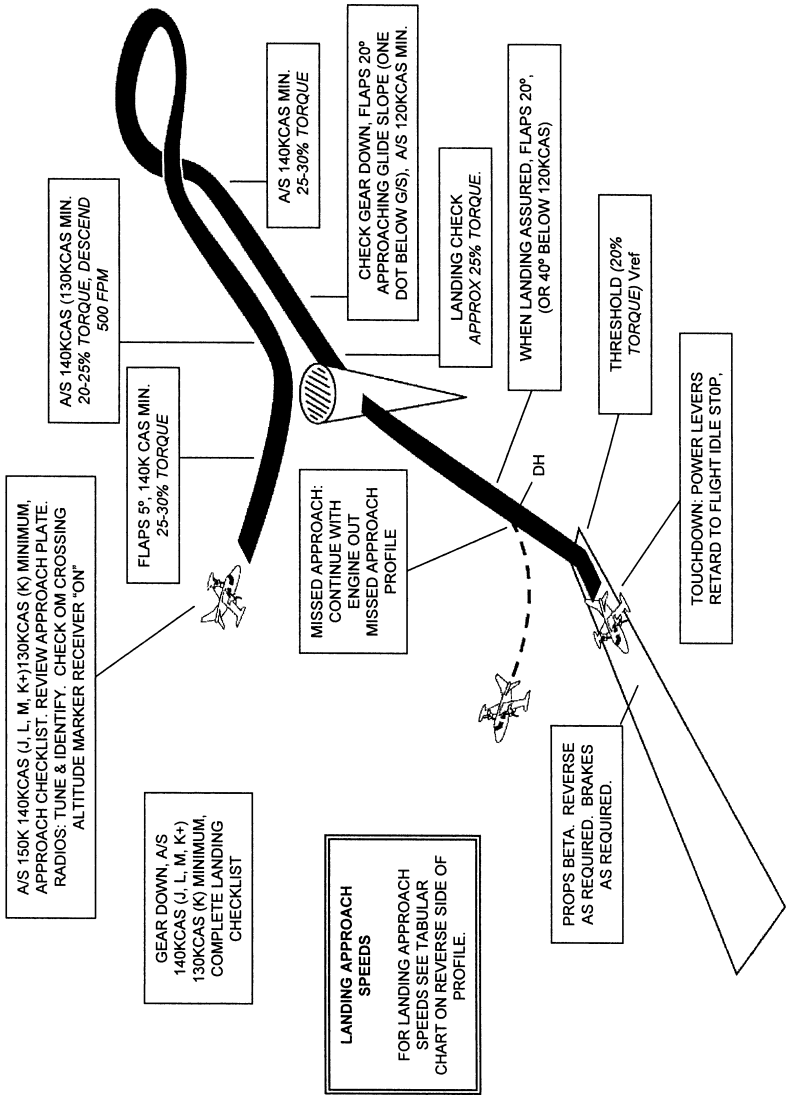
**MU-2B J (-35), K (-25), L (-36), M (-26)**

**CROSSWIND LANDING**



**MU-2B J (-35), K (-25), L (-36), M (-26)**

**ILS AND MISSED APPROACH**



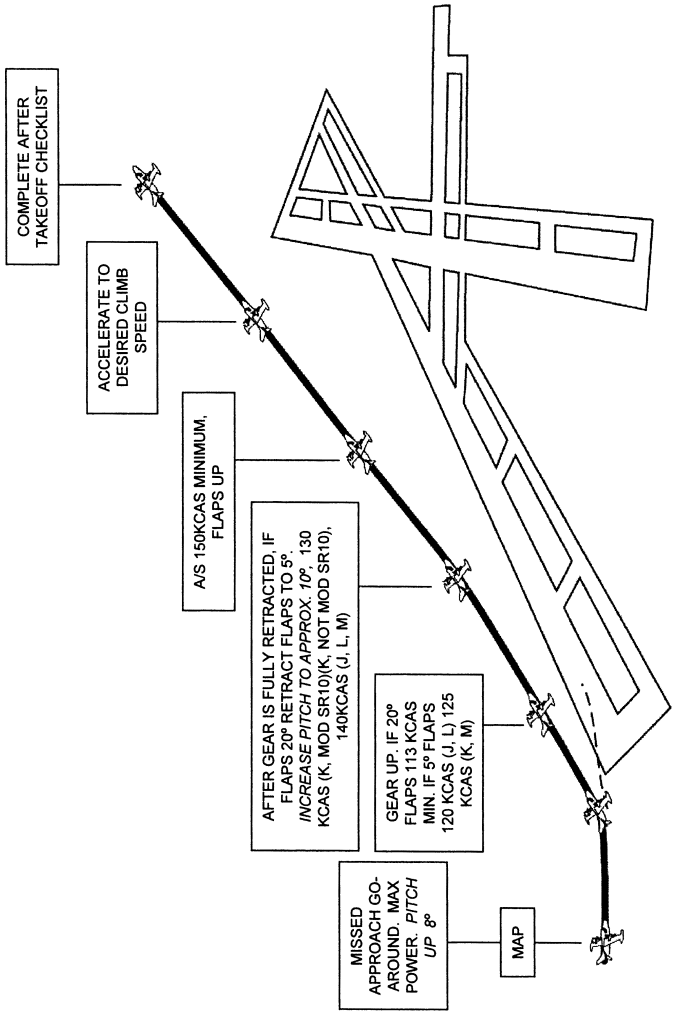

B-21

LANDING APPROACH SPEEDS Vref
J, K, L, M

| | FLAPS 20° (1.3 VS1) | | | | FLAPS 40° (1.5 VS1) | | | |
|---|---|---|---|---|---|---|---|---|
| WEIGHT | K | M | J | L | K | M | J | L |
| 7,000 | 93 | 96 | | | | 96 | | |
| 7,500 | 96 | 100 | 93 | | 99 | 100 | 100 | |
| 8,000 | 100 | 103 | 96 | | 103 | 103 | 103 | |
| 8,500 | 103 | 106 | 100 | 99 | 106 | 106 | 106 | 105 |
| 9,000 | 106 | 109 | 103 | 99 | 109 | 109 | 109 | 108 |
| 9,435 | 108 | | | | 112 | | | |
| 9,500 | | 112 | 106 | 103 | | 112 | 112 | 111 |
| 9,955 | | 115 | | | | 115 | | |
| 10,000 | | | 109 | 105 | | | 115 | 114 |
| 10,260 | | | 110 | | | | 117 | |
| 10,500 | | | | 108 | | | | 117 |
| 11,000 | | | | 110 | | | | 119 |
| 11,025 | | | | 110 | | | | 119 |

**MU-2B J (-35), K (-25), L (-36), M (-26)**

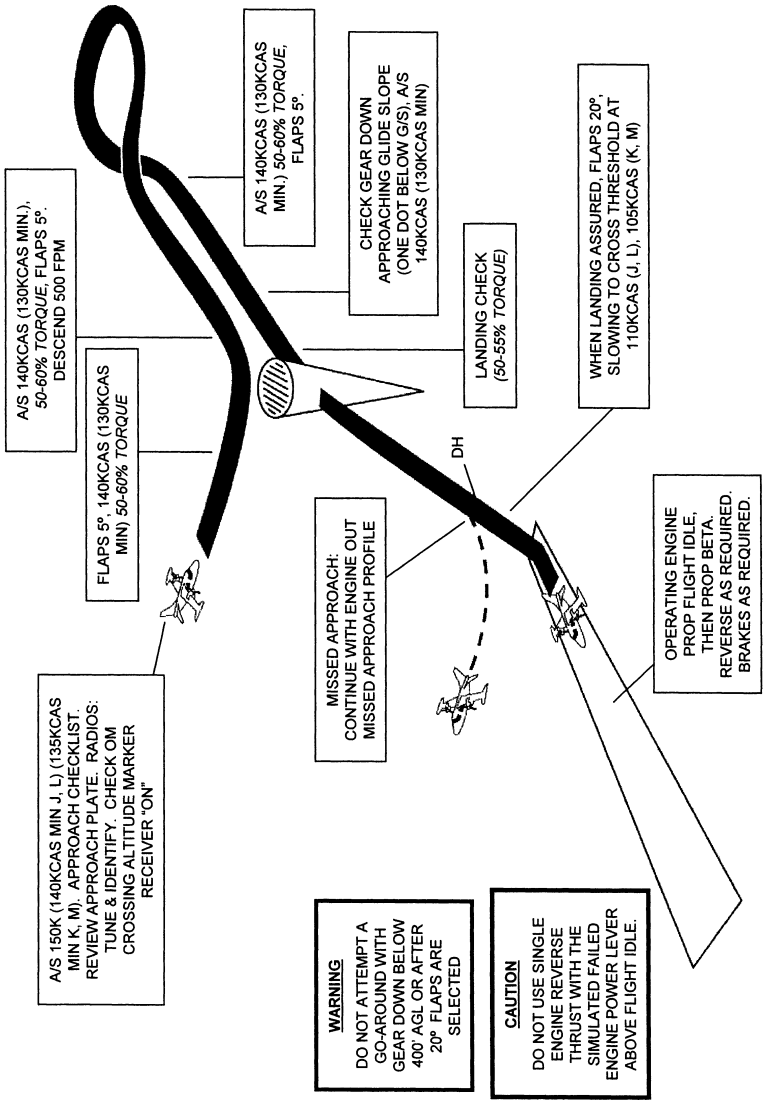
**TWO ENGINE MISSED APPROACH**




B-22

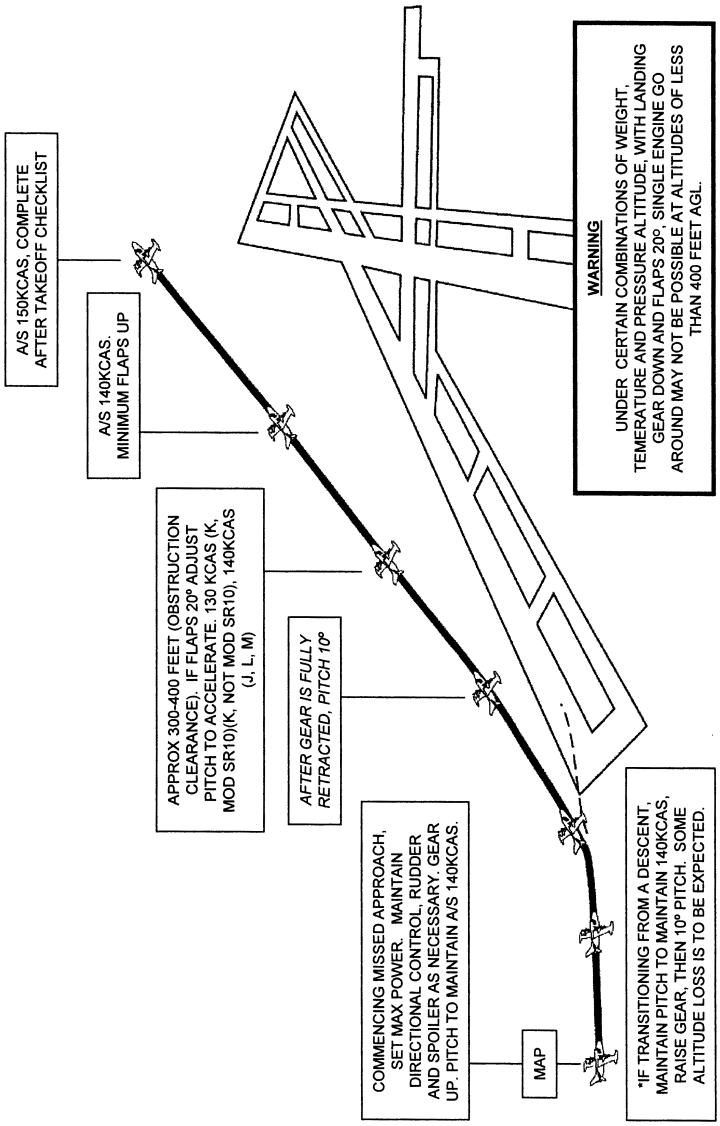
MU-2B J (-35), K (-25), L (-36), M (-26)

ONE ENGINE INOPERATIVE ILS AND MISSED APPROACH




B-23

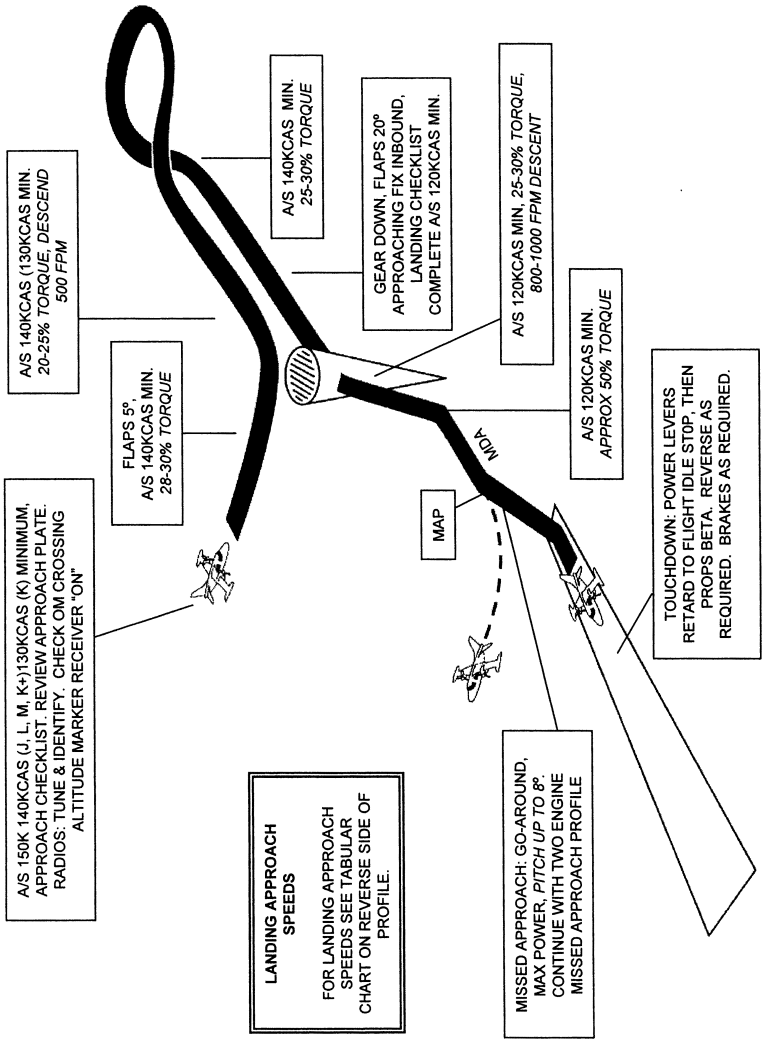
**MU-2B J (-35), K (-25), L (-36), M (-26)**
**ONE ENGINE INOPERATIVE MISSED APPROACH**




B-24

**MU-2B J (-35), K (-25), L (-36), M (-26)**

**NON-PRECISION AND MISSED APPROACH**



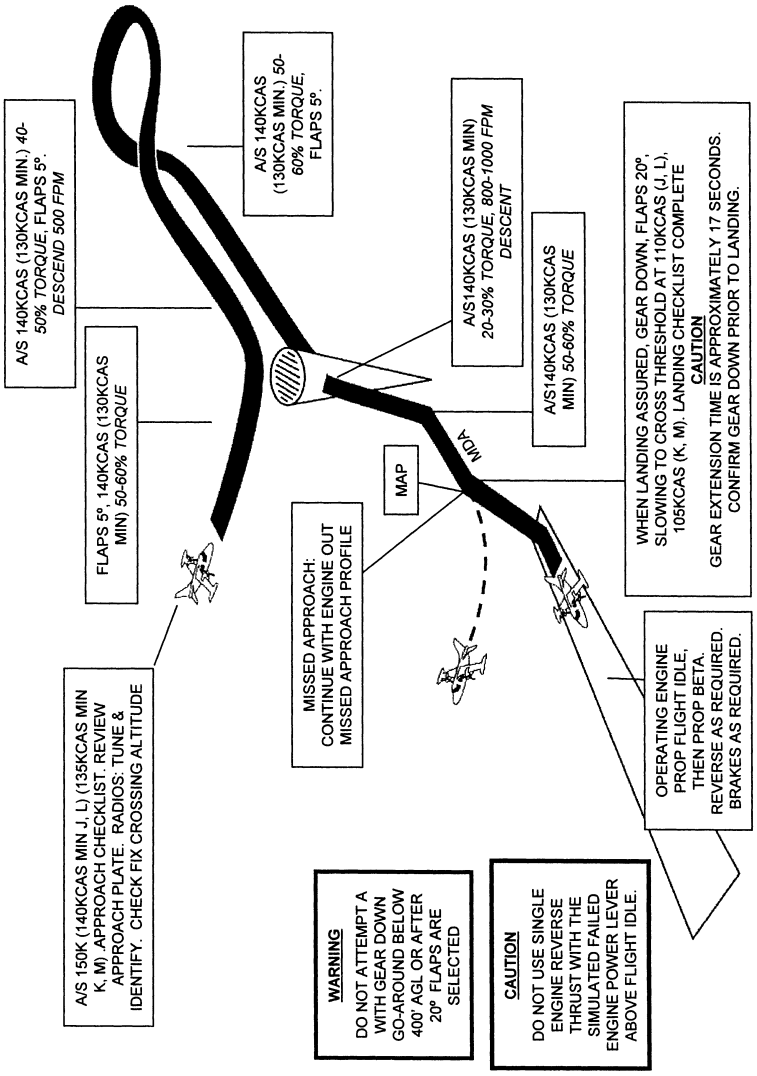

B-25

LANDING APPROACH SPEEDS Vref
J, K, L, M

| | FLAPS 20° (1.3 VS1) | | | | FLAPS 40° (1.5 VS1) | | | |
|---|---|---|---|---|---|---|---|---|
| WEIGHT | K | M | J | L | K | M | J | L |
| 7,000 | 93 | 96 | | | | 96 | | |
| 7,500 | 96 | 100 | 93 | | 99 | 100 | 100 | |
| 8,000 | 100 | 103 | 96 | | 103 | 103 | 103 | |
| 8,500 | 103 | 106 | 100 | 99 | 106 | 106 | 106 | 105 |
| 9,000 | 106 | 109 | 103 | 99 | 109 | 109 | 109 | 108 |
| 9,435 | 108 | | | | 112 | | | |
| 9,500 | | 112 | 106 | 103 | | 112 | 112 | 111 |
| 9,955 | | 115 | | | | 115 | | |
| 10,000 | | | 109 | 105 | | | 115 | 114 |
| 10,260 | | | 110 | | | | 117 | |
| 10,500 | | | | 108 | | | | 117 |
| 11,000 | | | | 110 | | | | 119 |
| 11,025 | | | | 110 | | | | 119 |

**MU-2B J (-35), K (-25), L (-36), M (-26)**

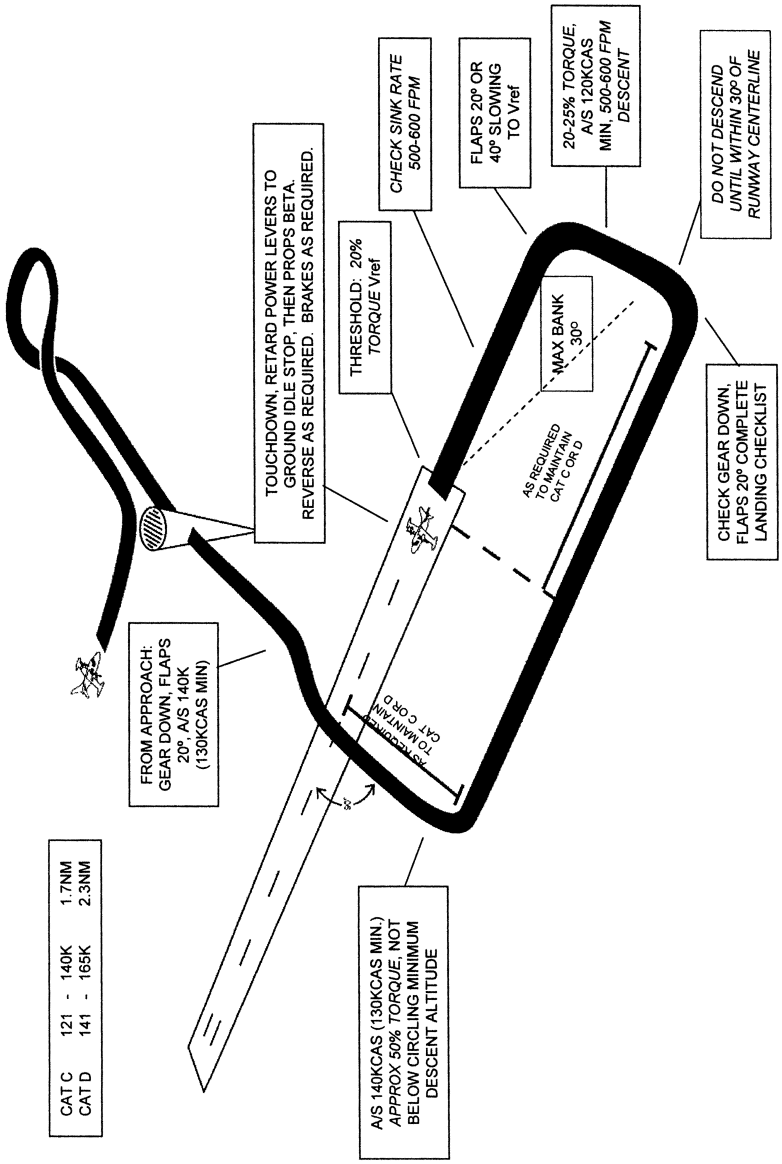
**ONE ENGINE INOPERATIVE NON-PRECISION AND MISSED APPROACH**




B-26

**MU-2B J (-35), K (-25), L (-36), M (-26)**

**CIRCLING APPROACH AT WEATHER MINIMUMS**



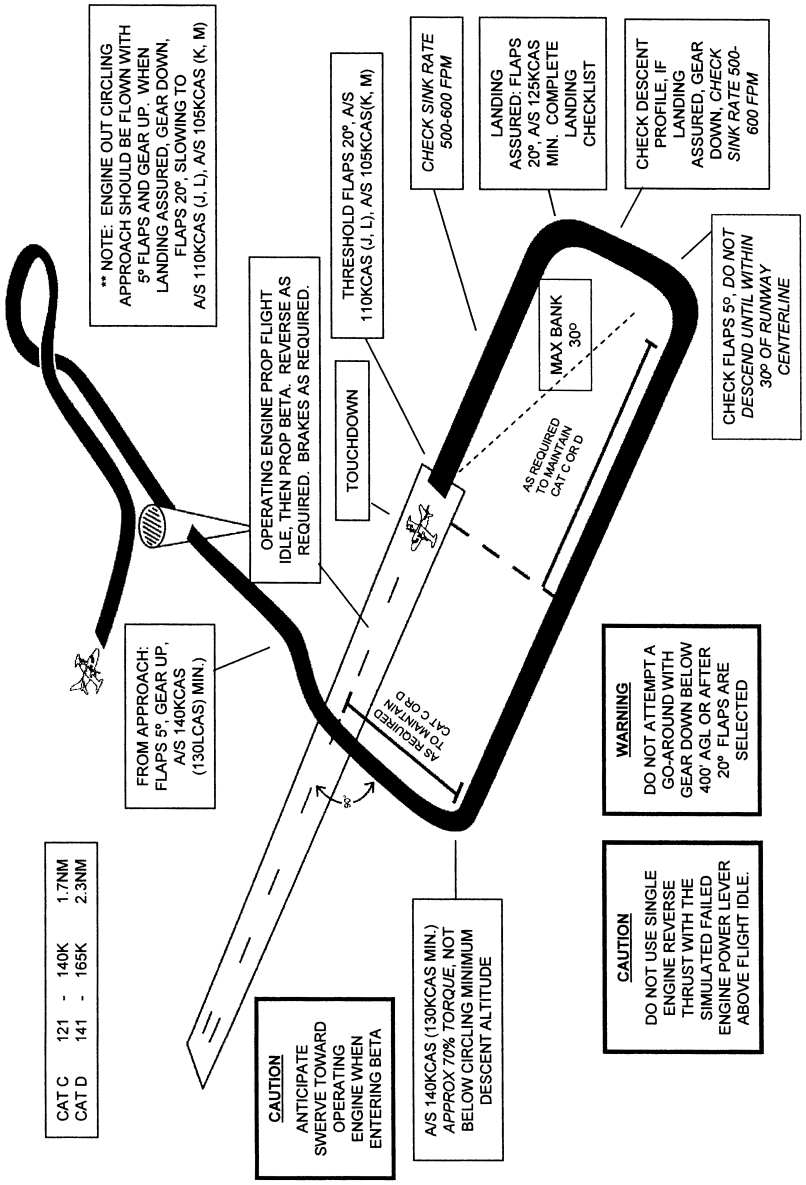

B-27

LANDING APPROACH SPEEDS Vref
J, K, L, M

| | FLAPS 20° (1.3 VS1) | | | | FLAPS 40° (1.5 VS1) | | | |
|---|---|---|---|---|---|---|---|---|
| WEIGHT | K | M | J | L | K | M | J | L |
| 7,000 | 93 | 96 | | | | 96 | | |
| 7,500 | 96 | 100 | 93 | | 99 | 100 | 100 | |
| 8,000 | 100 | 103 | 96 | | 103 | 103 | 103 | |
| 8,500 | 103 | 106 | 100 | 99 | 106 | 106 | 106 | 105 |
| 9,000 | 106 | 109 | 103 | 99 | 109 | 109 | 109 | 108 |
| 9,435 | 108 | | | | 112 | | | |
| 9,500 | | 112 | 106 | 103 | | 112 | 112 | 111 |
| 9,955 | | 115 | | | | 115 | | |
| 10,000 | | | 109 | 105 | | | 115 | 114 |
| 10,260 | | | 110 | | | | 117 | |
| 10,500 | | | | 108 | | | | 117 |
| 11,000 | | | | 110 | | | | 119 |
| 11,025 | | | | 110 | | | | 119 |

**MU-2B J (-35), K (-25), L (-36), M (-26)**

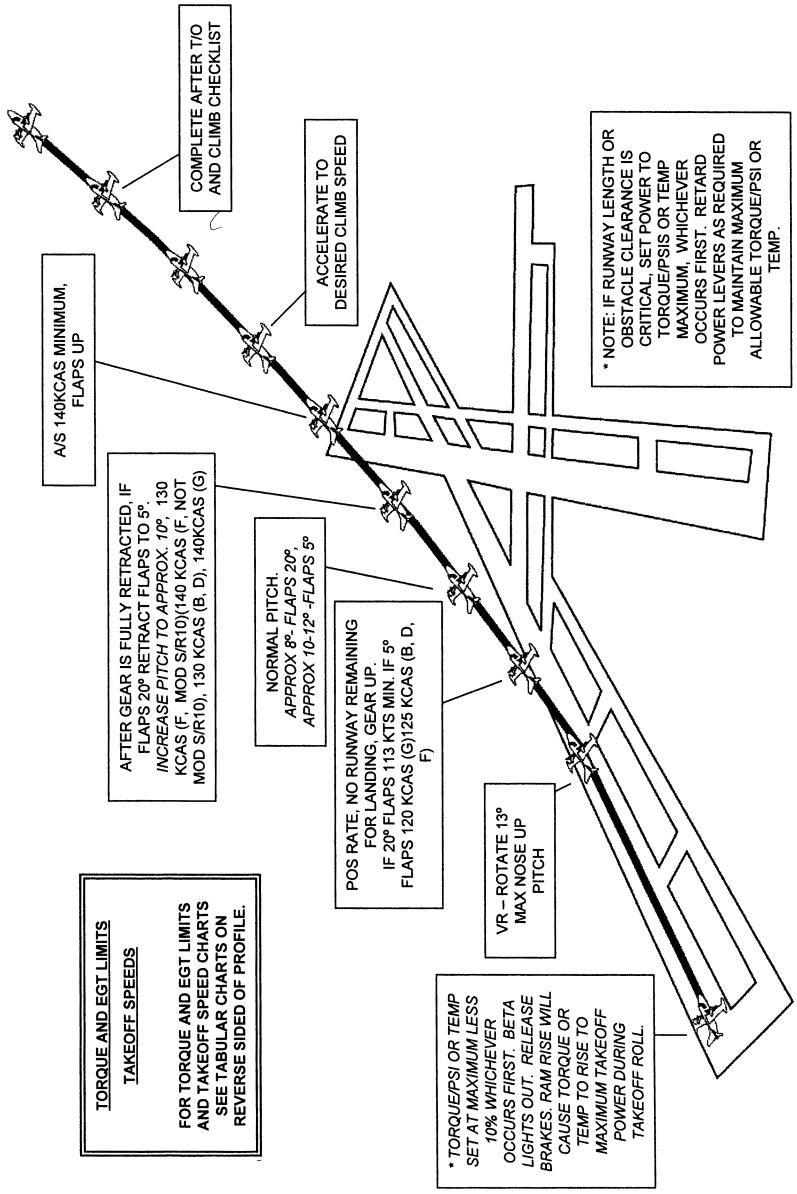
**ONE ENGINE INOPERATIVE CIRCLING APPROACH AT WEATHER MINIMUMS**




B-28

**MU-2B B, D (-10), F (-20), G (-30)**

**NORMAL TAKE-OFF, 5° OR 20° FLAPS**




C-1

**TORQUE LIMITS**

| | |
|---|---|
| B, D | 64 PSI |
| F, G | 60 PSI (STATIC) |
| | 64 PSI (RAM CONDITIONS 5 MINUTES |

EGT LIMITS DEPEND ON OUTSIDE AIR TEMPERATURE, CHECK EGT LIMITS PRIOR TO DEPARTURE.

**TAKE OFF SPEEDS**
ROTATE

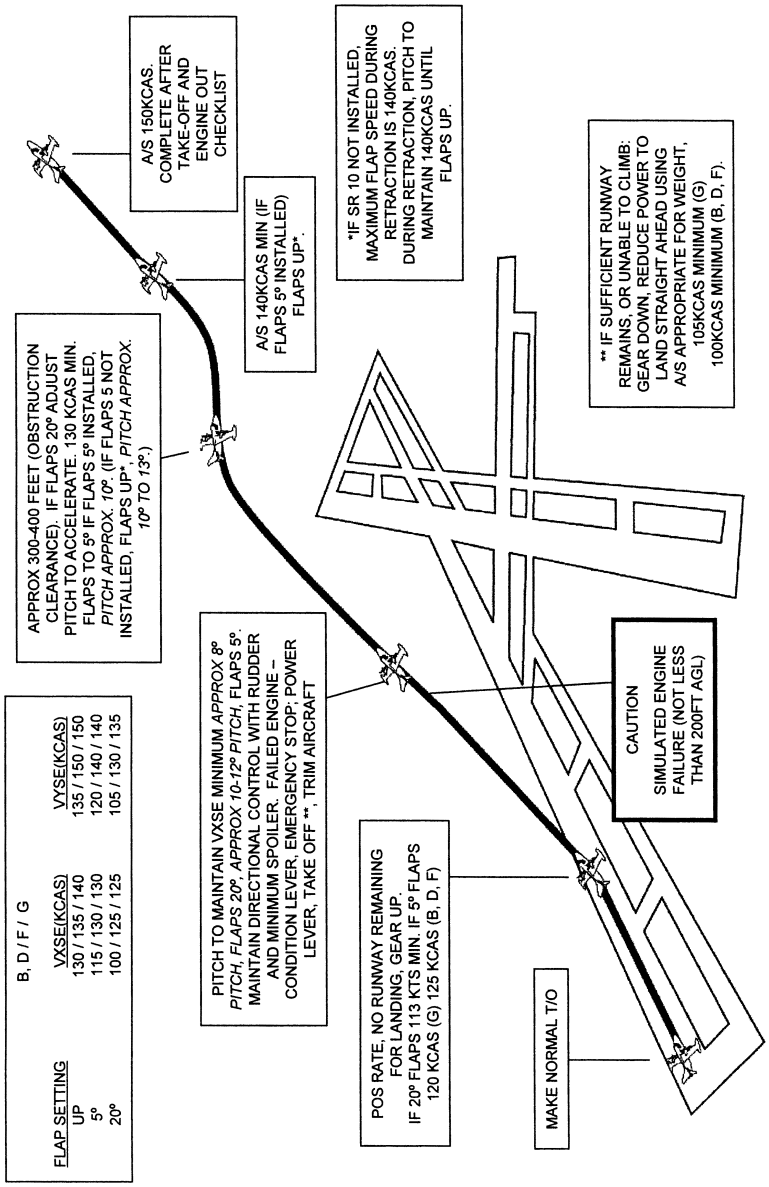
| FLAPS 5° | B | B+ | D | F | G |
|---|---|---|---|---|---|
| 10,800 LBS | | | | | 109 |
| 10,000 LBS | | | | | 105 |
| 9,920 LBS | | | | 108 | |
| 9,500 LBS | | | | 107 | 103 |
| 9,350 LBS | | 111 | 111 | | |
| 9,000 LBS | | 110 | 110 | 106 | 101 |
| 8,930 LBS | 109 | | | | |
| 8,000 LBS | 107 | 107 | 107 | 104 | 100 |
| 7,500 LBS | 106 | 106 | 106 | 102 | |
| 7,000 LBS | 104 | 104 | 104 | | |

| FLAPS 20° | B | B+ | D | F | G |
|---|---|---|---|---|---|
| 10,800 LBS | | | | | 105 |
| 10,000 LBS | | | | | 102 |
| 9,920 LBS | | | | 102 | |
| 9,500 LBS | | | | 101 | 101 |
| 9,350 LBS | | 104 | 104 | | |
| 9,000 LBS | | 103 | 103 | 100 | 100 |
| 8,930 LBS | 103 | | | | |
| 8,000 LBS | 101 | 101 | 101 | 99 | 100 |
| 7,500 LBS | 100 | 100 | 100 | 98 | |
| 7,000 LBS | 99 | 99 | 99 | | |

B: NOT MODIFIED BYH S/B 036 AND S/B 092
B+: MODIFIED BY S/B 036 AND S/B 092

**MU-2B B, D (-10), F (-20), G (-30)**

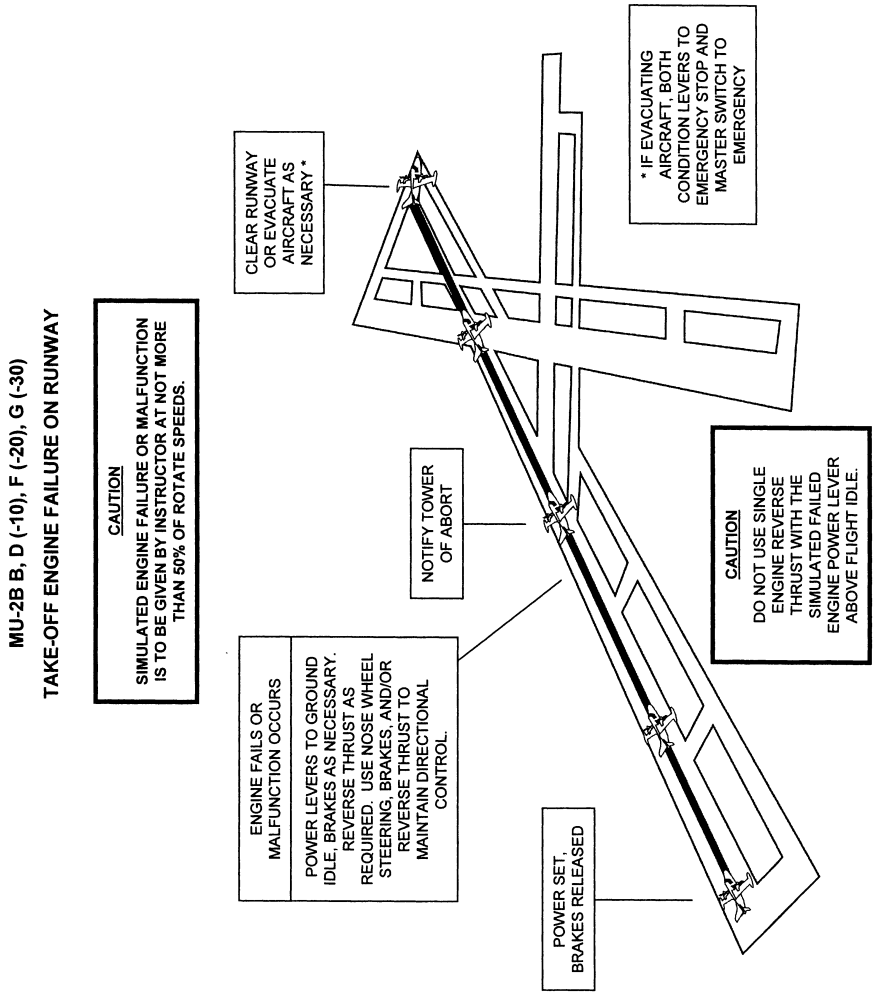
**TAKE-OFF ENGINE FAILURE – FLAPS 5° OR 20°**




C-2

**MU-2B B, D (-10), F (-20), G (-30)**

**TAKE-OFF ENGINE FAILURE ON RUNWAY**

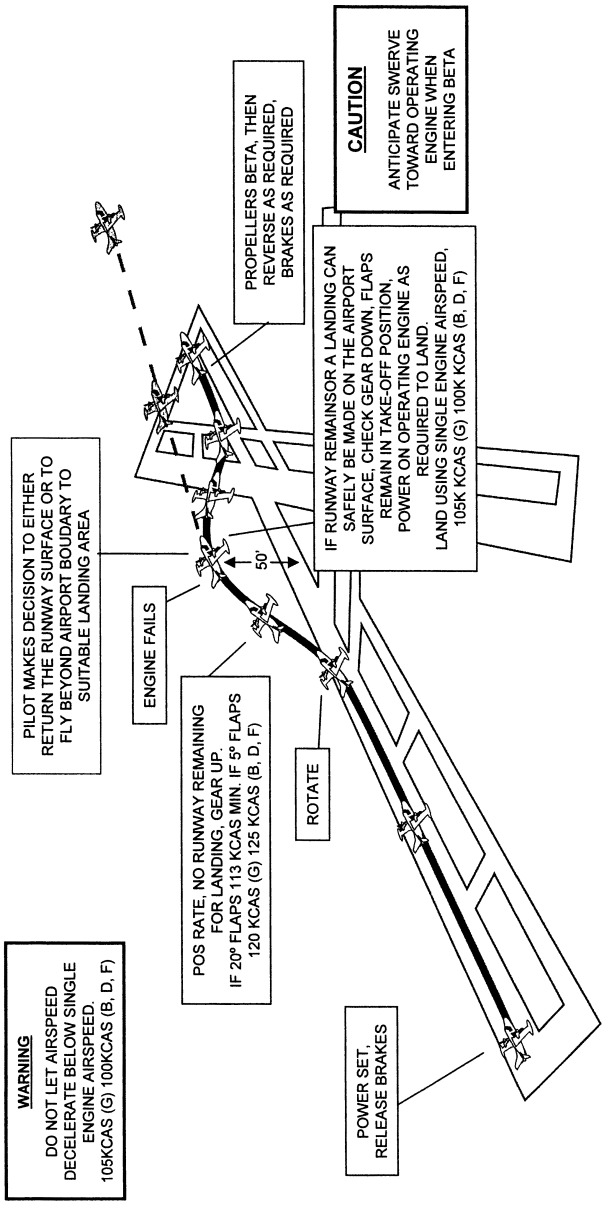



C-3

**MU-2B B, D (-10), F (-20), G (-30)**

**TAKE-OFF ENGINE FAILURE - UNABLE TO CLIMB**

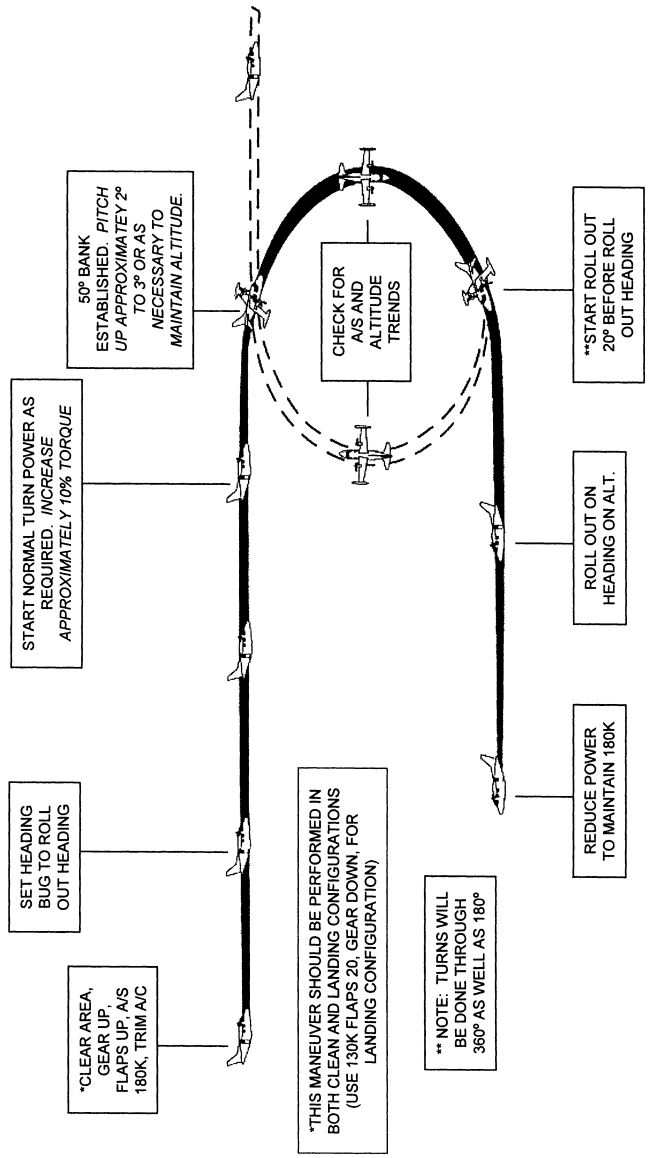
***CLASSROOM DISCUSSION OR FTD USE ONLY***




C-4

**MU-2B B, D (-10), F (-20), G (-30)**

**STEEP TURNS**




C-5

## MU-2B B, D (-10), F (-20), G (-30)

## SLOW FLIGHT MANEUVERING

## MINIMUM CONTROLLABLE AIRSPEED

SLOW FLIGHT MANEUVERING IS CONDUCTED AS FOLLOWS:

CLEAR THE AREA PRIOR TO BEGINNING THE MANEUVER.

START WITH CLEAN CONFIGURATION AND CHANGE AIRCRAFT CONFIGURATION FROM CLEAN TO FULL FLAP AND GEAR IN STAGES. USE A MAXIMUM OF 15° BANK AND PERFORM HEADING CHANGES OF 90° LEFT AND RIGHT. CONSTANT ALTITUDE IS REQUIRED THROUGHOUT.
MAINTAIN 115K IN ALL CONFIGURATIONS.

**APPROXIMATE POWER SETTINGS ARE:

| | | |
|---|---|---|
| *CLEAN* | *TORQUE (35%) OR PSI (23) PER ENGINE* | *APPROX PITCH +12* |
| *5° FLAP* | *TORQUE (32%) OR PSI (21) PER ENGINE* | *APPROX PITCH +8* |
| *5° FLAP & GEAR* | *TORQUE (44%) OR PSI (29) PER ENGINE* | *APPROX PITCH +9* |
| *20° FLAP & GEAR* | *TORQUE (42%) OR PSI (27) PER ENGINE* | *APPROX PITCH +4* |
| *40° FLAP & GEAR* | *TORQUE (54%) OR PSI (35) PER ENGINE* | *APPROX PITCH 0* |

** NOTE: POWER SETTINGS WILL VARY WITH AIRCRAFT WEIGHT AND ALTITUDE.

STALL SPEEDS (APPROXIMATE)
AT MAXIMUM GROSS TAKEOFF WEIGHT
B, B+, D, F, G

| ANGLE OF BANK | B/ B+ / D / F / G<br>0° | B / B+ / D / F / G<br>15° |
|---|---|---|
| FLAPS | | |
| UP | 95/ 98 / 98/102/104 | 98/ 99/ 99/104/106 |
| 5° | 85/ 88/ 88/ 95/ 98 | 88/ 89/ 89/ 97/100 |
| 20° | 80/ 81/ 81/ 85/ 86 | 81/ 83/ 83/ 87/ 88 |
| 40° | 72/ 73/ 73/ 77/ 80 | 73/ 74/ 74/ 78/ 81 |

**Vmc: 20° FLAPS (90KCAS G, 93KCAS F, 89KCAS D, 89/91KCAS B )**
**5° FLAPS (99KCAS G, 100KCAS F, 97KCAS D, 97/99KCAS B)**
**(FOR B MODEL Vmc SPEED CONSULT SERIAL NUMBER APPLICABILITY IN AFM)**

**CAUTION**

STALL WARNING MAY ACTIVATE
4 TO 9 KTS ABOVE STALL

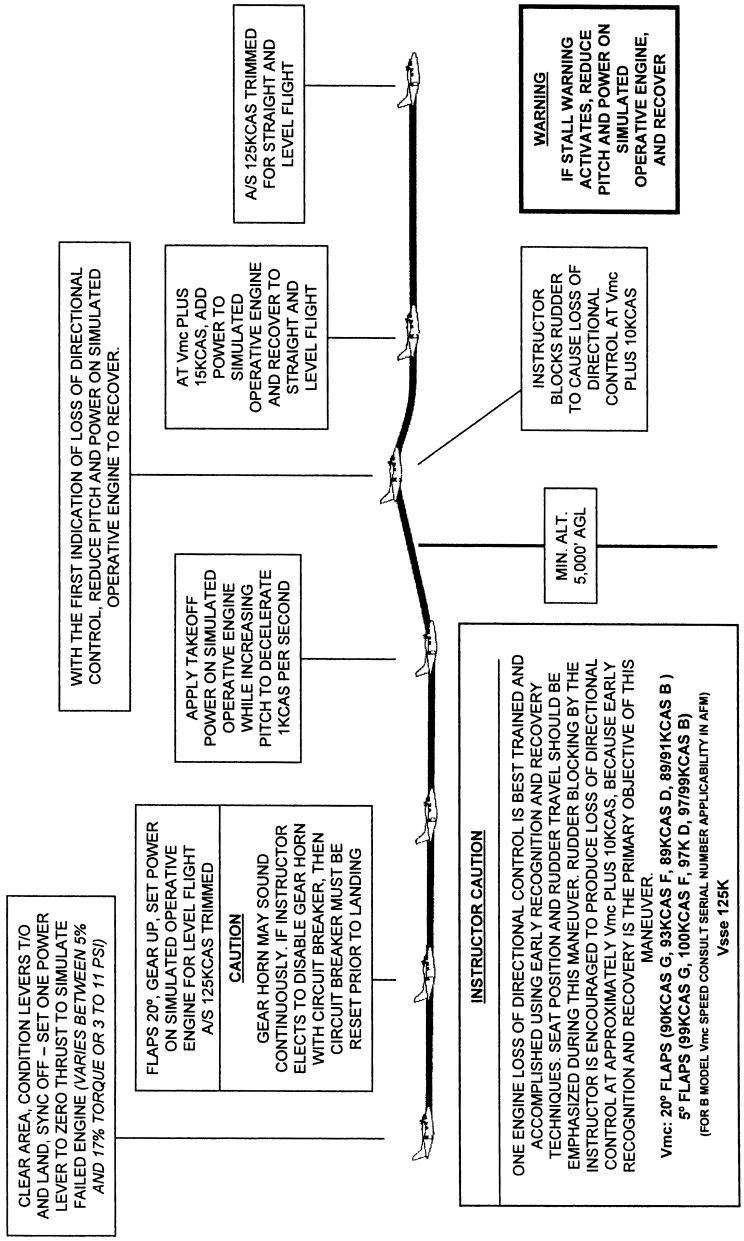
MINIMUM CONTROLLABLE AIRSPEED IS CONDUCTED AS FOLLOWS:

CLEAR THE AREA PRIOR TO BEGINNING THE MANEUVER.

THE MANEUVER MAY BE DONE IN ANY COMBINATION OF GEAR OR FLAP CONFIGURATIONS. IF BANK IS TO BE USED, IT SHOULD BE DONE AT BANK OF NOT MORE THAN 10°. BEGIN THE MANEUVER BY CONFIGURING THE AIRCRAFT IN THE DESIRED GEAR AND FLAP CONFIGURATION. SLOW THE AIRCRAFT UNTIL THE STALL WARNING (STICK SHAKER) IS ACTIVATED AND ADD POWER TO MAINTAIN ALTITUDE AND A SPEED JUST ABOVE AERODYNAMIC STALL. DO NOT ALLOW THE AIRCRAFT TO REACH AERODYNAMIC STALL BUFFET.

**MU-2B B, D (-10), F (-20), G (-30)**

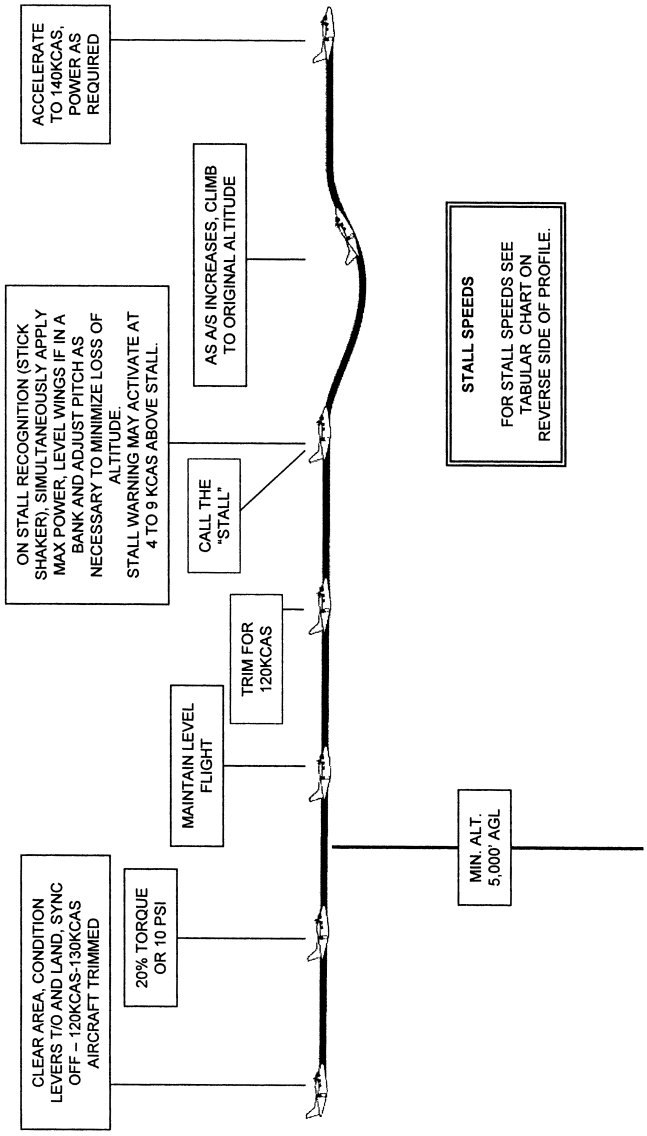
**ONE ENGINE INOPERATIVE MANEUVERING LOSS OF DIRECTIONAL CONTROL**




C-7

**MU-2B B, D (-10), F (-20), G (-30)**

**APPROACH TO STALL CLEAN CONFIGURATION / WINGS LEVEL**




C-8

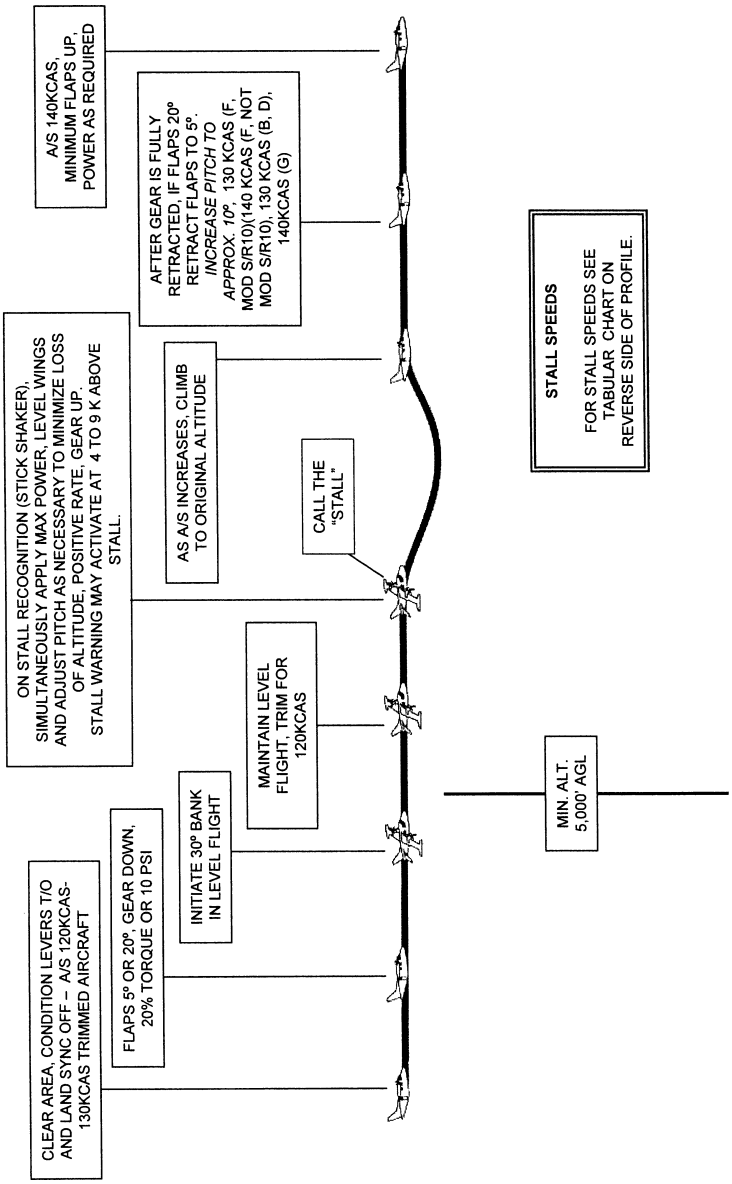
STALL SPEEDS

| FLAPS SET | 0 | 5 | 20 | 40 |
|---|---|---|---|---|
| GR.WT. | B/ B+, D/ F/ G | B/ B+, D/ F/ G | B/ B+, D/ F/ G | B/ B+, D/ F/ G |
| 7,000 | 85/ 85/ 85 | 76/ 76/ 80 | 70/ 70/ 72 | 63/ 63/ 64 |
| 7,500 | 88/ 88/ 85/ | 78/ 78/ 83/ | 73/ 73/ 74/ | 66/ 63/ 67/ |
| 8,000 | 90/ 90/ 91/ 90 | 81/ 81/ 86/ 84 | 75/ 75/ 77/ 74 | 68/ 68/ 69/ 69 |
| 8,500 | 93/ 93/ 94/ 93 | 83/ 83/ 88/ 87 | 78/ 78/ 79/ 77 | 70/ 70/ 71/ 71 |
| 8,930 | 95/ | 85/ | 79/ | 72/ |
| 9,000 | / 95/ 97/ 95 | / 86/ 91/ 90 | / 80/ 81/ 79 | / 72/ 73/ 73 |
| 9,350 | / 97/ | / 87/ | / 81/ | / 73/ |
| 9,500 | / 99/ 98 | 93/ 92 | / 83/ 81 | / 75/ 75 |
| 9,920 | /101/ | 95/ | / 85/ | / 76/ |
| 10,000 | /101 | / 94 | / 83 | / 77 |
| 10,500 | /103 | / 97 | / 85 | / 79 |
| 10,800 | /105 | / 98 | / 87 | / 81 |

**MU-2B B, D (-10), F (-20), G (-30)**

**APPROACH TO STALL**

**TAKEOFF CONFIGURATION 15-30° BANK**




C-9

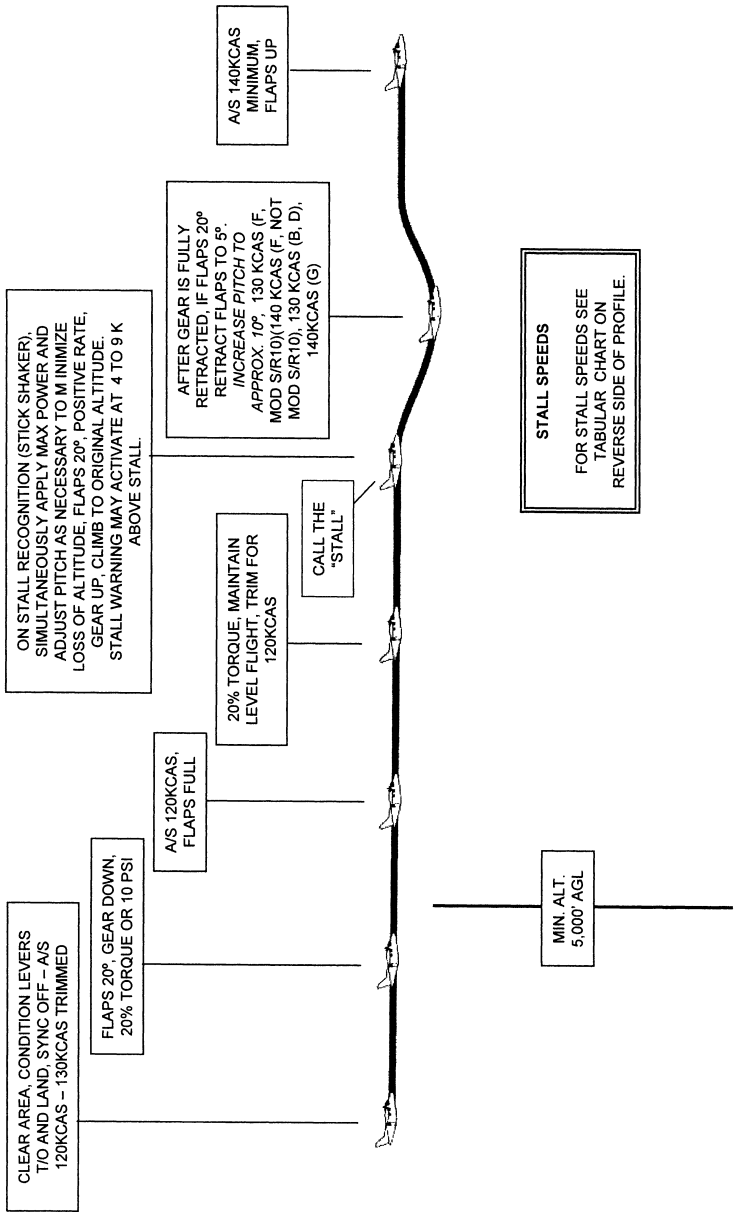
STALL SPEEDS (APPROXIMATE)
AT MAXIMUM GROSS TAKEOFF WEIGHT
B, B+, D, F, G

| BANK ANGLE | 10 | 20 | 30 | 40 | 50 | 60 |
|---|---|---|---|---|---|---|
| FLAPS | B/ B+, D/ F/ G | B/ B+, D/ F/ G | B/ B+, D/ F/ G | B/ B+, D/ F/ G | B/ B+, D/ F/ G | B/ B+, D/ F/ G |
| UP | 96/ 99/102/106 | 99/ 101/105/108 | 103/105/109/112 | 109/111/116/120 | 120/122/126/130 | 136/138/143/148 |
| 5° | 87/ 88/ 96/ 99 | 89/ 90/ 98/101 | 92/ 94/102/105 | 98/100/109/112 | 107/109/119/122 | 120/124/135/138 |
| 20° | 80/ 82/ 86/ 87 | 82/ 84/ 88/ 89 | 86/ 87/ 92/ 93 | 91/ 93/ 97/ 98 | 99/101/107/108 | 113/114/120/122 |
| 40° | 72/ 74/ 77/ 81 | 74/ 75/ 79/ 82 | 77/ 79/ 82/ 86 | 82/ 83/ 87/ 91 | 90/ 91/ 95/100 | 102/103/108/113 |

**MU-2B B, D (-10), F (-20), G (-30)**

**APPROACH TO STALL**

**GEAR DOWN – FULL FLAPS**



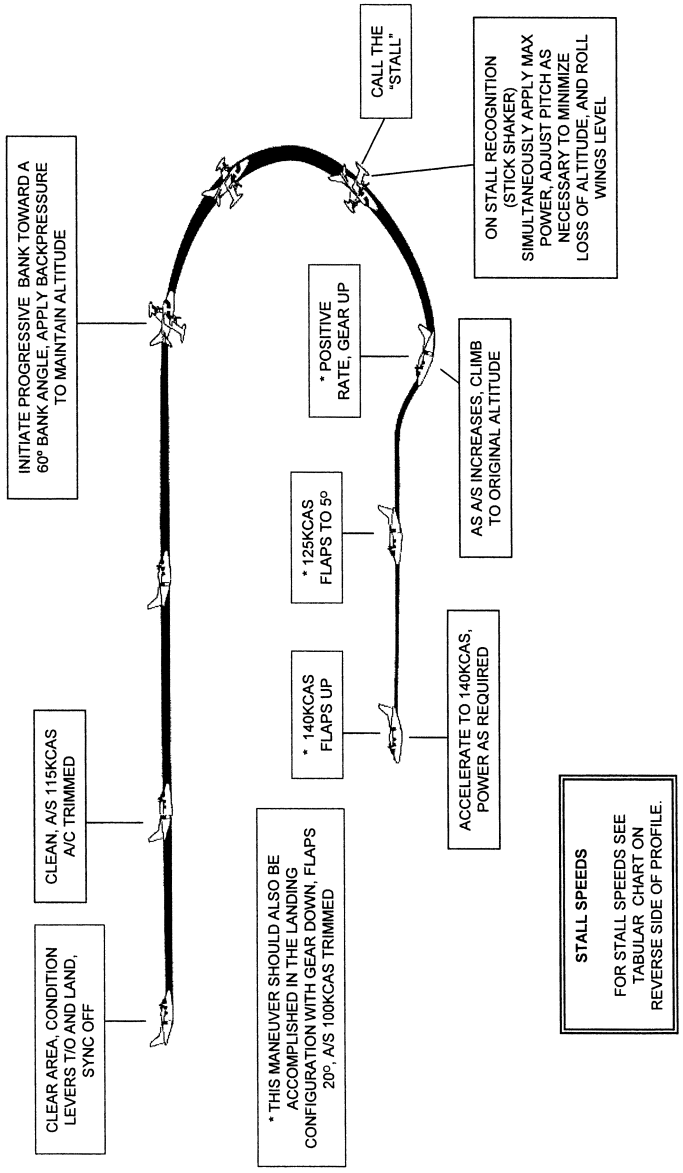

C-10

STALL SPEEDS

| FLAPS SET | 0 | 5 | 20 | 40 |
|---|---|---|---|---|
| GR.WT. | B/ B+, D/ F/ G | B/ B+, D/ F/ G | B/ B+, D/ F/ G | B/ B+, D/ F/ G |
| 7,000 | 85/ 85/ 85 | 76/ 76/ 80 | 70/ 70/ 72 | 63/ 63/ 64 |
| 7,500 | 88/ 88/ 85/ | 78/ 78/ 83/ | 73/ 73/ 74/ | 66/ 63/ 67/ |
| 8,000 | 90/ 90/ 91/ 90 | 81/ 81/ 86/ 84 | 75/ 75/ 77/ 74 | 68/ 68/ 69/ 69 |
| 8,500 | 93/ 93/ 94/ 93 | 83/ 83/ 88/ 87 | 78/ 78/ 79/ 77 | 70/ 70/ 71/ 71 |
| 8,930 | 95/ | 85/ | 79/ | 72/ |
| 9,000 | / 95/ 97/ 95 | / 86/ 91/ 90 | / 80/ 81/ 79 | / 72/ 73/ 73 |
| 9,350 | / 97/ | / 87/ | / 81/ | / 73/ |
| 9,500 | / 99/ 98 | 93/ 92 | / 83/ 81 | / 75/ 75 |
| 9,920 | /101/ | 95/ | / 85/ | / 76/ |
| 10,000 | /101 | / 94 | / 83 | / 77 |
| 10,500 | /103 | / 97 | / 85 | / 79 |
| 10,800 | /105 | / 98 | / 87 | / 81 |

**MU-2B B, D (-10), F (-20), G (-30)**

**ACCELERATED STALLS**



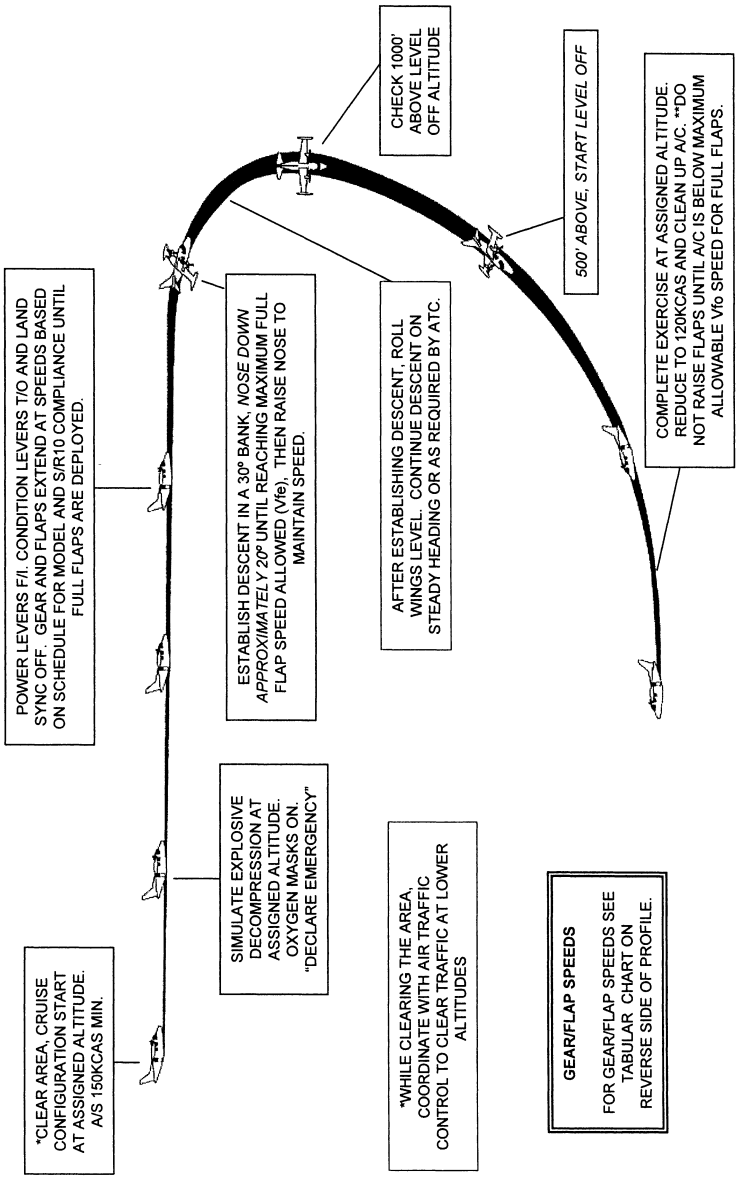

C-11

STALL SPEEDS (APPROXIMATE)
AT MAXIMUM GROSS TAKEOFF WEIGHT
B, B+, D, F, G

| BANK ANGLE | 10 | 20 | 30 | 40 | 50 | 60 |
|---|---|---|---|---|---|---|
| FLAPS | B/ B+, D/ F/ G | B/ B+, D/ F/ G | B/ B+, D/ F/ G | B/ B+, D/ F/ G | B/ B+, D/ F/ G | B/ B+, D/ F/ G |
| UP | 96/ 99/102/106 | 99/ 101/105/108 | 103/105/109/112 | 109/111/116/120 | 120/122/126/130 | 136/138/143/148 |
| 5° | 87/ 88/ 96/ 99 | 89/ 90/ 98/101 | 92/ 94/102/105 | 98/100/109/112 | 107/109/119/122 | 120/124/135/138 |
| 20° | 80/ 82/ 86/ 87 | 82/ 84/ 88/ 89 | 86/ 87/ 92/ 93 | 91/ 93/ 97/ 98 | 99/101/107/108 | 113/114/120/122 |
| 40° | 72/ 74/ 77/ 81 | 74/ 75/ 79/ 82 | 77/ 79/ 82/ 86 | 82/ 83/ 87/ 91 | 90/ 91/ 95/100 | 102/103/108/113 |

**MU-2B B, D (-10), F (-20), G (-30)**

**EMERGENCY DESCENT (LOW SPEED)**

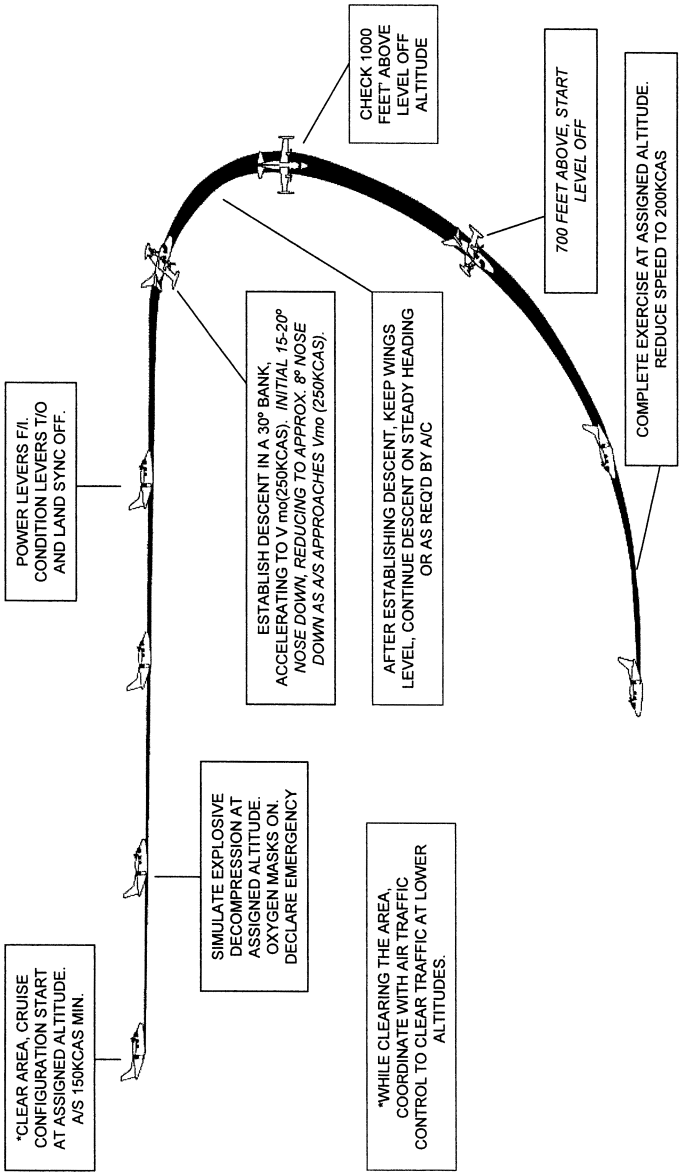



C-12

| GEAR AND FLAP EXTEND SCHEDULE (F+ AND G+ ARE MODIFIED BY S/R10) | | | |
|---|---|---|---|
| GEAR | | | |
| B, D, F, F+: | 160KCAS | | |
| G, G+: | 170KCAS | | |
| FLAPS | 5° | 20° | 40° |
| G: NOT MODIFIED BY S/R10 | 146KCAS | 146KCAS | 120KCAS |
| G+: MODIFIED BY S/R10 AND | 175KCAS | 146KCAS | 120KCAS |
| F: NOT MODIFIED BY S/R10 | 140KCAS | 140KCAS | 120KCAS |
| F+: MODIFIED BY S/R10 AND | 175KCAS | 140KCAS | 120KCAS |
| B, D, F | 140KCAS | 140KCAS | 120KCAS |

**MU-2B B, D (-10), F (-20), G (-30)**

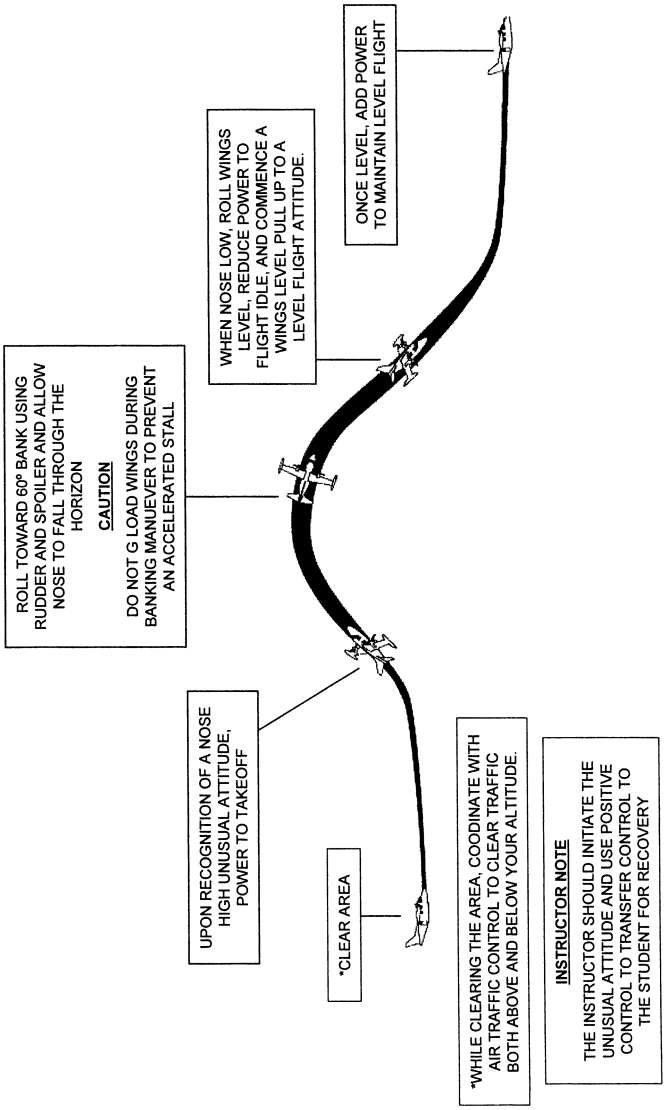
**EMERGENCY DESCENT (HIGH SPEED)**




C-13

**MU-2B B, D (-10), F (-20), G (-30)**

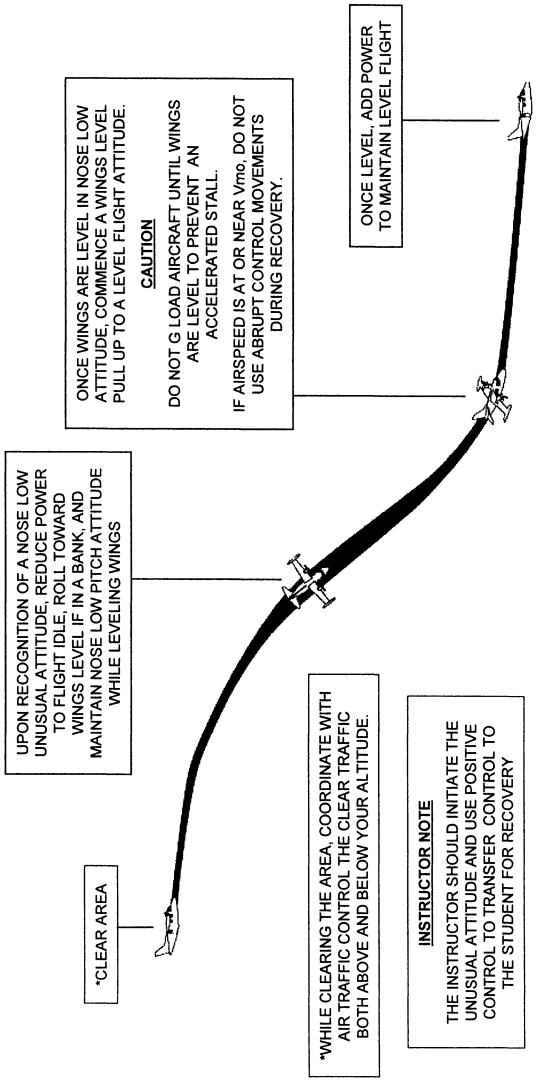
**UNUSUAL ATTITUDE RECOVERY (NOSE HIGH)**




C-14

**MU-2B B, D (-10), F (-20), G (-30)**

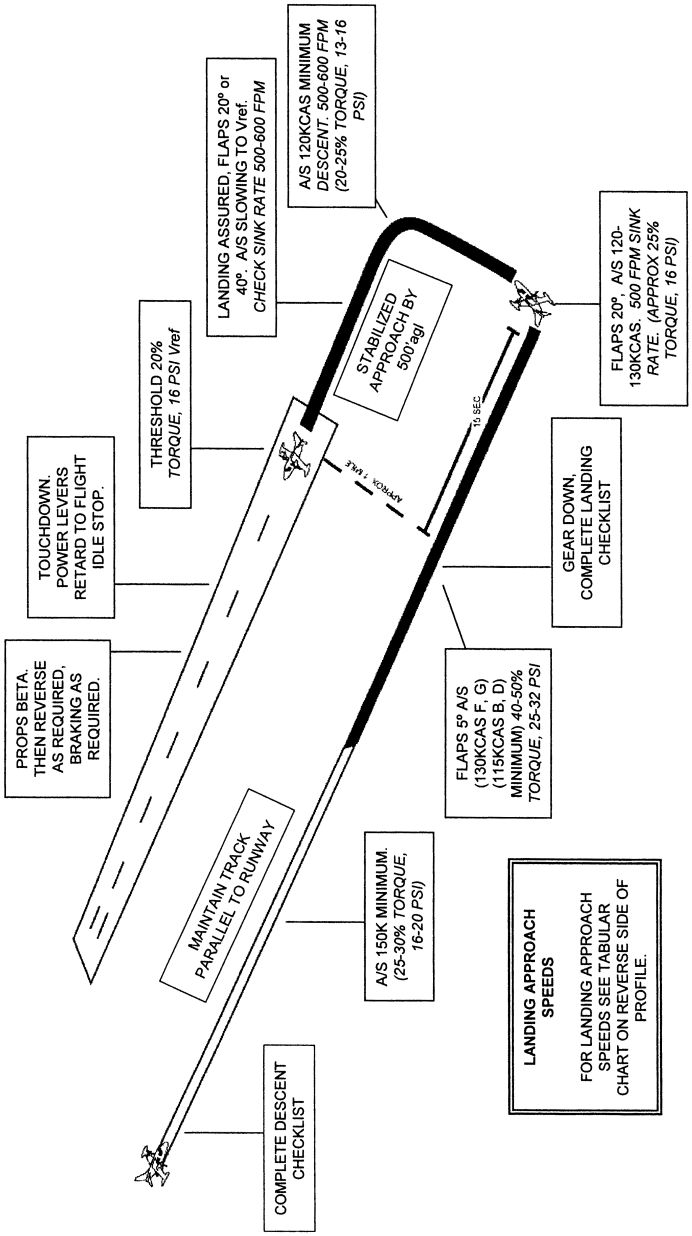
**UNUSUAL ATTITUDE RECOVERY (NOSE LOW)**




C-15

**MU-2B B, D (-10), F (-20), G (-30)**

**NORMAL LANDING (20°or 40° FLAPS)**

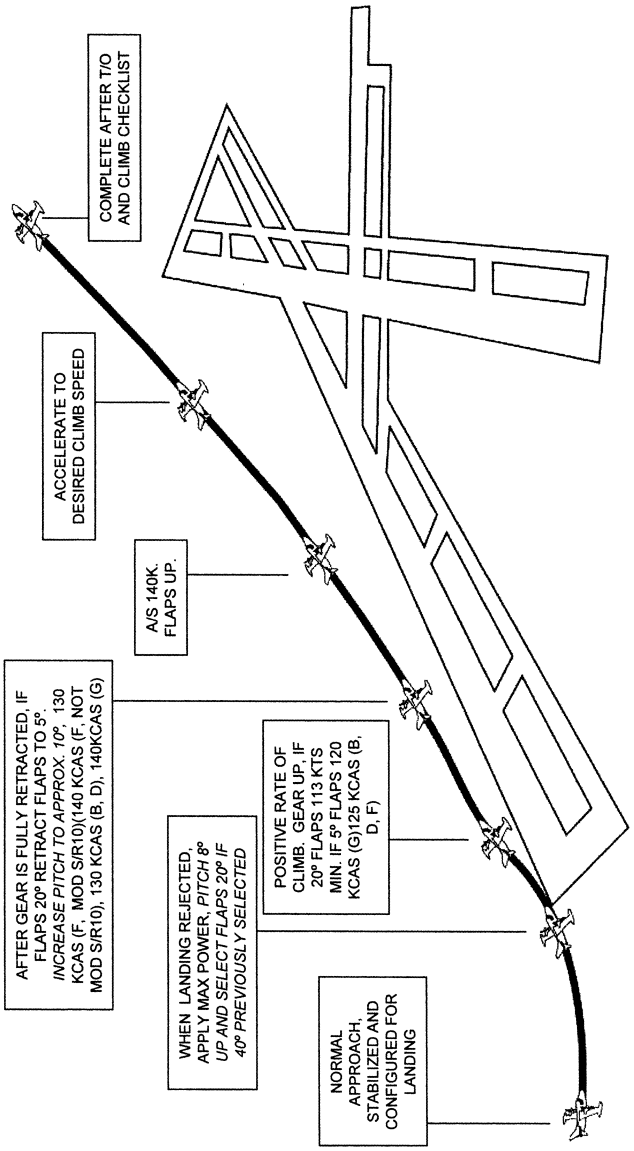



C-16

LANDING APPROACH SPEEDS Vref
B, B+, D, F, G

| | FLAPS 20° (1.3 VSI) | | | | FLAPS 40° (1.5 VSI) | | | |
|---|---|---|---|---|---|---|---|---|
| WEIGHT | B | B+, D | F | G | B | B+, D | F | G |
| 7,000 | 92 | 92 | 93 | | 94 | 94 | | |
| 7,500 | 95 | 95 | 96 | 94 | 98 | 98 | 99 | 100 |
| 8,000 | 98 | 98 | 100 | 97 | 101 | 101 | 103 | 103 |
| 8,500 | | 101 | 103 | 100 | | 104 | 106 | 106 |
| 8,490 | 101 | | | | 104 | | | |
| 8,930 | | 103 | | | | 107 | | |
| 9,000 | | | 106 | 103 | | | 109 | 109 |
| 9,435 | | | 108 | | | | 112 | |
| 9,500 | | | | 105 | | | | 112 |
| 10,000 | | | | 108 | | | | 115 |
| 10,260 | | | | 109 | | | | 117 |

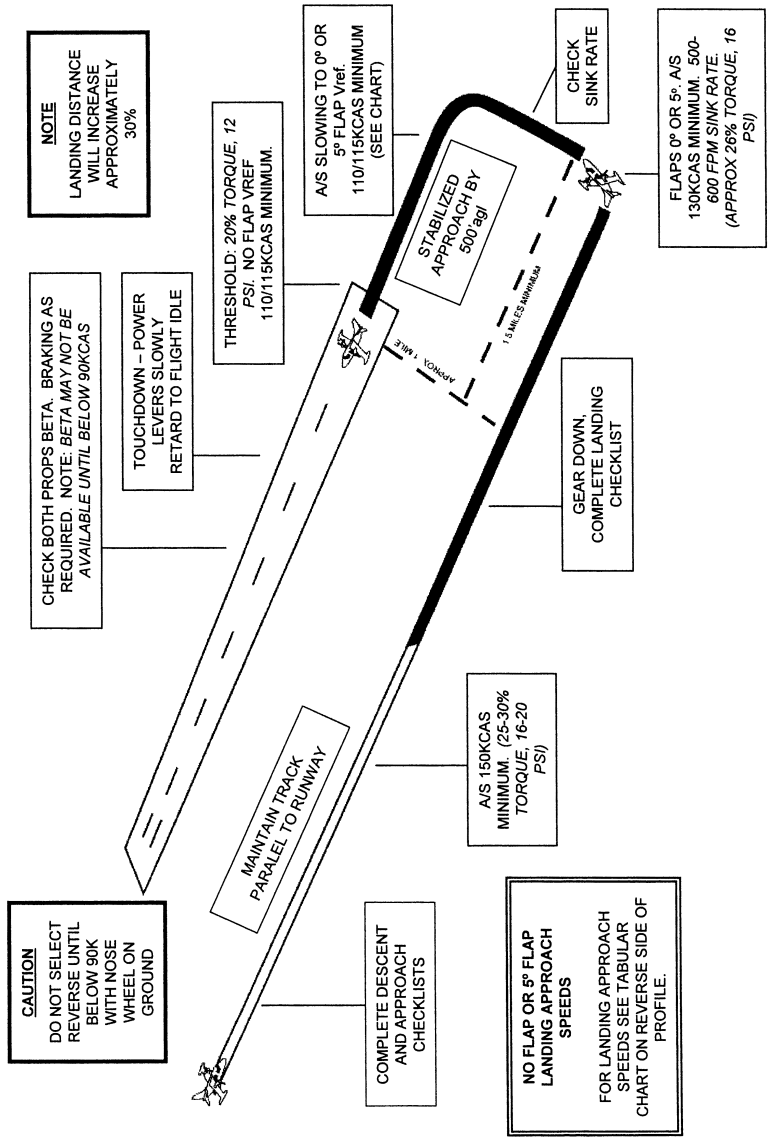
**MU-2B B, D (-10), F (-20), G (-30)**
**GO AROUND - REJECTED LANDING**




C-17

**MU-2B B, D (-10), F (-20), G (-30)**

**NO FLAP OR 5° FLAP LANDING**

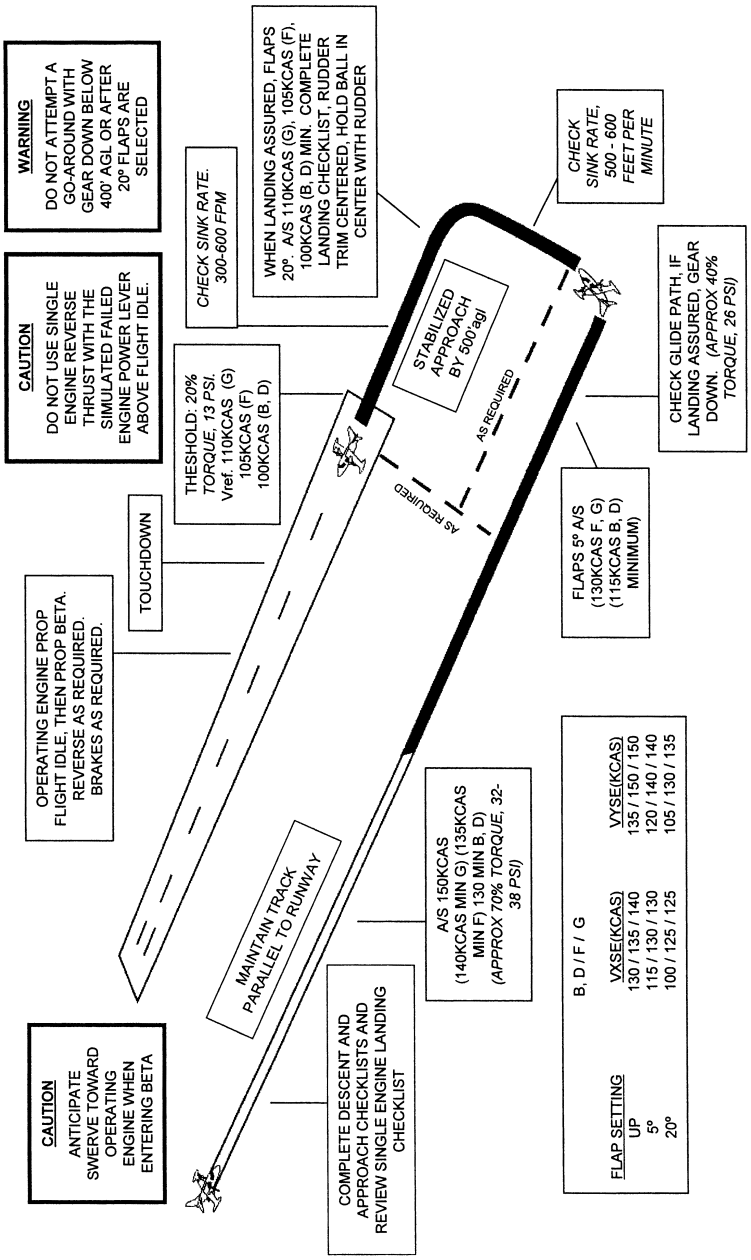



A-18

NO FLAP Vref 1.25 VS1
(BUT NOT BELOW 110KCAS (B, B+, D, F) 115KCAS (G))
USE FOR FLAP UP OR 5°
B, B+, D, F, G

| | FLAPS UP | | | | | FLAPS 5° | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| WEIGHT | B | B+ | D | F | G | B | B+ | D | F | G |
| 7,500 | 110 | 110 | 110 | 110 | | 110 | 110 | 110 | 110 | |
| 8.000 | 113 | 113 | 113 | 114 | 115 | 110 | 110 | 110 | 110 | 115 |
| 8,490 | 117 | | | | | 110 | | | | |
| 8.500 | | 117 | 117 | 118 | 117 | | 110 | 110 | 110 | 115 |
| 8,930 | | 119 | 119 | | | | 110 | 110 | | |
| 9.000 | | | | 122 | 119 | | | | 114 | 115 |
| 9,435 | | | | 124 | | | | | 117 | |
| 9.500 | | | | | 123 | | | | | 115 |
| 10.000 | | | | | 127 | | | | | 118 |
| 10.260 | | | | | 128 | | | | | 120 |

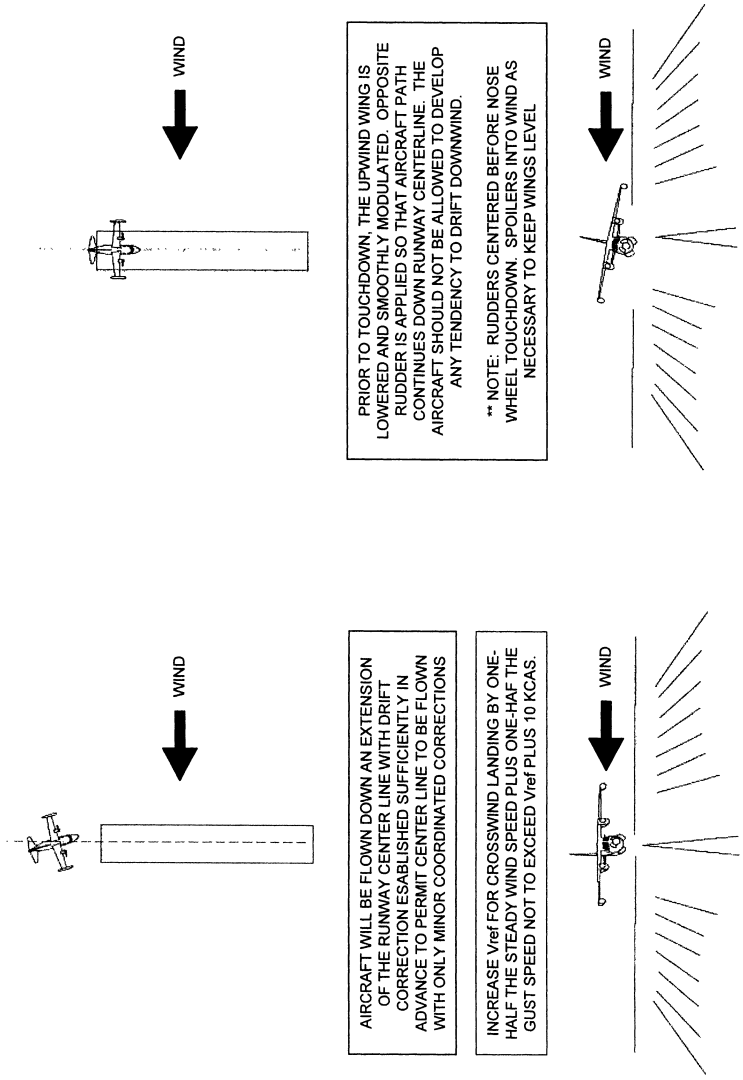
**MU-2B B, D (-10), F (-20), G (-30)**
**ONE ENGINE INOPERATIVE LANDING**




C-19

**MU-2B B, D (-10), F (-20), G (-30)**

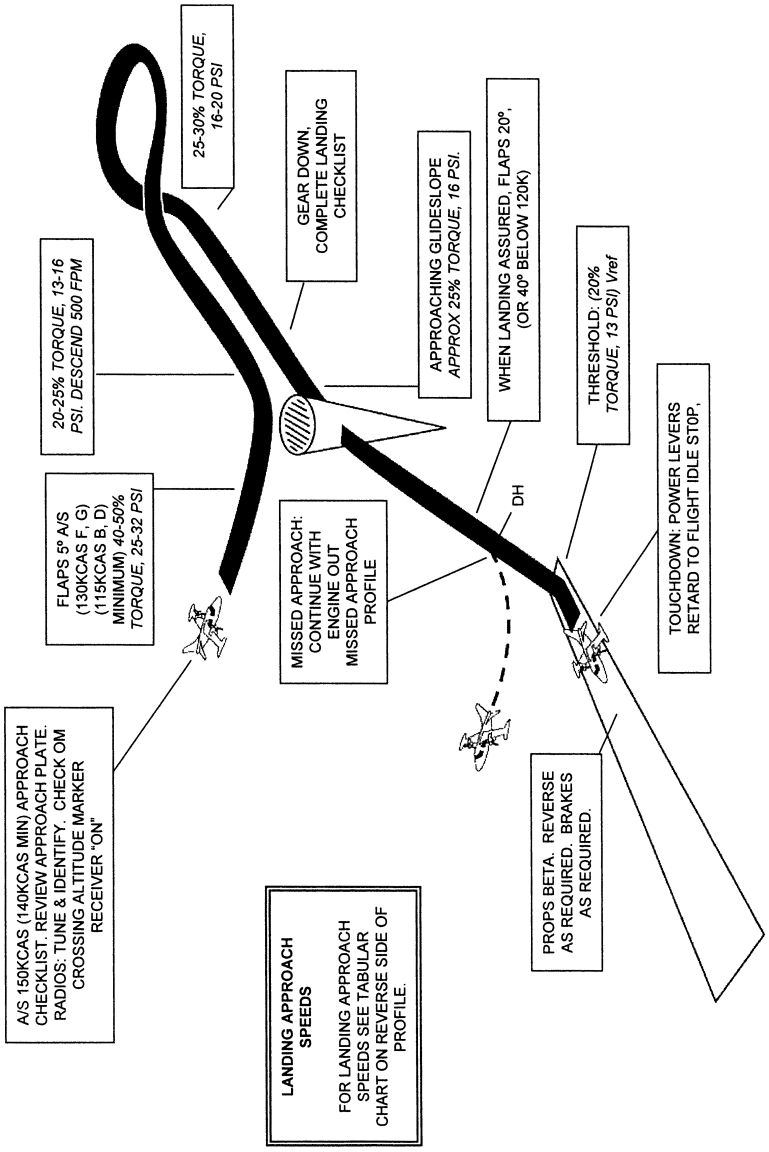
**CROSSWIND LANDING**




C-20

**MU-2B B, D (-10), F (-20), G (-30)**

**ILS AND MISSED APPROACH**

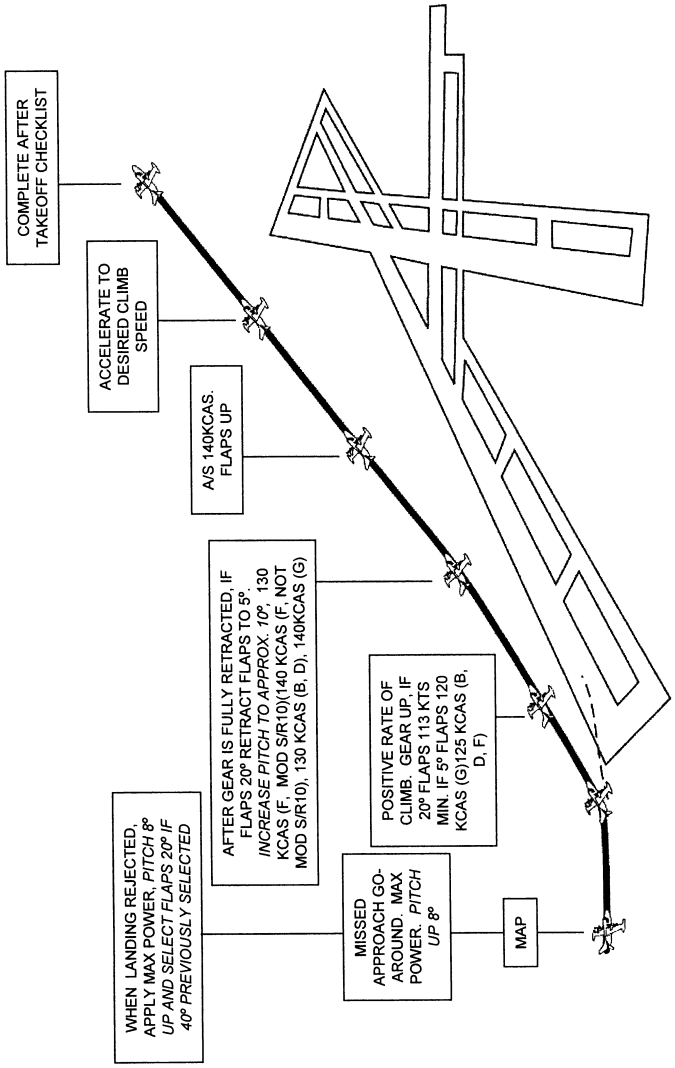



C-21

LANDING APPROACH SPEEDS Vref
B, B+, D, F, G

| | FLAPS 20° (1.3 VSI) | | | | FLAPS 40° (1.5 VSI) | | | |
|---|---|---|---|---|---|---|---|---|
| WEIGHT | B | B+, D | F | G | B | B+, D | F | G |
| 7,000 | 92 | 92 | 93 | | 94 | 94 | | |
| 7,500 | 95 | 95 | 96 | 94 | 98 | 98 | 99 | 100 |
| 8,000 | 98 | 98 | 100 | 97 | 101 | 101 | 103 | 103 |
| 8,500 | | 101 | 103 | 100 | | 104 | 106 | 106 |
| 8,490 | 101 | | | | 104 | | | |
| 8,930 | | 103 | | | | 107 | | |
| 9,000 | | | 106 | 103 | | | 109 | 109 |
| 9,435 | | | 108 | | | | 112 | |
| 9,500 | | | | 105 | | | | 112 |
| 10,000 | | | | 108 | | | | 115 |
| 10,260 | | | | 109 | | | | 117 |

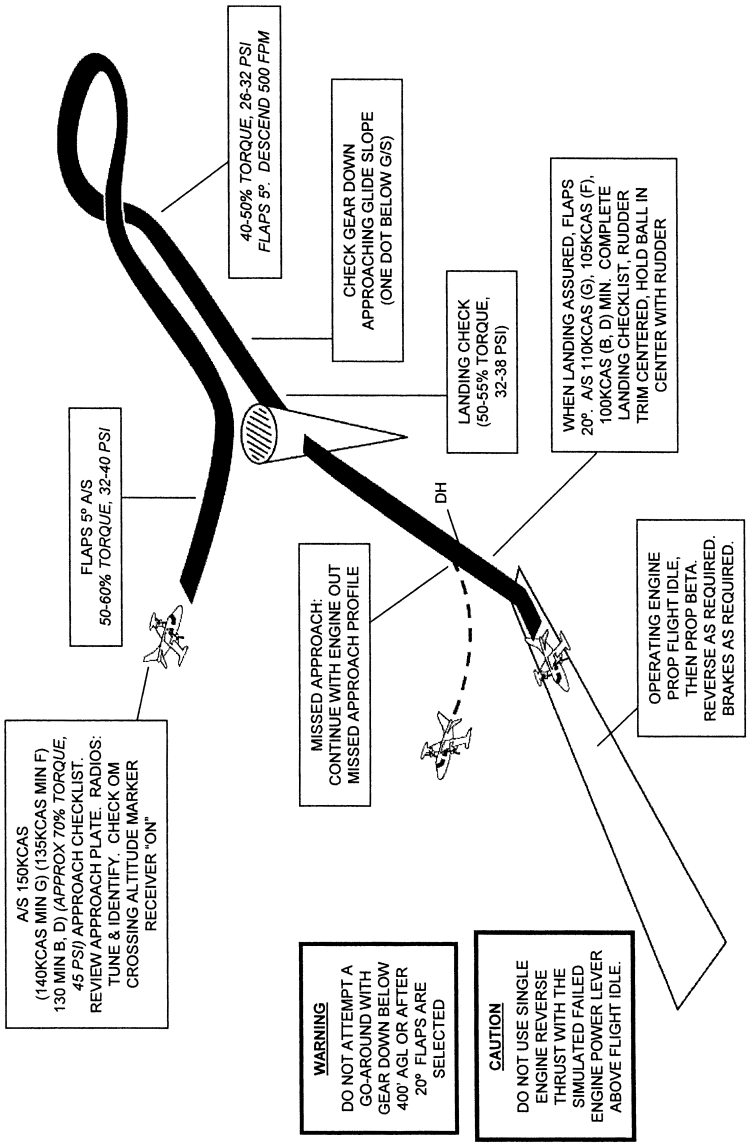
**MU-2B B, D (-10), F (-20), G (-30)**
**TWO ENGINE MISSED APPROACH**




C-22

**MU-2B B, D (-10), F (-20), G (-30)**

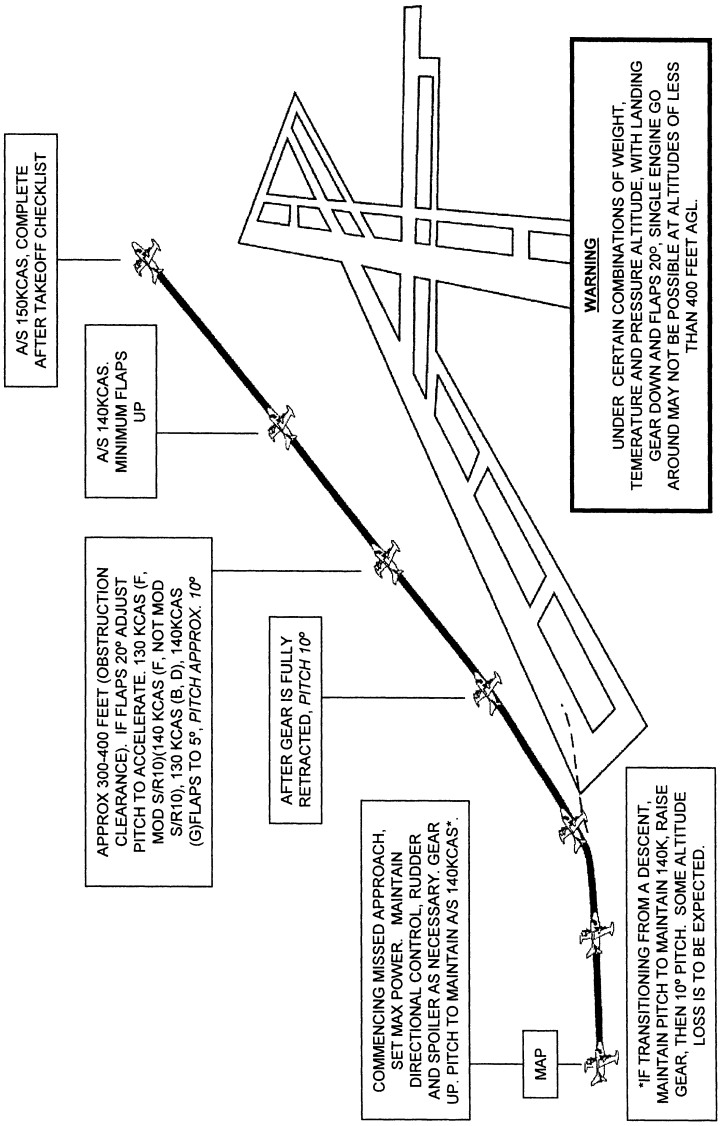
**ONE ENGINE INOPERATIVE ILS AND MISSED APPROACH**




C-23

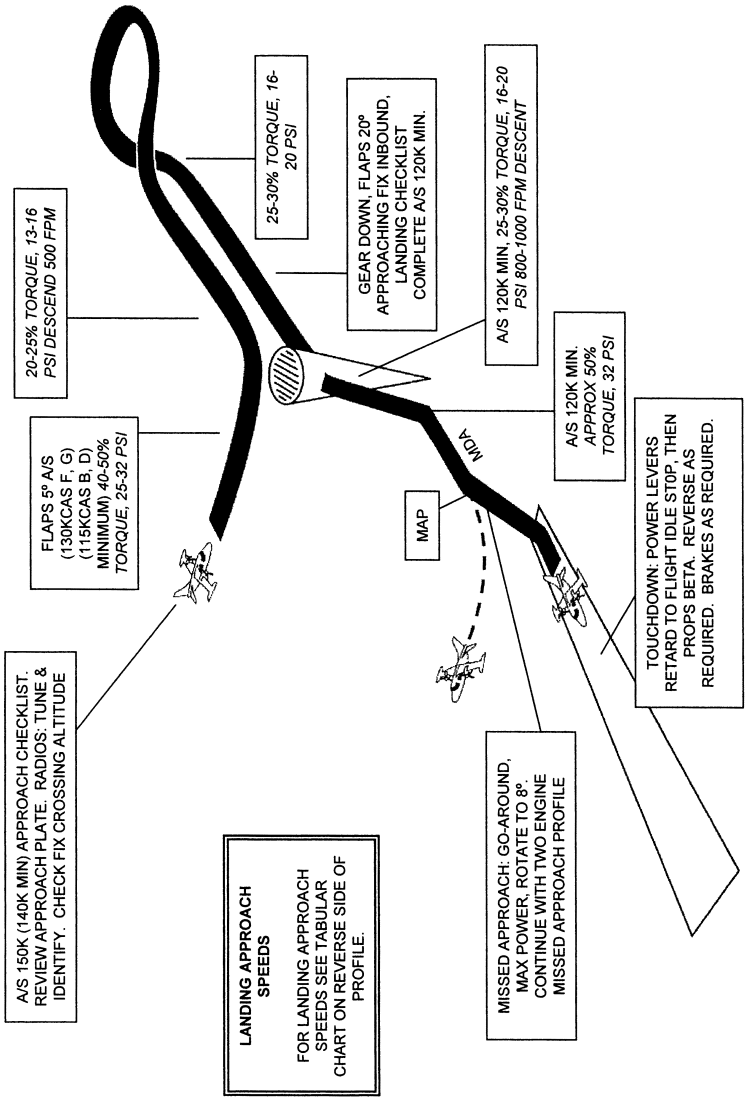
**MU-2B B, D (-10), F (-20), G (-30)**

**ONE ENGINE INOPERATIVE MISSED APPROACH**




C-24

**MU-2B B, D (-10), F (-20), G (-30)**
**NON-PRECISION AND MISSED APPROACH**



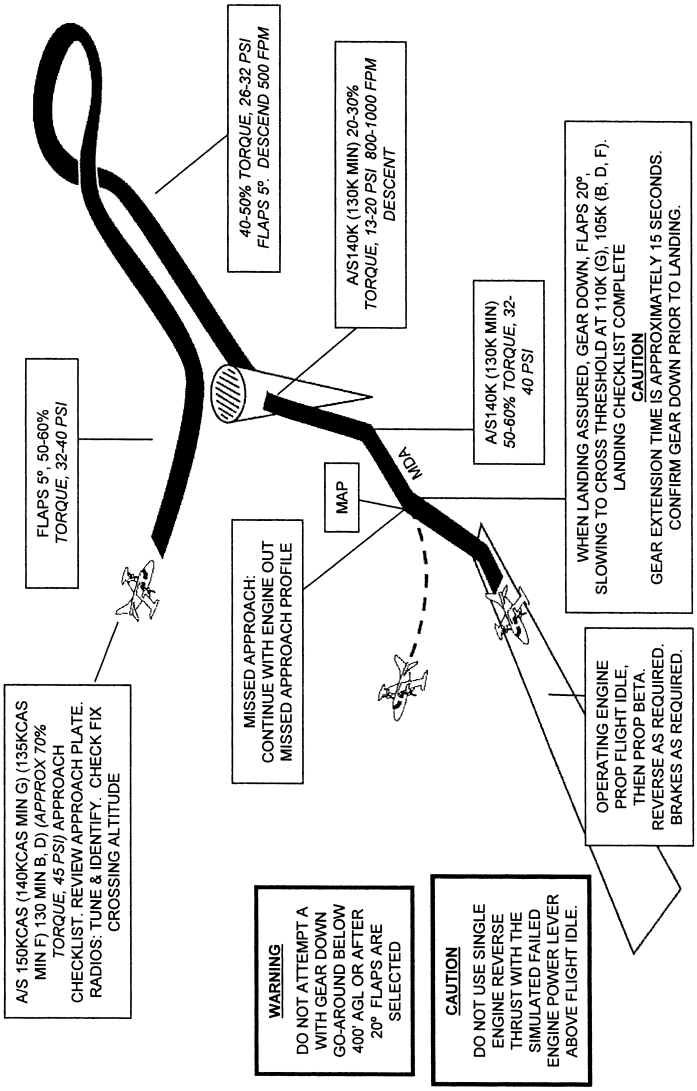

C-25

LANDING APPROACH SPEEDS Vref
B, B+, D, F, G

| | FLAPS 20° (1.3 VSI) | | | | FLAPS 40° (1.5 VSI) | | | |
|---|---|---|---|---|---|---|---|---|
| WEIGHT | B | B+, D | F | G | B | B+, D | F | G |
| 7,000 | 92 | 92 | 93 | | 94 | 94 | | |
| 7,500 | 95 | 95 | 96 | 94 | 98 | 98 | 99 | 100 |
| 8,000 | 98 | 98 | 100 | 97 | 101 | 101 | 103 | 103 |
| 8,500 | | 101 | 103 | 100 | | 104 | 106 | 106 |
| 8,490 | 101 | | | | 104 | | | |
| 8,930 | | 103 | | | | 107 | | |
| 9,000 | | | 106 | 103 | | | 109 | 109 |
| 9,435 | | | 108 | | | | 112 | |
| 9,500 | | | | 105 | | | | 112 |
| 10,000 | | | | 108 | | | | 115 |
| 10,260 | | | | 109 | | | | 117 |

**MU-2B B, D (-10), F (-20), G (-30)**

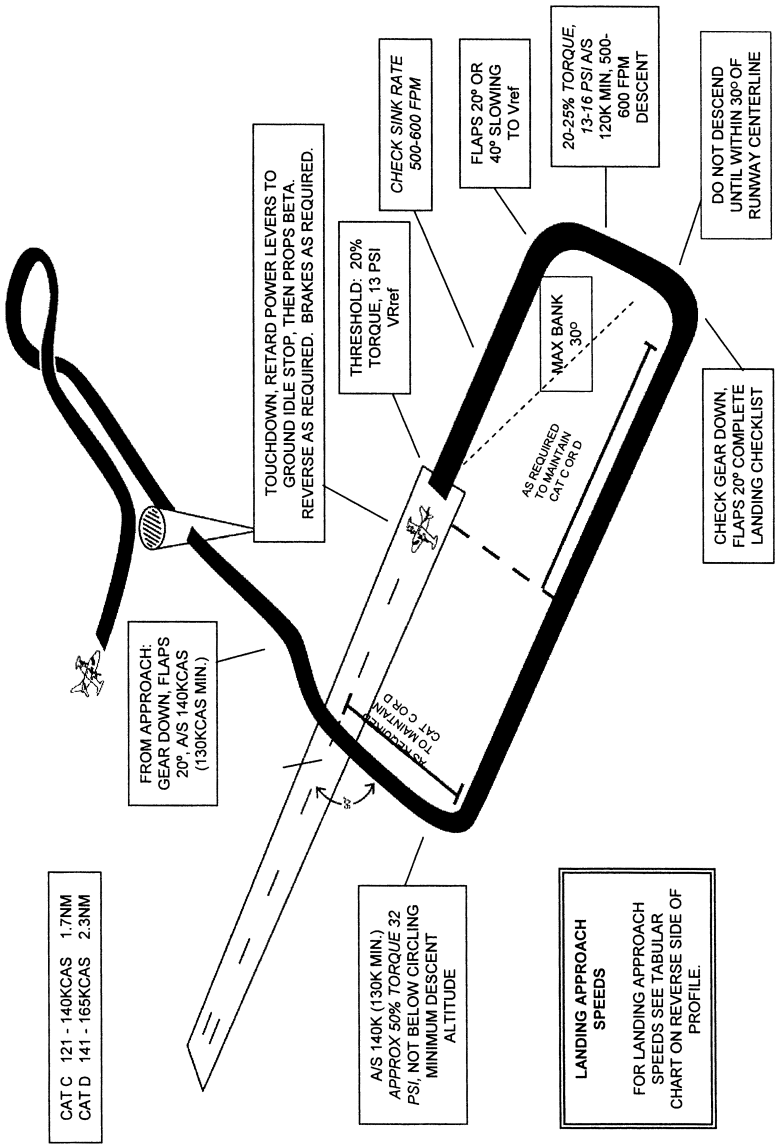
**ONE ENGINE INOPERATIVE NON-PRECISION AND MISSED APPROACH**




C-26

**MU-2B B, D (-10), F (-20), G (-30)**

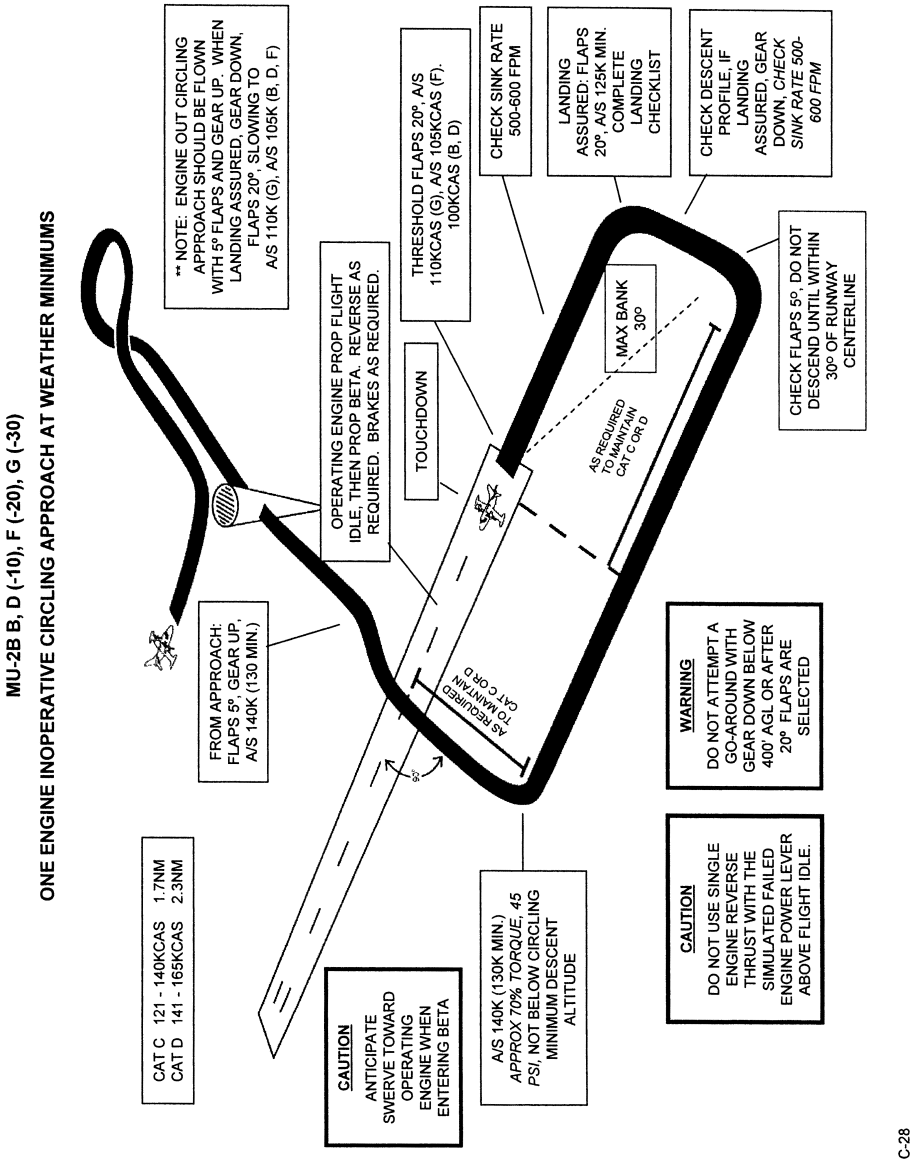
**CIRCLING APPROACH AT WEATHER MINIMUMS**




C-27

LANDING APPROACH SPEEDS Vref
B, B+, D, F, G

| | FLAPS 20° (1.3 VSI) | | | | FLAPS 40° (1.5 VSI) | | | |
|---|---|---|---|---|---|---|---|---|
| WEIGHT | B | B+, D | F | G | B | B+, D | F | G |
| 7,000 | 92 | 92 | 93 | | 94 | 94 | | |
| 7,500 | 95 | 95 | 96 | 94 | 98 | 98 | 99 | 100 |
| 8,000 | 98 | 98 | 100 | 97 | 101 | 101 | 103 | 103 |
| 8,500 | | 101 | 103 | 100 | | 104 | 106 | 106 |
| 8,490 | 101 | | | | 104 | | | |
| 8,930 | | 103 | | | | 107 | | |
| 9,000 | | | 106 | 103 | | | 109 | 109 |
| 9,435 | | | 108 | | | | 112 | |
| 9,500 | | | | 105 | | | | 112 |
| 10,000 | | | | 108 | | | | 115 |
| 10,260 | | | | 109 | | | | 117 |




(D) Each MU–2B profile in its respective section follows the outline below.

(1) Normal Takeoff (5- and 20-degrees flaps).

(2) Takeoff Engine Failure (5- and 20-degrees flaps).

(3) Takeoff Engine Failure on Runway or Rejected Takeoff.

(4) Takeoff Engine Failure after Liftoff—Unable to Climb (Classroom or FTD only).

(5) Steep Turns.

(6) Slow Flight Maneuvers.

(7) One Engine Inoperative Maneuvering/Loss of Directional Control.

(8) Approach to Stall (clean configuration/wings level).

(9) Approach to Stall (takeoff configuration/15- to 30-degrees bank).

(10) Approach to Stall (landing configuration/gear down/40-degrees flaps).

(11) Accelerated Stall (no flaps).

(12) Emergency Descent (low speed).

(13) Emergency Descent (high speed).

(14) Unusual Altitude Recovery (nose high).

(15) Unusual Altitude Recovery (nose low).

(16) Normal Landing (20- and 40-degrees flaps).

(17) Go Around/Rejected Landing.

(18) No Flap or 5-degrees flaps Landing.

(19) One Engine Inoperative Landing (5- and 20-degrees flaps).

(20) Crosswind Landing.

(21) ILS and Missed Approach.

(22) Two Engine Missed Approach.

(23) One Engine Inoperative ILS and Missed Approach.

(24) One Engine Inoperative Missed Approach.

(25) Non-Precision and Missed Approach.

(26) One Engine Inoperative Non-Precision and Missed Approach.

(27) Circling Approach at Weather Minimums.

(28) One Engine Inoperative Circling Approach at Weather Minimums.

*Engine Performance*

(A) The following should be considered in reference to power settings and airspeeds:

(1) Power settings shown in *italics* are provided as guidance only during training and are not referenced in the AFM. Power setting guidance is provided to show the approximate power setting that will produce the desired airspeed or flight condition. Actual power settings may be different from those stated and should be noted by the instructor and student for reference during other maneuvers. Power settings in the profiles are stated in torque or PSI and will vary with aircraft model, engine model, weight, and density altitude. Power settings are based on standard atmospheric conditions.

(2) Some pilots prefer to set power initially using fuel flow, because the fuel flow system is not field adjustable. Fuel flow settings refer to engine operations only. If fuel flow is used to set power for takeoff, check torque and temperature after setting fuel flow and adjust torque or temperature, whichever is limiting, for maximum takeoff power prior to liftoff.

(3) Improperly adjusted torque or improperly calibrated temperatures are a safety of flight issue and must be checked and corrected prior to conducting flight training.

(4) The pilot should refer to the performance section of the airplane flight manual to determine actual speeds required for his/her particular model and specific weight for any given operation.

*In Flight Maneuvering*

(A) Maneuvers conducted at altitude such as stalls and steep turns must always be preceded by clearing turns and at least one crew member must continually clear the flying area during the maneuver. The instructor must emphasize the importance of clearing the area, even if the maneuvers are being done in an FTD or simulator. This will create the habit pattern in the pilot to clear the area before practicing maneuvers.

(B) During stalling maneuvers and upon recognition of the indication of a stall, the pilot must call the ''stall'' to the instructor and then proceed with the recovery. In addition, during training, the pilot must announce the completion of the stall recovery maneuver. Instructors must exercise caution when conducting stall maneuvers and be prepared to take the controls if the safe outcome of the maneuver is in doubt.

(C) During accelerated stall maneuvers, it is important that the instructor pay close attention to the position of the ball throughout the maneuver and recovery so as to maintain coordinated flight. Stall recognition and recovery is the completion criteria, and it is not necessary to continue the stall beyond the stick shaker to aerodynamic buffet.

(D) When demonstrating a loss of directional control with one engine inoperative, the engine failure must only be simulated. During the slowing of the aircraft to demonstrate loss of directional control, the instructor should use the rudder block method to allow the student to experience the loss of directional control associated with VMC, at a speed of approximately 10 knots above actual VMC.

NOTE: To accurately simulate single engine operations, zero thrust must be established. The zero thrust torque setting will vary greatly from model to model. It is important to establish to zero thrust torque setting for your aircraft. This requires that the aircraft be flown on one engine to establish the zero thrust setting. This is accomplished by establishing single engine flight with one propeller feathered and noting the performance with the operating engine at maximum torque or temperature. It is suggested that two airspeeds be established for zero thrust power settings. They are 120 kts, flaps 20, gear up for takeoff and 140 knots, flaps 5, gear up for in-flight and approach maneuvering. Once performance has been established and recorded for each airspeed, restart the other engine and find the torque setting that duplicates the performance (climb or descent rate, airspeed) as was recorded with that propeller feathered. This torque setting will be zero thrust for the simulated inoperative engine. The student/pilot should note that the performance experienced with one engine operating at flight idle, may produce

greater performance than if the engine were stopped and the propeller feathered.

Pre-maneuver briefings for any maneuver that requires either an actual engine shutdown or a simulated engine failure must be undertaken when using an aircraft. In the case of an actual engine shutdown, a minimum altitude of 3,000 ft above ground level (agl) must be used and done in a position where a safe landing can be made at an airport in the event of difficulty.

*Takeoff and Landing*

(A) When using the profiles to establish the procedure for configuring the aircraft for takeoff or landing, it is important to understand that each task for the procedure, as noted on the procedure diagram, establishes the point at which each task should have been completed and not the exact point at which the task should be accomplished unless otherwise stated in the task box. Numbers which represent performance such as descent rates or other maneuvering information that is not contained in the aircraft flight manual are shown in *italics*.

(B) In all takeoff profiles the prompt for the gear to be retracted is ''No Runway Remaining, Gear Up''. This should set the decision point for making a landback after an engine failure and should normally be reached at altitudes of less than 100 ft AGL. It is impractical to attempt a landback from above 100 ft AGL, because it can require distances up to 10,000 ft from the beginning of the takeoff run to bring the aircraft to a stop. But, even on very long runways, landback will not be necessary above 100 ft AGL and above Vyse for the flap configurations, if the single engine climb capability found in the POM charts, with the gear up, is positive (250 fpm or better) and obstacles clearance is not an issue.

(C) The manufacturers FAA-accepted checklists and checklist in Appendix C to this SFAR No. 108 describe a procedure for the discontinuance of flight following an engine failure after takeoff and the realization that the aircraft cannot climb. The corresponding flight profile in this training program is ''Takeoff Engine Failure, Unable to Climb''. This maneuver must not be attempted in the aircraft, but must be the subject of a classroom discussion or be demonstrated in the FTD.

(D) The focus of all landing procedures, whether two engine or engine out, is on a stabilized approach from an altitude of 500 feet. This will not be possible for all approach procedure maneuvering, especially during non-precision or circle to land approaches. Approach procedures for these two approaches should be stabilized from the point at which the pilot leaves the Minimum Descent Altitude for the landing.

(E) When performing one engine inoperative approaches, landings or missed approaches, the instructor must be prepared to add power to the simulated failed engine at the first sign of deteriorating airspeed or other situation that indicates the student's inability to correctly perform the maneuver.

(F) While maneuvering in the pattern or during instrument approach procedures with one engine inoperative, a 30° bank angle must not be exceeded. This will become especially important when executing non-precision and circle to land approaches.

*Emergency and Abnormal Procedures*

(A) During training, either in the FTD or in the aircraft, the performance of emergency and abnormal procedures is critical to the completion of the training program. All emergency and abnormal procedures should be simulated when training in the MU–2B airplane.

(B) When presenting emergency scenarios to the student, the instructor must not introduce multiple emergencies concurrently.

*Scenario Based Training (SBT)*

SBT flight training creates an environment of realism. The SBT programs utilize a highly structured flight operation scenario to simulate the overall flight environment. The pilot is required to plan a routine, point-to-point flight and initiate the flight. During the conduct of the flight, ''reality-based'' abnormal or emergency events are introduced without warning. Because the pilot is constantly operating in the world of unknowns, this type of training also builds in the ''startle factor'', and just as in the real-world, the consequences of the pilot's actions (decisions, judgment, airmanship, tactile skills, etc.) will continue to escalate and affect the outcome of the planned flight. Although flying skills are an integral part of this type of training, SBT enables the pilot to gain experience in dealing with unexpected events and more importantly further enhances the development of good judgment and decisionmaking.

[Doc. No. FAA–2006–24981, 73 FR 7051, Feb. 6, 2008]

## Subpart A—General

SOURCE: Docket No. 18334, 54 FR 34292, Aug. 18, 1989, unless otherwise noted.

### §91.1 Applicability.

(a) Except as provided in paragraphs (b) and (c) of this section and §§91.701 and 91.703, this part prescribes rules governing the operation of aircraft (other than moored balloons, kites, unmanned rockets, and unmanned free balloons, which are governed by part

101 of this chapter, and ultralight vehicles operated in accordance with part 103 of this chapter) within the United States, including the waters within 3 nautical miles of the U.S. coast.

(b) Each person operating an aircraft in the airspace overlying the waters between 3 and 12 nautical miles from the coast of the United States must comply with §§ 91.1 through 91.21; §§ 91.101 through 91.143; §§ 91.151 through 91.159; §§ 91.167 through 91.193; § 91.203; § 91.205; §§ 91.209 through 91.217; § 91.221; §§ 91.303 through 91.319; §§ 91.323 through 91.327; § 91.605; § 91.609; §§ 91.703 through 91.715; and § 91.903.

(c) This part applies to each person on board an aircraft being operated under this part, unless otherwise specified.

(d) This part also establishes requirements for operators to take actions to support the continued airworthiness of each airplane.

[Doc. No. 18334, 54 FR 34292, Aug. 18, 1989, as amended by Amdt. 91–257, 64 FR 1079, Jan. 7, 1999; Amdt. 91–282, 69 FR 44880, July 27, 2004; Amdt. 91–297, 72 FR 63410, Nov. 8, 2007]

### § 91.3 Responsibility and authority of the pilot in command.

(a) The pilot in command of an aircraft is directly responsible for, and is the final authority as to, the operation of that aircraft.

(b) In an in-flight emergency requiring immediate action, the pilot in command may deviate from any rule of this part to the extent required to meet that emergency.

(c) Each pilot in command who deviates from a rule under paragraph (b) of this section shall, upon the request of the Administrator, send a written report of that deviation to the Administrator.

(Approved by the Office of Management and Budget under control number 2120–0005)

### § 91.5 Pilot in command of aircraft requiring more than one required pilot.

No person may operate an aircraft that is type certificated for more than one required pilot flight crewmember unless the pilot in command meets the requirements of § 61.58 of this chapter.

### § 91.7 Civil aircraft airworthiness.

(a) No person may operate a civil aircraft unless it is in an airworthy condition.

(b) The pilot in command of a civil aircraft is responsible for determining whether that aircraft is in condition for safe flight. The pilot in command shall discontinue the flight when unairworthy mechanical, electrical, or structural conditions occur.

### § 91.9 Civil aircraft flight manual, marking, and placard requirements.

(a) Except as provided in paragraph (d) of this section, no person may operate a civil aircraft without complying with the operating limitations specified in the approved Airplane or Rotorcraft Flight Manual, markings, and placards, or as otherwise prescribed by the certificating authority of the country of registry.

(b) No person may operate a U.S.-registered civil aircraft—

(1) For which an Airplane or Rotorcraft Flight Manual is required by § 21.5 of this chapter unless there is available in the aircraft a current, approved Airplane or Rotorcraft Flight Manual or the manual provided for in § 121.141(b); and

(2) For which an Airplane or Rotorcraft Flight Manual is not required by § 21.5 of this chapter, unless there is available in the aircraft a current approved Airplane or Rotorcraft Flight Manual, approved manual material, markings, and placards, or any combination thereof.

(c) No person may operate a U.S.-registered civil aircraft unless that aircraft is identified in accordance with part 45 of this chapter.

(d) Any person taking off or landing a helicopter certificated under part 29 of this chapter at a heliport constructed over water may make such momentary flight as is necessary for takeoff or landing through the prohibited range of the limiting height-speed envelope established for the helicopter if that flight through the prohibited range takes place over water on which a safe ditching can be accomplished and if the helicopter is amphibious or

is equipped with floats or other emergency flotation gear adequate to accomplish a safe emergency ditching on open water.

### §91.11 Prohibition on interference with crewmembers.

No person may assault, threaten, intimidate, or interfere with a crewmember in the performance of the crewmember's duties aboard an aircraft being operated.

### §91.13 Careless or reckless operation.

(a) *Aircraft operations for the purpose of air navigation.* No person may operate an aircraft in a careless or reckless manner so as to endanger the life or property of another.

(b) *Aircraft operations other than for the purpose of air navigation.* No person may operate an aircraft, other than for the purpose of air navigation, on any part of the surface of an airport used by aircraft for air commerce (including areas used by those aircraft for receiving or discharging persons or cargo), in a careless or reckless manner so as to endanger the life or property of another.

### §91.15 Dropping objects.

No pilot in command of a civil aircraft may allow any object to be dropped from that aircraft in flight that creates a hazard to persons or property. However, this section does not prohibit the dropping of any object if reasonable precautions are taken to avoid injury or damage to persons or property.

### §91.17 Alcohol or drugs.

(a) No person may act or attempt to act as a crewmember of a civil aircraft—

(1) Within 8 hours after the consumption of any alcoholic beverage;

(2) While under the influence of alcohol;

(3) While using any drug that affects the person's faculties in any way contrary to safety; or

(4) While having an alcohol concentration of 0.04 or greater in a blood or breath specimen. Alcohol concentration means grams of alcohol per deciliter of blood or grams of alcohol per 210 liters of breath.

(b) Except in an emergency, no pilot of a civil aircraft may allow a person who appears to be intoxicated or who demonstrates by manner or physical indications that the individual is under the influence of drugs (except a medical patient under proper care) to be carried in that aircraft.

(c) A crewmember shall do the following:

(1) On request of a law enforcement officer, submit to a test to indicate the alcohol concentration in the blood or breath, when—

(i) The law enforcement officer is authorized under State or local law to conduct the test or to have the test conducted; and

(ii) The law enforcement officer is requesting submission to the test to investigate a suspected violation of State or local law governing the same or substantially similar conduct prohibited by paragraph (a)(1), (a)(2), or (a)(4) of this section.

(2) Whenever the FAA has a reasonable basis to believe that a person may have violated paragraph (a)(1), (a)(2), or (a)(4) of this section, on request of the FAA, that person must furnish to the FAA the results, or authorize any clinic, hospital, or doctor, or other person to release to the FAA, the results of each test taken within 4 hours after acting or attempting to act as a crewmember that indicates an alcohol concentration in the blood or breath specimen.

(d) Whenever the Administrator has a reasonable basis to believe that a person may have violated paragraph (a)(3) of this section, that person shall, upon request by the Administrator, furnish the Administrator, or authorize any clinic, hospital, doctor, or other person to release to the Administrator, the results of each test taken within 4 hours after acting or attempting to act as a crewmember that indicates the presence of any drugs in the body.

(e) Any test information obtained by the Administrator under paragraph (c) or (d) of this section may be evaluated in determining a person's qualifications for any airman certificate or possible violations of this chapter and may be used as evidence in any legal

proceeding under section 602, 609, or 901 of the Federal Aviation Act of 1958.

[Doc. No. 18334, 54 FR 34292, Aug. 18, 1989, as amended by Amdt. 91–291, June 21, 2006]

### § 91.19 Carriage of narcotic drugs, marihuana, and depressant or stimulant drugs or substances.

(a) Except as provided in paragraph (b) of this section, no person may operate a civil aircraft within the United States with knowledge that narcotic drugs, marihuana, and depressant or stimulant drugs or substances as defined in Federal or State statutes are carried in the aircraft.

(b) Paragraph (a) of this section does not apply to any carriage of narcotic drugs, marihuana, and depressant or stimulant drugs or substances authorized by or under any Federal or State statute or by any Federal or State agency.

### § 91.21 Portable electronic devices.

(a) Except as provided in paragraph (b) of this section, no person may operate, nor may any operator or pilot in command of an aircraft allow the operation of, any portable electronic device on any of the following U.S.-registered civil aircraft:

(1) Aircraft operated by a holder of an air carrier operating certificate or an operating certificate; or

(2) Any other aircraft while it is operated under IFR.

(b) Paragraph (a) of this section does not apply to—

(1) Portable voice recorders;

(2) Hearing aids;

(3) Heart pacemakers;

(4) Electric shavers; or

(5) Any other portable electronic device that the operator of the aircraft has determined will not cause interference with the navigation or communication system of the aircraft on which it is to be used.

(c) In the case of an aircraft operated by a holder of an air carrier operating certificate or an operating certificate, the determination required by paragraph (b)(5) of this section shall be made by that operator of the aircraft on which the particular device is to be used. In the case of other aircraft, the determination may be made by the pilot in command or other operator of the aircraft.

### § 91.23 Truth-in-leasing clause requirement in leases and conditional sales contracts.

(a) Except as provided in paragraph (b) of this section, the parties to a lease or contract of conditional sale involving a U.S.-registered large civil aircraft and entered into after January 2, 1973, shall execute a written lease or contract and include therein a written truth-in-leasing clause as a concluding paragraph in large print, immediately preceding the space for the signature of the parties, which contains the following with respect to each such aircraft:

(1) Identification of the Federal Aviation Regulations under which the aircraft has been maintained and inspected during the 12 months preceding the execution of the lease or contract of conditional sale, and certification by the parties thereto regarding the aircraft's status of compliance with applicable maintenance and inspection requirements in this part for the operation to be conducted under the lease or contract of conditional sale.

(2) The name and address (printed or typed) and the signature of the person responsible for operational control of the aircraft under the lease or contract of conditional sale, and certification that each person understands that person's responsibilities for compliance with applicable Federal Aviation Regulations.

(3) A statement that an explanation of factors bearing on operational control and pertinent Federal Aviation Regulations can be obtained from the nearest FAA Flight Standards district office.

(b) The requirements of paragraph (a) of this section do not apply—

(1) To a lease or contract of conditional sale when—

(i) The party to whom the aircraft is furnished is a foreign air carrier or certificate holder under part 121, 125, 135, or 141 of this chapter, or

(ii) The party furnishing the aircraft is a foreign air carrier or a person operating under part 121, 125, and 141 of this chapter, or a person operating under

part 135 of this chapter having authority to engage in on-demand operations with large aircraft.

(2) To a contract of conditional sale, when the aircraft involved has not been registered anywhere prior to the execution of the contract, except as a new aircraft under a dealer's aircraft registration certificate issued in accordance with §47.61 of this chapter.

(c) No person may operate a large civil aircraft of U.S. registry that is subject to a lease or contract of conditional sale to which paragraph (a) of this section applies, unless—

(1) The lessee or conditional buyer, or the registered owner if the lessee is not a citizen of the United States, has mailed a copy of the lease or contract that complies with the requirements of paragraph (a) of this section, within 24 hours of its execution, to the Aircraft Registration Branch, Attn: Technical Section, P.O. Box 25724, Oklahoma City, OK 73125;

(2) A copy of the lease or contract that complies with the requirements of paragraph (a) of this section is carried in the aircraft. The copy of the lease or contract shall be made available for review upon request by the Administrator, and

(3) The lessee or conditional buyer, or the registered owner if the lessee is not a citizen of the United States, has notified by telephone or in person the FAA Flight Standards district office nearest the airport where the flight will originate. Unless otherwise authorized by that office, the notification shall be given at least 48 hours before takeoff in the case of the first flight of that aircraft under that lease or contract and inform the FAA of—

(i) The location of the airport of departure;

(ii) The departure time; and

(iii) The registration number of the aircraft involved.

(d) The copy of the lease or contract furnished to the FAA under paragraph (c) of this section is commercial or financial information obtained from a person. It is, therefore, privileged and confidential and will not be made available by the FAA for public inspection or copying under 5 U.S.C. 552(b)(4) unless recorded with the FAA under part 49 of this chapter.

(e) For the purpose of this section, a lease means any agreement by a person to furnish an aircraft to another person for compensation or hire, whether with or without flight crewmembers, other than an agreement for the sale of an aircraft and a contract of conditional sale under section 101 of the Federal Aviation Act of 1958. The person furnishing the aircraft is referred to as the lessor, and the person to whom it is furnished the lessee.

(Approved by the Office of Management and Budget under control number 2120–0005)

[Doc. No. 18334, 54 FR 34292, Aug. 18, 1989, as amended by Amdt. 91–212, 54 FR 39293, Sept. 25, 1989; Amdt. 91–253, 62 FR 13253, Mar. 19, 1997; Amdt. 91–267, 66 FR 21066, Apr. 27, 2001]

### §91.25 Aviation Safety Reporting Program: Prohibition against use of reports for enforcement purposes.

The Administrator of the FAA will not use reports submitted to the National Aeronautics and Space Administration under the Aviation Safety Reporting Program (or information derived therefrom) in any enforcement action except information concerning accidents or criminal offenses which are wholly excluded from the Program.

### §§91.27–91.99 [Reserved]

## Subpart B—Flight Rules

SOURCE: Docket No. 18334, 54 FR 34294, Aug. 18, 1989, unless otherwise noted.

GENERAL

### §91.101 Applicability.

This subpart prescribes flight rules governing the operation of aircraft within the United States and within 12 nautical miles from the coast of the United States.

### §91.103 Preflight action.

Each pilot in command shall, before beginning a flight, become familiar with all available information concerning that flight. This information must include—

(a) For a flight under IFR or a flight not in the vicinity of an airport, weather reports and forecasts, fuel requirements, alternatives available if

the planned flight cannot be completed, and any known traffic delays of which the pilot in command has been advised by ATC;

(b) For any flight, runway lengths at airports of intended use, and the following takeoff and landing distance information:

(1) For civil aircraft for which an approved Airplane or Rotorcraft Flight Manual containing takeoff and landing distance data is required, the takeoff and landing distance data contained therein; and

(2) For civil aircraft other than those specified in paragraph (b)(1) of this section, other reliable information appropriate to the aircraft, relating to aircraft performance under expected values of airport elevation and runway slope, aircraft gross weight, and wind and temperature.

### § 91.105 Flight crewmembers at stations.

(a) During takeoff and landing, and while en route, each required flight crewmember shall—

(1) Be at the crewmember station unless the absence is necessary to perform duties in connection with the operation of the aircraft or in connection with physiological needs; and

(2) Keep the safety belt fastened while at the crewmember station.

(b) Each required flight crewmember of a U.S.-registered civil aircraft shall, during takeoff and landing, keep his or her shoulder harness fastened while at his or her assigned duty station. This paragraph does not apply if—

(1) The seat at the crewmember's station is not equipped with a shoulder harness; or

(2) The crewmember would be unable to perform required duties with the shoulder harness fastened.

[Doc. No. 18334, 54 FR 34294, Aug. 18, 1989, as amended by Amdt. 91–231, 57 FR 42671, Sept. 15, 1992]

### § 91.107 Use of safety belts, shoulder harnesses, and child restraint systems.

(a) Unless otherwise authorized by the Administrator—

(1) No pilot may take off a U.S.-registered civil aircraft (except a free balloon that incorporates a basket or gondola, or an airship type certificated before November 2, 1987) unless the pilot in command of that aircraft ensures that each person on board is briefed on how to fasten and unfasten that person's safety belt and, if installed, shoulder harness.

(2) No pilot may cause to be moved on the surface, take off, or land a U.S.-registered civil aircraft (except a free balloon that incorporates a basket or gondola, or an airship type certificated before November 2, 1987) unless the pilot in command of that aircraft ensures that each person on board has been notified to fasten his or her safety belt and, if installed, his or her shoulder harness.

(3) Except as provided in this paragraph, each person on board a U.S.-registered civil aircraft (except a free balloon that incorporates a basket or gondola or an airship type certificated before November 2, 1987) must occupy an approved seat or berth with a safety belt and, if installed, shoulder harness, properly secured about him or her during movement on the surface, takeoff, and landing. For seaplane and float equipped rotorcraft operations during movement on the surface, the person pushing off the seaplane or rotorcraft from the dock and the person mooring the seaplane or rotorcraft at the dock are excepted from the preceding seating and safety belt requirements. Notwithstanding the preceding requirements of this paragraph, a person may:

(i) Be held by an adult who is occupying an approved seat or berth, provided that the person being held has not reached his or her second birthday and does not occupy or use any restraining device;

(ii) Use the floor of the aircraft as a seat, provided that the person is on board for the purpose of engaging in sport parachuting; or

(iii) Notwithstanding any other requirement of this chapter, occupy an approved child restraint system furnished by the operator or one of the persons described in paragraph (a)(3)(iii)(A) of this section provided that:

(A) The child is accompanied by a parent, guardian, or attendant designated by the child's parent or guardian to attend to the safety of the child during the flight;

(B) Except as provided in paragraph (a)(3)(iii)(B)(*4*) of this action, the approved child restraint system bears one or more labels as follows:

(*1*) Seats manufactured to U.S. standards between January 1, 1981, and February 25, 1985, must bear the label: ''This child restraint system conforms to all applicable Federal motor vehicle safety standards'';

(*2*) Seats manufactured to U.S. standards on or after February 26, 1985, must bear two labels:

(*i*) ''This child restraint system conforms to all applicable Federal motor vehicle safety standards''; and

(*ii*) ''THIS RESTRAINT IS CERTIFIED FOR USE IN MOTOR VEHICLES AND AIRCRAFT'' in red lettering;

(*3*) Seats that do not qualify under paragraphs (a)(3)(iii)(B)(*1*) and (a)(3)(iii)(B)(*2*) of this section must bear a label or markings showing:

(*i*) That the seat was approved by a foreign government;

(*ii*) That the seat was manufactured under the standards of the United Nations; or

(*iii*) That the seat or child restraint device furnished by the operator was approved by the FAA through Type Certificate or Supplemental Type Certificate.

(*iv*) That the seat or child restraint device furnished by the operator, or one of the persons described in paragraph (a) (3) (iii) (A) of this section, was approved by the FAA in accordance with §21.305(d) or Technical Standard Order C–100b, or a later version.

(*4*) Except as provided in §91.107(a)(3)(iii)(B)(*3*)(*iii*) and §91.107(a)(3)(iii)(B)(*3*)(*iv*), booster-type child restraint systems (as defined in Federal Motor Vehicle Safety Standard No. 213 (49 CFR 571.213)), vest- and harness-type child restraint systems, and lap held child restraints are not approved for use in aircraft; and

(C) The operator complies with the following requirements:

(*1*) The restraint system must be properly secured to an approved forward-facing seat or berth;

(*2*) The child must be properly secured in the restraint system and must not exceed the specified weight limit for the restraint system; and

(*3*) The restraint system must bear the appropriate label(s).

(b) Unless otherwise stated, this section does not apply to operations conducted under part 121, 125, or 135 of this chapter. Paragraph (a)(3) of this section does not apply to persons subject to §91.105.

[Doc. No. 26142, 57 FR 42671, Sept. 15, 1992, as amended by Amdt. 91–250, 61 FR 28421, June 4, 1996; Amdt. 91–289, 70 FR 50906, Aug. 26, 2005; Amdt. 91–292, 71 FR 40009, July 14, 2006]

### §91.109 Flight instruction; Simulated instrument flight and certain flight tests.

(a) No person may operate a civil aircraft (except a manned free balloon) that is being used for flight instruction unless that aircraft has fully functioning dual controls. However, instrument flight instruction may be given in a single-engine airplane equipped with a single, functioning throwover control wheel in place of fixed, dual controls of the elevator and ailerons when—

(1) The instructor has determined that the flight can be conducted safely; and

(2) The person manipulating the controls has at least a private pilot certificate with appropriate category and class ratings.

(b) No person may operate a civil aircraft in simulated instrument flight unless—

(1) The other control seat is occupied by a safety pilot who possesses at least a private pilot certificate with category and class ratings appropriate to the aircraft being flown.

(2) The safety pilot has adequate vision forward and to each side of the aircraft, or a competent observer in the aircraft adequately supplements the vision of the safety pilot; and

(3) Except in the case of lighter-than-air aircraft, that aircraft is equipped with fully functioning dual controls. However, simulated instrument flight may be conducted in a single-engine

airplane, equipped with a single, functioning, throwover control wheel, in place of fixed, dual controls of the elevator and ailerons, when—

(i) The safety pilot has determined that the flight can be conducted safely; and

(ii) The person manipulating the controls has at least a private pilot certificate with appropriate category and class ratings.

(c) No person may operate a civil aircraft that is being used for a flight test for an airline transport pilot certificate or a class or type rating on that certificate, or for a part 121 proficiency flight test, unless the pilot seated at the controls, other than the pilot being checked, is fully qualified to act as pilot in command of the aircraft.

### § 91.111 Operating near other aircraft.

(a) No person may operate an aircraft so close to another aircraft as to create a collision hazard.

(b) No person may operate an aircraft in formation flight except by arrangement with the pilot in command of each aircraft in the formation.

(c) No person may operate an aircraft, carrying passengers for hire, in formation flight.

### § 91.113 Right-of-way rules: Except water operations.

(a) *Inapplicability*. This section does not apply to the operation of an aircraft on water.

(b) *General*. When weather conditions permit, regardless of whether an operation is conducted under instrument flight rules or visual flight rules, vigilance shall be maintained by each person operating an aircraft so as to see and avoid other aircraft. When a rule of this section gives another aircraft the right-of-way, the pilot shall give way to that aircraft and may not pass over, under, or ahead of it unless well clear.

(c) *In distress*. An aircraft in distress has the right-of-way over all other air traffic.

(d) *Converging*. When aircraft of the same category are converging at approximately the same altitude (except head-on, or nearly so), the aircraft to the other's right has the right-of-way. If the aircraft are of different categories—

(1) A balloon has the right-of-way over any other category of aircraft;

(2) A glider has the right-of-way over an airship, powered parachute, weight-shift-control aircraft, airplane, or rotorcraft.

(3) An airship has the right-of-way over a powered parachute, weight-shift-control aircraft, airplane, or rotorcraft.

However, an aircraft towing or refueling other aircraft has the right-of-way over all other engine-driven aircraft.

(e) *Approaching head-on*. When aircraft are approaching each other head-on, or nearly so, each pilot of each aircraft shall alter course to the right.

(f) *Overtaking*. Each aircraft that is being overtaken has the right-of-way and each pilot of an overtaking aircraft shall alter course to the right to pass well clear.

(g) *Landing*. Aircraft, while on final approach to land or while landing, have the right-of-way over other aircraft in flight or operating on the surface, except that they shall not take advantage of this rule to force an aircraft off the runway surface which has already landed and is attempting to make way for an aircraft on final approach. When two or more aircraft are approaching an airport for the purpose of landing, the aircraft at the lower altitude has the right-of-way, but it shall not take advantage of this rule to cut in front of another which is on final approach to land or to overtake that aircraft.

[Doc. No. 18334, 54 FR 34294, Aug. 18, 1989, as amended by Amdt. 91-282, 69 FR 44880, July 27, 2004]

### § 91.115 Right-of-way rules: Water operations.

(a) *General*. Each person operating an aircraft on the water shall, insofar as possible, keep clear of all vessels and avoid impeding their navigation, and shall give way to any vessel or other aircraft that is given the right-of-way by any rule of this section.

(b) *Crossing*. When aircraft, or an aircraft and a vessel, are on crossing courses, the aircraft or vessel to the other's right has the right-of-way.

(c) *Approaching head-on*. When aircraft, or an aircraft and a vessel, are approaching head-on, or nearly so, each

shall alter its course to the right to keep well clear.

(d) *Overtaking*. Each aircraft or vessel that is being overtaken has the right-of-way, and the one overtaking shall alter course to keep well clear.

(e) *Special circumstances*. When aircraft, or an aircraft and a vessel, approach so as to involve risk of collision, each aircraft or vessel shall proceed with careful regard to existing circumstances, including the limitations of the respective craft.

### §91.117 Aircraft speed.

(a) Unless otherwise authorized by the Administrator, no person may operate an aircraft below 10,000 feet MSL at an indicated airspeed of more than 250 knots (288 m.p.h.).

(b) Unless otherwise authorized or required by ATC, no person may operate an aircraft at or below 2,500 feet above the surface within 4 nautical miles of the primary airport of a Class C or Class D airspace area at an indicated airspeed of more than 200 knots (230 mph.). This paragraph (b) does not apply to any operations within a Class B airspace area. Such operations shall comply with paragraph (a) of this section.

(c) No person may operate an aircraft in the airspace underlying a Class B airspace area designated for an airport or in a VFR corridor designated through such a Class B airspace area, at an indicated airspeed of more than 200 knots (230 mph).

(d) If the minimum safe airspeed for any particular operation is greater than the maximum speed prescribed in this section, the aircraft may be operated at that minimum speed.

[Doc. No. 18334, 54 FR 34292, Aug. 18, 1989, as amended by Amdt. 91–219, 55 FR 34708, Aug. 24, 1990; Amdt. 91–227, 56 FR 65657, Dec. 17, 1991; Amdt. 91–233, 58 FR 43554, Aug. 17, 1993]

### §91.119 Minimum safe altitudes: General.

Except when necessary for takeoff or landing, no person may operate an aircraft below the following altitudes:

(a) *Anywhere*. An altitude allowing, if a power unit fails, an emergency landing without undue hazard to persons or property on the surface.

(b) *Over congested areas*. Over any congested area of a city, town, or settlement, or over any open air assembly of persons, an altitude of 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft.

(c) *Over other than congested areas*. An altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure.

(d) *Helicopters*. Helicopters may be operated at less than the minimums prescribed in paragraph (b) or (c) of this section if the operation is conducted without hazard to persons or property on the surface. In addition, each person operating a helicopter shall comply with any routes or altitudes specifically prescribed for helicopters by the Administrator.

### §91.121 Altimeter settings.

(a) Each person operating an aircraft shall maintain the cruising altitude or flight level of that aircraft, as the case may be, by reference to an altimeter that is set, when operating—

(1) Below 18,000 feet MSL, to—

(i) The current reported altimeter setting of a station along the route and within 100 nautical miles of the aircraft;

(ii) If there is no station within the area prescribed in paragraph (a)(1)(i) of this section, the current reported altimeter setting of an appropriate available station; or

(iii) In the case of an aircraft not equipped with a radio, the elevation of the departure airport or an appropriate altimeter setting available before departure; or

(2) At or above 18,000 feet MSL, to 29.92″ Hg.

(b) The lowest usable flight level is determined by the atmospheric pressure in the area of operation as shown in the following table:

| Current altimeter setting | Lowest usable flight level |
|---|---|
| 29.92 (or higher) | 180 |
| 29.91 through 29.42 | 185 |
| 29.41 through 28.92 | 190 |
| 28.91 through 28.42 | 195 |

| Current altimeter setting | Lowest usable flight level |
|---|---|
| 28.41 through 27.92 | 200 |
| 27.91 through 27.42 | 205 |
| 27.41 through 26.92 | 210 |

(c) To convert minimum altitude prescribed under §§ 91.119 and 91.177 to the minimum flight level, the pilot shall take the flight level equivalent of the minimum altitude in feet and add the appropriate number of feet specified below, according to the current reported altimeter setting:

| Current altimeter setting | Adjustment factor |
|---|---|
| 29.92 (or higher) | None |
| 29.91 through 29.42 | 500 |
| 29.41 through 28.92 | 1,000 |
| 28.91 through 28.42 | 1,500 |
| 28.41 through 27.92 | 2,000 |
| 27.91 through 27.42 | 2,500 |
| 27.41 through 26.92 | 3,000 |

### § 91.123 Compliance with ATC clearances and instructions.

(a) When an ATC clearance has been obtained, no pilot in command may deviate from that clearance unless an amended clearance is obtained, an emergency exists, or the deviation is in response to a traffic alert and collision avoidance system resolution advisory. However, except in Class A airspace, a pilot may cancel an IFR flight plan if the operation is being conducted in VFR weather conditions. When a pilot is uncertain of an ATC clearance, that pilot shall immediately request clarification from ATC.

(b) Except in an emergency, no person may operate an aircraft contrary to an ATC instruction in an area in which air traffic control is exercised.

(c) Each pilot in command who, in an emergency, or in response to a traffic alert and collision avoidance system resolution advisory, deviates from an ATC clearance or instruction shall notify ATC of that deviation as soon as possible.

(d) Each pilot in command who (though not deviating from a rule of this subpart) is given priority by ATC in an emergency, shall submit a detailed report of that emergency within 48 hours to the manager of that ATC facility, if requested by ATC.

(e) Unless otherwise authorized by ATC, no person operating an aircraft may operate that aircraft according to any clearance or instruction that has been issued to the pilot of another aircraft for radar air traffic control purposes.

(Approved by the Office of Management and Budget under control number 2120–0005)

[Doc. No. 18834, 54 FR 34294, Aug. 18, 1989, as amended by Amdt. 91–227, 56 FR 65658, Dec. 17, 1991; Amdt. 91–244, 60 FR 50679, Sept. 29, 1995]

### § 91.125 ATC light signals.

ATC light signals have the meaning shown in the following table:

| Color and type of signal | Meaning with respect to aircraft on the surface | Meaning with respect to aircraft in flight |
|---|---|---|
| Steady green | Cleared for takeoff | Cleared to land. |
| Flashing green | Cleared to taxi | Return for landing (to be followed by steady green at proper time). |
| Steady red | Stop | Give way to other aircraft and continue circling. |
| Flashing red | Taxi clear of runway in use. | Airport unsafe—do not land. |
| Flashing white | Return to starting point on airport. | Not applicable. |
| Alternating red and green. | Exercise extreme caution. | Exercise extreme caution. |

### § 91.126 Operating on or in the vicinity of an airport in Class G airspace.

(a) *General.* Unless otherwise authorized or required, each person operating an aircraft on or in the vicinity of an airport in a Class G airspace area must comply with the requirements of this section.

(b) *Direction of turns.* When approaching to land at an airport without an operating control tower in Class G airspace—

(1) Each pilot of an airplane must make all turns of that airplane to the left unless the airport displays approved light signals or visual markings indicating that turns should be made to the right, in which case the pilot must make all turns to the right; and

(2) Each pilot of a helicopter or a powered parachute must avoid the flow of fixed-wing aircraft.

(c) *Flap settings.* Except when necessary for training or certification, the pilot in command of a civil turbojet-powered aircraft must use, as a final

flap setting, the minimum certificated landing flap setting set forth in the approved performance information in the Airplane Flight Manual for the applicable conditions. However, each pilot in command has the final authority and responsibility for the safe operation of the pilot's airplane, and may use a different flap setting for that airplane if the pilot determines that it is necessary in the interest of safety.

(d) *Communications with control towers.* Unless otherwise authorized or required by ATC, no person may operate an aircraft to, from, through, or on an airport having an operational control tower unless two-way radio communications are maintained between that aircraft and the control tower. Communications must be established prior to 4 nautical miles from the airport, up to and including 2,500 feet AGL. However, if the aircraft radio fails in flight, the pilot in command may operate that aircraft and land if weather conditions are at or above basic VFR weather minimums, visual contact with the tower is maintained, and a clearance to land is received. If the aircraft radio fails while in flight under IFR, the pilot must comply with §91.185.

[Doc. No. 24458, 56 FR 65658, Dec. 17, 1991, as amended by Amdt. 91–239, 59 FR 11693, Mar. 11, 1994; Amdt. 91–282, 69 FR 44880, July 27, 2004]

### §91.127 Operating on or in the vicinity of an airport in Class E airspace.

(a) Unless otherwise required by part 93 of this chapter or unless otherwise authorized or required by the ATC facility having jurisdiction over the Class E airspace area, each person operating an aircraft on or in the vicinity of an airport in a Class E airspace area must comply with the requirements of §91.126.

(b) *Departures.* Each pilot of an aircraft must comply with any traffic patterns established for that airport in part 93 of this chapter.

(c) *Communications with control towers.* Unless otherwise authorized or required by ATC, no person may operate an aircraft to, from, through, or on an airport having an operational control tower unless two-way radio communications are maintained between that aircraft and the control tower. Communications must be established prior to 4 nautical miles from the airport, up to and including 2,500 feet AGL. However, if the aircraft radio fails in flight, the pilot in command may operate that aircraft and land if weather conditions are at or above basic VFR weather minimums, visual contact with the tower is maintained, and a clearance to land is received. If the aircraft radio fails while in flight under IFR, the pilot must comply with §91.185.

[Doc. No. 24458, 56 FR 65658, Dec. 17, 1991, as amended by Amdt. 91–239, 59 FR 11693, Mar. 11, 1994]

### §91.129 Operations in Class D airspace.

(a) *General.* Unless otherwise authorized or required by the ATC facility having jurisdiction over the Class D airspace area, each person operating an aircraft in Class D airspace must comply with the applicable provisions of this section. In addition, each person must comply with §§91.126 and 91.127. For the purpose of this section, the primary airport is the airport for which the Class D airspace area is designated. A satellite airport is any other airport within the Class D airspace area.

(b) *Deviations.* An operator may deviate from any provision of this section under the provisions of an ATC authorization issued by the ATC facility having jurisdiction over the airspace concerned. ATC may authorize a deviation on a continuing basis or for an individual flight, as appropriate.

(c) *Communications.* Each person operating an aircraft in Class D airspace must meet the following two-way radio communications requirements:

(1) *Arrival or through flight.* Each person must establish two-way radio communications with the ATC facility (including foreign ATC in the case of foreign airspace designated in the United States) providing air traffic services prior to entering that airspace and thereafter maintain those communications while within that airspace.

(2) *Departing flight.* Each person—

(i) From the primary airport or satellite airport with an operating control tower must establish and maintain two-way radio communications with

the control tower, and thereafter as instructed by ATC while operating in the Class D airspace area; or

(ii) From a satellite airport without an operating control tower, must establish and maintain two-way radio communications with the ATC facility having jurisdiction over the Class D airspace area as soon as practicable after departing.

(d) *Communications failure.* Each person who operates an aircraft in a Class D airspace area must maintain two-way radio communications with the ATC facility having jurisdiction over that area.

(1) If the aircraft radio fails in flight under IFR, the pilot must comply with § 91.185 of the part.

(2) If the aircraft radio fails in flight under VFR, the pilot in command may operate that aircraft and land if—

(i) Weather conditions are at or above basic VFR weather minimums;

(ii) Visual contact with the tower is maintained; and

(iii) A clearance to land is received.

(e) *Minimum altitudes when operating to an airport in Class D airspace.* (1) Unless required by the applicable distance-from-cloud criteria, each pilot operating a large or turbine-powered airplane must enter the traffic pattern at an altitude of at least 1,500 feet above the elevation of the airport and maintain at least 1,500 feet until further descent is required for a safe landing.

(2) Each pilot operating a large or turbine-powered airplane approaching to land on a runway served by an instrument approach procedure with vertical guidance, if the airplane is so equipped, must:

(i) Operate that airplane at an altitude at or above the glide path between the published final approach fix and the decision altitude (DA), or decision height (DH), as applicable; or

(ii) If compliance with the applicable distance-from-cloud criteria requires glide path interception closer in, operate that airplane at or above the glide path, between the point of interception of glide path and the DA or the DH.

(3) Each pilot operating an airplane approaching to land on a runway served by a visual approach slope indicator must maintain an altitude at or above the glide path until a lower altitude is necessary for a safe landing.

(4) Paragraphs (e)(2) and (e)(3) of this section do not prohibit normal bracketing maneuvers above or below the glide path that are conducted for the purpose of remaining on the glide path.

(f) *Approaches.* Except when conducting a circling approach under part 97 of this chapter or unless otherwise required by ATC, each pilot must—

(1) Circle the airport to the left, if operating an airplane; or

(2) Avoid the flow of fixed-wing aircraft, if operating a helicopter.

(g) *Departures.* No person may operate an aircraft departing from an airport except in compliance with the following:

(1) Each pilot must comply with any departure procedures established for that airport by the FAA.

(2) Unless otherwise required by the prescribed departure procedure for that airport or the applicable distance from clouds criteria, each pilot of a turbine-powered airplane and each pilot of a large airplane must climb to an altitude of 1,500 feet above the surface as rapidly as practicable.

(h) *Noise abatement.* Where a formal runway use program has been established by the FAA, each pilot of a large or turbine-powered airplane assigned a noise abatement runway by ATC must use that runway. However, consistent with the final authority of the pilot in command concerning the safe operation of the aircraft as prescribed in § 91.3(a), ATC may assign a different runway if requested by the pilot in the interest of safety.

(i) *Takeoff, landing, taxi clearance.* No person may, at any airport with an operating control tower, operate an aircraft on a runway or taxiway, or take off or land an aircraft, unless an appropriate clearance is received from ATC. A clearance to ''taxi to'' the takeoff runway assigned to the aircraft is not a clearance to cross that assigned takeoff runway, or to taxi on that runway at any point, but is a clearance to cross other runways that intersect the taxi route to that assigned takeoff runway. A clearance to ''taxi to'' any point other than an assigned takeoff runway

is clearance to cross all runways that intersect the taxi route to that point.

[Doc. No. 24458, 56 FR 65658, Dec. 17, 1991, as amended by Amdt. 91–234, 58 FR 48793, Sept. 20, 1993; Amdt. 91–296, 72 FR 31678, June 7, 2007]

### §91.130 Operations in Class C airspace.

(a) *General.* Unless otherwise authorized by ATC, each aircraft operation in Class C airspace must be conducted in compliance with this section and §91.129. For the purpose of this section, the primary airport is the airport for which the Class C airspace area is designated. A satellite airport is any other airport within the Class C airspace area.

(b) *Traffic patterns.* No person may take off or land an aircraft at a satellite airport within a Class C airspace area except in compliance with FAA arrival and departure traffic patterns.

(c) *Communications.* Each person operating an aircraft in Class C airspace must meet the following two-way radio communications requirements:

(1) *Arrival or through flight.* Each person must establish two-way radio communications with the ATC facility (including foreign ATC in the case of foreign airspace designated in the United States) providing air traffic services prior to entering that airspace and thereafter maintain those communications while within that airspace.

(2) *Departing flight.* Each person—

(i) From the primary airport or satellite airport with an operating control tower must establish and maintain two-way radio communications with the control tower, and thereafter as instructed by ATC while operating in the Class C airspace area; or

(ii) From a satellite airport without an operating control tower, must establish and maintain two-way radio communications with the ATC facility having jurisdiction over the Class C airspace area as soon as practicable after departing.

(d) *Equipment requirements.* Unless otherwise authorized by the ATC having jurisdiction over the Class C airspace area, no person may operate an aircraft within a Class C airspace area designated for an airport unless that aircraft is equipped with the applicable equipment specified in §91.215.

(e) *Deviations.* An operator may deviate from any provision of this section under the provisions of an ATC authorization issued by the ATC facility having jurisdiction over the airspace concerned. ATC may authorize a deviation on a continuing basis or for an individual flight, as appropriate.

[Doc. No. 24458, 56 FR 65659, Dec. 17, 1991, as amended by Amdt. 91–232, 58 FR 40736, July 30, 1993; Amdt. 91–239, 59 FR 11693, Mar. 11, 1994]

### §91.131 Operations in Class B airspace.

(a) *Operating rules.* No person may operate an aircraft within a Class B airspace area except in compliance with §91.129 and the following rules:

(1) The operator must receive an ATC clearance from the ATC facility having jurisdiction for that area before operating an aircraft in that area.

(2) Unless otherwise authorized by ATC, each person operating a large turbine engine-powered airplane to or from a primary airport for which a Class B airspace area is designated must operate at or above the designated floors of the Class B airspace area while within the lateral limits of that area.

(3) Any person conducting pilot training operations at an airport within a Class B airspace area must comply with any procedures established by ATC for such operations in that area.

(b) *Pilot requirements.* (1) No person may take off or land a civil aircraft at an airport within a Class B airspace area or operate a civil aircraft within a Class B airspace area unless—

(i) The pilot in command holds at least a private pilot certificate;

(ii) The pilot in command holds a recreational pilot certificate and has met—

(A) The requirements of §61.101(d) of this chapter; or

(B) The requirements for a student pilot seeking a recreational pilot certificate in §61.94 of this chapter;

(iii) The pilot in command holds a sport pilot certificate and has met—

(A) The requirements of §61.325 of this chapter; or

(B) The requirements for a student pilot seeking a recreational pilot certificate in § 61.94 of this chapter; or

(iv) The aircraft is operated by a student pilot who has met the requirements of § 61.94 or § 61.95 of this chapter, as applicable.

(2) Notwithstanding the provisions of paragraphs (b)(1)(ii), (b)(1)(iii) and (b)(1)(iv) of this section, no person may take off or land a civil aircraft at those airports listed in section 4 of appendix D to this part unless the pilot in command holds at least a private pilot certificate.

(c) *Communications and navigation equipment requirements.* Unless otherwise authorized by ATC, no person may operate an aircraft within a Class B airspace area unless that aircraft is equipped with—

(1) *For IFR operation.* An operable VOR or TACAN receiver or an operable and suitable RNAV system; and

(2) *For all operations.* An operable two-way radio capable of communications with ATC on appropriate frequencies for that Class B airspace area.

(d) *Transponder requirements.* No person may operate an aircraft in a Class B airspace area unless the aircraft is equipped with the applicable operating transponder and automatic altitude reporting equipment specified in paragraph (a) of § 91.215, except as provided in paragraph (d) of that section.

[Doc. No. 24458, 56 FR 65658, Dec. 17, 1991, as amended by Amdt. 91–282, 69 FR 44880, July 27, 2004; Amdt. 91–296, 72 FR 31678, June 7, 2007]

### § 91.133 Restricted and prohibited areas.

(a) No person may operate an aircraft within a restricted area (designated in part 73) contrary to the restrictions imposed, or within a prohibited area, unless that person has the permission of the using or controlling agency, as appropriate.

(b) Each person conducting, within a restricted area, an aircraft operation (approved by the using agency) that creates the same hazards as the operations for which the restricted area was designated may deviate from the rules of this subpart that are not compatible with the operation of the aircraft.

### § 91.135 Operations in Class A airspace.

Except as provided in paragraph (d) of this section, each person operating an aircraft in Class A airspace must conduct that operation under instrument flight rules (IFR) and in compliance with the following:

(a) *Clearance.* Operations may be conducted only under an ATC clearance received prior to entering the airspace.

(b) *Communications.* Unless otherwise authorized by ATC, each aircraft operating in Class A airspace must be equipped with a two-way radio capable of communicating with ATC on a frequency assigned by ATC. Each pilot must maintain two-way radio communications with ATC while operating in Class A airspace.

(c) *Transponder requirement.* Unless otherwise authorized by ATC, no person may operate an aircraft within Class A airspace unless that aircraft is equipped with the applicable equipment specified in § 91.215.

(d) *ATC authorizations.* An operator may deviate from any provision of this section under the provisions of an ATC authorization issued by the ATC facility having jurisdiction of the airspace concerned. In the case of an inoperative transponder, ATC may immediately approve an operation within a Class A airspace area allowing flight to continue, if desired, to the airport of ultimate destination, including any intermediate stops, or to proceed to a place where suitable repairs can be made, or both. Requests for deviation from any provision of this section must be submitted in writing, at least 4 days before the proposed operation. ATC may authorize a deviation on a continuing basis or for an individual flight.

[Doc. No. 24458, 56 FR 65659, Dec. 17, 1991]

### § 91.137 Temporary flight restrictions in the vicinity of disaster/hazard areas.

(a) The Administrator will issue a Notice to Airmen (NOTAM) designating an area within which temporary flight restrictions apply and specifying the hazard or condition requiring their imposition, whenever he determines it is necessary in order to—

(1) Protect persons and property on the surface or in the air from a hazard associated with an incident on the surface;

(2) Provide a safe environment for the operation of disaster relief aircraft; or

(3) Prevent an unsafe congestion of sightseeing and other aircraft above an incident or event which may generate a high degree of public interest.

The Notice to Airmen will specify the hazard or condition that requires the imposition of temporary flight restrictions.

(b) When a NOTAM has been issued under paragraph (a)(1) of this section, no person may operate an aircraft within the designated area unless that aircraft is participating in the hazard relief activities and is being operated under the direction of the official in charge of on scene emergency response activities.

(c) When a NOTAM has been issued under paragraph (a)(2) of this section, no person may operate an aircraft within the designated area unless at least one of the following conditions are met:

(1) The aircraft is participating in hazard relief activities and is being operated under the direction of the official in charge of on scene emergency response activities.

(2) The aircraft is carrying law enforcement officials.

(3) The aircraft is operating under the ATC approved IFR flight plan.

(4) The operation is conducted directly to or from an airport within the area, or is necessitated by the impracticability of VFR flight above or around the area due to weather, or terrain; notification is given to the Flight Service Station (FSS) or ATC facility specified in the NOTAM to receive advisories concerning disaster relief aircraft operations; and the operation does not hamper or endanger relief activities and is not conducted for the purpose of observing the disaster.

(5) The aircraft is carrying properly accredited news representatives, and, prior to entering the area, a flight plan is filed with the appropriate FAA or ATC facility specified in the Notice to Airmen and the operation is conducted above the altitude used by the disaster relief aircraft, unless otherwise authorized by the official in charge of on scene emergency response activities.

(d) When a NOTAM has been issued under paragraph (a)(3) of this section, no person may operate an aircraft within the designated area unless at least one of the following conditions is met:

(1) The operation is conducted directly to or from an airport within the area, or is necessitated by the impracticability of VFR flight above or around the area due to weather or terrain, and the operation is not conducted for the purpose of observing the incident or event.

(2) The aircraft is operating under an ATC approved IFR flight plan.

(3) The aircraft is carrying incident or event personnel, or law enforcement officials.

(4) The aircraft is carrying properly accredited news representatives and, prior to entering that area, a flight plan is filed with the appropriate FSS or ATC facility specified in the NOTAM.

(e) Flight plans filed and notifications made with an FSS or ATC facility under this section shall include the following information:

(1) Aircraft identification, type and color.

(2) Radio communications frequencies to be used.

(3) Proposed times of entry of, and exit from, the designated area.

(4) Name of news media or organization and purpose of flight.

(5) Any other information requested by ATC.

### §91.138 Temporary flight restrictions in national disaster areas in the State of Hawaii.

(a) When the Administrator has determined, pursuant to a request and justification provided by the Governor of the State of Hawaii, or the Governor's designee, that an inhabited area within a declared national disaster area in the State of Hawaii is in need of protection for humanitarian reasons, the Administrator will issue a Notice to Airmen (NOTAM) designating an area within which temporary

flight restrictions apply. The Administrator will designate the extent and duration of the temporary flight restrictions necessary to provide for the protection of persons and property on the surface.

(b) When a NOTAM has been issued in accordance with this section, no person may operate an aircraft within the designated area unless at least one of the following conditions is met:

(1) That person has obtained authorization from the official in charge of associated emergency or disaster relief response activities, and is operating the aircraft under the conditions of that authorization.

(2) The aircraft is carrying law enforcement officials.

(3) The aircraft is carrying persons involved in an emergency or a legitimate scientific purpose.

(4) The aircraft is carrying properly accredited newspersons, and that prior to entering the area, a flight plan is filed with the appropriate FAA or ATC facility specified in the NOTAM and the operation is conducted in compliance with the conditions and restrictions established by the official in charge of on-scene emergency response activities.

(5) The aircraft is operating in accordance with an ATC clearance or instruction.

(c) A NOTAM issued under this section is effective for 90 days or until the national disaster area designation is terminated, whichever comes first, unless terminated by notice or extended by the Administrator at the request of the Governor of the State of Hawaii or the Governor's designee.

[Doc. No. 26476, 56 FR 23178, May 20, 1991, as amended by Amdt. 91–270, 66 FR 47377, Sept. 11, 2001]

### § 91.139 Emergency air traffic rules.

(a) This section prescribes a process for utilizing Notices to Airmen (NOTAMs) to advise of the issuance and operations under emergency air traffic rules and regulations and designates the official who is authorized to issue NOTAMs on behalf of the Administrator in certain matters under this section.

(b) Whenever the Administrator determines that an emergency condition exists, or will exist, relating to the FAA's ability to operate the air traffic control system and during which normal flight operations under this chapter cannot be conducted consistent with the required levels of safety and efficiency—

(1) The Administrator issues an immediately effective air traffic rule or regulation in response to that emergency condition; and

(2) The Administrator or the Associate Administrator for Air Traffic may utilize the NOTAM system to provide notification of the issuance of the rule or regulation.

Those NOTAMs communicate information concerning the rules and regulations that govern flight operations, the use of navigation facilities, and designation of that airspace in which the rules and regulations apply.

(c) When a NOTAM has been issued under this section, no person may operate an aircraft, or other device governed by the regulation concerned, within the designated airspace except in accordance with the authorizations, terms, and conditions prescribed in the regulation covered by the NOTAM.

### § 91.141 Flight restrictions in the proximity of the Presidential and other parties.

No person may operate an aircraft over or in the vicinity of any area to be visited or traveled by the President, the Vice President, or other public figures contrary to the restrictions established by the Administrator and published in a Notice to Airmen (NOTAM).

### § 91.143 Flight limitation in the proximity of space flight operations.

When a Notice to Airmen (NOTAM) is issued in accordance with this section, no person may operate any aircraft of U.S. registry, or pilot any aircraft under the authority of an airman certificate issued by the Federal Aviation Administration, within areas designated in a NOTAM for space flight operation except when authorized by ATC.

[Doc. No. FAA–2004–19246, 69 FR 59753, Oct. 5, 2004]

**§91.144 Temporary restriction on flight operations during abnormally high barometric pressure conditions.**

(a) *Special flight restrictions.* When any information indicates that barometric pressure on the route of flight currently exceeds or will exceed 31 inches of mercury, no person may operate an aircraft or initiate a flight contrary to the requirements established by the Administrator and published in a Notice to Airmen issued under this section.

(b) *Waivers.* The Administrator is authorized to waive any restriction issued under paragraph (a) of this section to permit emergency supply, transport, or medical services to be delivered to isolated communities, where the operation can be conducted with an acceptable level of safety.

[Amdt. 91–240, 59 FR 17452, Apr. 12, 1994; 59 FR 37669, July 25, 1994]

**§91.145 Management of aircraft operations in the vicinity of aerial demonstrations and major sporting events.**

(a) The FAA will issue a Notice to Airmen (NOTAM) designating an area of airspace in which a temporary flight restriction applies when it determines that a temporary flight restriction is necessary to protect persons or property on the surface or in the air, to maintain air safety and efficiency, or to prevent the unsafe congestion of aircraft in the vicinity of an aerial demonstration or major sporting event. These demonstrations and events may include:

(1) United States Naval Flight Demonstration Team (Blue Angels);

(2) United States Air Force Air Demonstration Squadron (Thunderbirds);

(3) United States Army Parachute Team (Golden Knights);

(4) Summer/Winter Olympic Games;

(5) Annual Tournament of Roses Football Game;

(6) World Cup Soccer;

(7) Major League Baseball All-Star Game;

(8) World Series;

(9) Kodak Albuquerque International Balloon Fiesta;

(10) Sandia Classic Hang Gliding Competition;

(11) Indianapolis 500 Mile Race;

(12) Any other aerial demonstration or sporting event the FAA determines to need a temporary flight restriction in accordance with paragraph (b) of this section.

(b) In deciding whether a temporary flight restriction is necessary for an aerial demonstration or major sporting event not listed in paragraph (a) of this section, the FAA considers the following factors:

(1) Area where the event will be held.

(2) Effect flight restrictions will have on known aircraft operations.

(3) Any existing ATC airspace traffic management restrictions.

(4) Estimated duration of the event.

(5) Degree of public interest.

(6) Number of spectators.

(7) Provisions for spectator safety.

(8) Number and types of participating aircraft.

(9) Use of mixed high and low performance aircraft.

(10) Impact on non-participating aircraft.

(11) Weather minimums.

(12) Emergency procedures that will be in effect.

(c) A NOTAM issued under this section will state the name of the aerial demonstration or sporting event and specify the effective dates and times, the geographic features or coordinates, and any other restrictions or procedures governing flight operations in the designated airspace.

(d) When a NOTAM has been issued in accordance with this section, no person may operate an aircraft or device, or engage in any activity within the designated airspace area, except in accordance with the authorizations, terms, and conditions of the temporary flight restriction published in the NOTAM, unless otherwise authorized by:

(1) Air traffic control; or

(2) A Flight Standards Certificate of Waiver or Authorization issued for the demonstration or event.

(e) For the purpose of this section:

(1) *Flight restricted airspace area for an aerial demonstration*—The amount of airspace needed to protect persons and property on the surface or in the air, to maintain air safety and efficiency, or to prevent the unsafe congestion of aircraft will vary depending on the aerial

demonstration and the factors listed in paragraph (b) of this section. The restricted airspace area will normally be limited to a 5 nautical mile radius from the center of the demonstration and an altitude 17000 mean sea level (for high performance aircraft) or 13000 feet above the surface (for certain parachute operations), but will be no greater than the minimum airspace necessary for the management of aircraft operations in the vicinity of the specified area.

(2) *Flight restricted area for a major sporting event*—The amount of airspace needed to protect persons and property on the surface or in the air, to maintain air safety and efficiency, or to prevent the unsafe congestion of aircraft will vary depending on the size of the event and the factors listed in paragraph (b) of this section. The restricted airspace will normally be limited to a 3 nautical mile radius from the center of the event and 2500 feet above the surface but will not be greater than the minimum airspace necessary for the management of aircraft operations in the vicinity of the specified area.

(f) A NOTAM issued under this section will be issued at least 30 days in advance of an aerial demonstration or a major sporting event, unless the FAA finds good cause for a shorter period and explains this in the NOTAM.

(g) When warranted, the FAA Administrator may exclude the following flights from the provisions of this section:

(1) Essential military.

(2) Medical and rescue.

(3) Presidential and Vice Presidential.

(4) Visiting heads of state.

(5) Law enforcement and security.

(6) Public health and welfare.

[Doc. No. FAA–2000–8274, 66 FR 47378, Sept. 11, 2001]

### § 91.146 Passenger-carrying flights for the benefit of a charitable, nonprofit, or community event.

(a) *Definitions.* For purposes of this section, the following definitions apply:

*Charitable event* means an event that raises funds for the benefit of a charitable organization recognized by the Department of the Treasury whose donors may deduct contributions under section 170 of the Internal Revenue Code (26 U.S.C. Section 170).

*Community event* means an event that raises funds for the benefit of any local or community cause that is not a charitable event or non-profit event.

*Non-profit event* means an event that raises funds for the benefit of a nonprofit organization recognized under State or Federal law, as long as one of the organization's purposes is the promotion of aviation safety.

(b) Passenger carrying flights for the benefit of a charitable, nonprofit, or community event identified in paragraph (c) of this section are not subject to the certification requirements of part 119 or the drug and alcohol testing requirements in part 121, appendices I and J, of this chapter, provided the following conditions are satisfied and the limitations in paragraphs (c) and (d) are not exceeded:

(1) The flight is nonstop and begins and ends at the same airport and is conducted within a 25-statute mile radius of that airport;

(2) The flight is conducted from a public airport that is adequate for the airplane or helicopter used, or from another location the FAA approves for the operation;

(3) The airplane or helicopter has a maximum of 30 seats, excluding each crewmember seat, and a maximum payload capacity of 7,500 pounds;

(4) The flight is not an aerobatic or a formation flight;

(5) Each airplane or helicopter holds a standard airworthiness certificate, is airworthy, and is operated in compliance with the applicable requirements of subpart E of this part;

(6) Each flight is made during day VFR conditions;

(7) Reimbursement of the operator of the airplane or helicopter is limited to that portion of the passenger payment for the flight that does not exceed the pro rata cost of owning, operating, and maintaining the aircraft for that flight, which may include fuel, oil, airport expenditures, and rental fees;

(8) The beneficiary of the funds raised is not in the business of transportation by air;

(9) A private pilot acting as pilot in command has at least 500 hours of flight time;

(10) Each flight is conducted in accordance with the safety provisions of part 136, subpart A of this chapter; and

(11) Flights are not conducted over a national park, unit of a national park, or abutting tribal lands, unless the operator has secured a letter of agreement from the FAA, as specified under subpart B of part 136 of this chapter, and is operating in accordance with that agreement during the flights.

(c) (1) Passenger-carrying flights or series of flights are limited to a total of four charitable events or non-profit events per year, with no event lasting more than three consecutive days.

(2) Passenger-carrying flights or series of flights are limited to one community event per year, with no event lasting more than three consecutive days.

(d) Pilots and sponsors of events described in this section are limited to no more than 4 events per calendar year.

(e) At least seven days before the event, each sponsor of an event described in this section must furnish to the FAA Flight Standards District Office with jurisdiction over the geographical area where the event is scheduled:

(1) A signed letter detailing the name of the sponsor, the purpose of the event, the date and time of the event, the location of the event, all prior events under this section participated in by the sponsor in the current calendar year;

(2) A photocopy of each pilot in command's pilot certificate, medical certificate, and logbook entries that show the pilot is current in accordance with §§61.56 and 61.57 of this chapter and that any private pilot has at least 500 hours of flight time; and

(3) A signed statement from each pilot that lists all prior events under this section in which the pilot has participated during the current calendar year.

[Doc. No. FAA–1998–4521, 72 FR 6910, Feb. 13, 2007]

## §91.147 Passenger carrying flights for compensation or hire.

Each Operator conducting passenger-carrying flights for compensation or hire must meet the following requirements unless all flights are conducted under §91.146.

(a) For the purposes of this section and for drug and alcohol testing, *Operator* means any person conducting non-stop passenger-carrying flights in an airplane or helicopter for compensation or hire in accordance with §§119.1(e)(2), 135.1(a)(5), or 121.1(d), of this chapter that begin and end at the same airport and are conducted within a 25-statute mile radius of that airport.

(b) An Operator must comply with the safety provisions of part 136, subpart A of this chapter, and apply for and receive a Letter of Authorization from the Flight Standards District Office nearest to its principal place of business by September 11, 2007.

(c) Each application for a Letter of Authorization must include the following information:

(1) Name of Operator, agent, and any d/b/a (doing-business-as) under which that Operator does business;

(2) Principal business address and mailing address;

(3) Principal place of business (if different from business address);

(4) Name of person responsible for management of the business;

(5) Name of person responsible for aircraft maintenance;

(6) Type of aircraft, registration number(s), and make/model/series; and

(7) An Antidrug and Alcohol Misuse Prevention Program registration.

(d) The Operator must register and implement its drug and alcohol testing programs in accordance with part 121, appendices I and J, of this chapter.

(e) The Operator must comply with the provisions of the Letter of Authorization received.

[Doc. No. FAA–1998–4521, 72 FR 6911, Feb. 13, 2007]

### §§ 91.148–91.149 [Reserved]

VISUAL FLIGHT RULES

### § 91.151 Fuel requirements for flight in VFR conditions.

(a) No person may begin a flight in an airplane under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing and, assuming normal cruising speed—

(1) During the day, to fly after that for at least 30 minutes; or

(2) At night, to fly after that for at least 45 minutes.

(b) No person may begin a flight in a rotorcraft under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing and, assuming normal cruising speed, to fly after that for at least 20 minutes.

### § 91.153 VFR flight plan: Information required.

(a) *Information required.* Unless otherwise authorized by ATC, each person filing a VFR flight plan shall include in it the following information:

(1) The aircraft identification number and, if necessary, its radio call sign.

(2) The type of the aircraft or, in the case of a formation flight, the type of each aircraft and the number of aircraft in the formation.

(3) The full name and address of the pilot in command or, in the case of a formation flight, the formation commander.

(4) The point and proposed time of departure.

(5) The proposed route, cruising altitude (or flight level), and true airspeed at that altitude.

(6) The point of first intended landing and the estimated elapsed time until over that point.

(7) The amount of fuel on board (in hours).

(8) The number of persons in the aircraft, except where that information is otherwise readily available to the FAA.

(9) Any other information the pilot in command or ATC believes is necessary for ATC purposes.

(b) *Cancellation.* When a flight plan has been activated, the pilot in command, upon canceling or completing the flight under the flight plan, shall notify an FAA Flight Service Station or ATC facility.

### § 91.155 Basic VFR weather minimums.

(a) Except as provided in paragraph (b) of this section and § 91.157, no person may operate an aircraft under VFR when the flight visibility is less, or at a distance from clouds that is less, than that prescribed for the corresponding altitude and class of airspace in the following table:

| Airspace | Flight visibility | Distance from clouds |
|---|---|---|
| Class A | Not Applicable | Not Applicable. |
| Class B | 3 statute miles | Clear of Clouds. |
| Class C | 3 statute miles | 500 feet below.<br>1,000 feet above.<br>2,000 feet horizontal. |
| Class D | 3 statute miles | 500 feet below.<br>1,000 feet above.<br>2,000 feet horizontal. |
| Class E: | | |
| Less than 10,000 feet MSL. | 3 statute miles | 500 feet below.<br>1,000 feet above.<br>2,000 feet horizontal |
| At or above 10,000 feet MSL. | 5 statute miles | 1,000 feet below.<br>1,000 feet above.<br>1 statute mile horizontal. |
| Class G: | | |
| 1,200 feet or less above the surface (regardless of MSL altitude). | | |
| Day, except as provided in § 91.155(b). | 1 statute mile | Clear of clouds. |
| Night, except as provided in § 91.155(b). | 3 statute miles | 500 feet below.<br>1,000 feet above.<br>2,000 feet horizontal. |
| More than 1,200 feet above the surface but less than 10,000 feet MSL | | |
| Day | 1 statute mile | 500 feet below.<br>1,000 feet above.<br>2,000 feet horizontal. |
| Night | 3 statute miles | 500 feet below.<br>1,000 feet above.<br>2,000 feet horizontal. |

| Airspace | Flight visibility | Distance from clouds |
|---|---|---|
| More than 1,200 feet above the surface and at or above 10,000 feet MSL. | 5 statute miles ..... | 1,000 feet below. 1,000 feet above. 1 statute mile horizontal. |

(b) *Class G Airspace*. Notwithstanding the provisions of paragraph (a) of this section, the following operations may be conducted in Class G airspace below 1,200 feet above the surface:

(1) *Helicopter*. A helicopter may be operated clear of clouds if operated at a speed that allows the pilot adequate opportunity to see any air traffic or obstruction in time to avoid a collision.

(2) *Airplane, powered parachute, or weight-shift-control aircraft*. If the visibility is less than 3 statute miles but not less than 1 statute mile during night hours and you are operating in an airport traffic pattern within ½ mile of the runway, you may operate an airplane, powered parachute, or weight-shift-control aircraft clear of clouds.

(c) Except as provided in §91.157, no person may operate an aircraft beneath the ceiling under VFR within the lateral boundaries of controlled airspace designated to the surface for an airport when the ceiling is less than 1,000 feet.

(d) Except as provided in §91.157 of this part, no person may take off or land an aircraft, or enter the traffic pattern of an airport, under VFR, within the lateral boundaries of the surface areas of Class B, Class C, Class D, or Class E airspace designated for an airport—

(1) Unless ground visibility at that airport is at least 3 statute miles; or

(2) If ground visibility is not reported at that airport, unless flight visibility during landing or takeoff, or while operating in the traffic pattern is at least 3 statute miles.

(e) For the purpose of this section, an aircraft operating at the base altitude of a Class E airspace area is considered to be within the airspace directly below that area.

[Doc. No. 24458, 56 FR 65660, Dec. 17, 1991, as amended by Amdt. 91–235, 58 FR 51968, Oct. 5, 1993; Amdt. 91–282, 69 FR 44880, July 27, 2004]

## §91.157 Special VFR weather minimums.

(a) Except as provided in appendix D, section 3, of this part, special VFR operations may be conducted under the weather minimums and requirements of this section, instead of those contained in §91.155, below 10,000 feet MSL within the airspace contained by the upward extension of the lateral boundaries of the controlled airspace designated to the surface for an airport.

(b) Special VFR operations may only be conducted—

(1) With an ATC clearance;

(2) Clear of clouds;

(3) Except for helicopters, when flight visibility is at least 1 statute mile; and

(4) Except for helicopters, between sunrise and sunset (or in Alaska, when the sun is 6 degrees or more below the horizon) unless—

(i) The person being granted the ATC clearance meets the applicable requirements for instrument flight under part 61 of this chapter; and

(ii) The aircraft is equipped as required in §91.205(d).

(c) No person may take off or land an aircraft (other than a helicopter) under special VFR—

(1) Unless ground visibility is at least 1 statute mile; or

(2) If ground visibility is not reported, unless flight visibility is at least 1 statute mile. For the purposes of this paragraph, the term flight visibility includes the visibility from the cockpit of an aircraft in takeoff position if:

(i) The flight is conducted under this part 91; and

(ii) The airport at which the aircraft is located is a satellite airport that does not have weather reporting capabilities.

(d) The determination of visibility by a pilot in accordance with paragraph (c)(2) of this section is not an official weather report or an official ground visibility report.

[Amdt. 91–235, 58 FR 51968, Oct. 5, 1993, as amended by Amdt. 91–247, 60 FR 66874, Dec. 27, 1995; Amdt. 91–262, 65 FR 16116, Mar. 24, 2000]

### § 91.159 VFR cruising altitude or flight level.

Except while holding in a holding pattern of 2 minutes or less, or while turning, each person operating an aircraft under VFR in level cruising flight more than 3,000 feet above the surface shall maintain the appropriate altitude or flight level prescribed below, unless otherwise authorized by ATC:

(a) When operating below 18,000 feet MSL and—

(1) On a magnetic course of zero degrees through 179 degrees, any odd thousand foot MSL altitude +500 feet (such as 3,500, 5,500, or 7,500); or

(2) On a magnetic course of 180 degrees through 359 degrees, any even thousand foot MSL altitude +500 feet (such as 4,500, 6,500, or 8,500).

(b) When operating above 18,000 feet MSL, maintain the altitude or flight level assigned by ATC.

[Doc. No. 18334, 54 FR 34294, Aug. 18, 1989, as amended by Amdt. 91–276, 68 FR 61321, Oct. 27, 2003; 68 FR 70133, Dec. 17, 2003]

### § 91.161 Special awareness training required for pilots flying under visual flight rules within a 60-nautical mile radius of the Washington, DC VOR/DME.

(a) *Operations within a 60-nautical mile radius of the Washington, DC VOR/DME under visual flight rules (VFR).* Except as provided under paragraph (e) of this section, no person may serve as a pilot in command or as second in command of an aircraft while flying within a 60-nautical mile radius of the DCA VOR/DME, under VFR, unless that pilot has completed Special Awareness Training and holds a certificate of training completion.

(b) *Special Awareness Training.* The Special Awareness Training consists of information to educate pilots about the procedures for flying in the Washington, DC area and, more generally, in other types of special use airspace. This free training is available on the FAA's Web site. Upon completion of the training, each person will need to print out a copy of the certificate of training completion.

(c) *Inspection of certificate of training completion.* Each person who holds a certificate for completing the Special Awareness Training must present it for inspection upon request from:

(1) An authorized representative of the FAA;

(2) An authorized representative of the National Transportation Safety Board;

(3) Any Federal, State, or local law enforcement officer; or

(4) An authorized representative of the Transportation Security Administration.

(d) *Emergency declared.* The failure to complete the Special Awareness Training course on flying in and around the Washington, DC Metropolitan Area is not a violation of this section if an emergency is declared by the pilot, as described under § 91.3(b), or there was a failure of two-way radio communications when operating under IFR as described under § 91.185.

(e) *Exceptions.* The requirements of this section do not apply if the flight is being performed in an aircraft of an air ambulance operator certificated to conduct part 135 operations under this chapter, the U.S. Armed Forces, or a law enforcement agency.

[Doc. No. FAA–2006–25250, 73 FR 46803, Aug. 12, 2008]

EFFECTIVE DATE NOTE: By Amdt. 91–302, 73 FR 46803, Aug. 12, 2008, § 91.161 was added, effective Feb. 9, 2009.

### §§ 91.162–91.165 [Reserved]

## INSTRUMENT FLIGHT RULES

### § 91.167 Fuel requirements for flight in IFR conditions.

(a) No person may operate a civil aircraft in IFR conditions unless it carries enough fuel (considering weather reports and forecasts and weather conditions) to—

(1) Complete the flight to the first airport of intended landing;

(2) Except as provided in paragraph (b) of this section, fly from that airport to the alternate airport; and

(3) Fly after that for 45 minutes at normal cruising speed or, for helicopters, fly after that for 30 minutes at normal cruising speed.

(b) Paragraph (a)(2) of this section does not apply if:

(1) Part 97 of this chapter prescribes a standard instrument approach procedure to, or a special instrument approach procedure has been issued by the Administrator to the operator for, the first airport of intended landing; and

(2) Appropriate weather reports or weather forecasts, or a combination of them, indicate the following:

(i) *For aircraft other than helicopters.* For at least 1 hour before and for 1 hour after the estimated time of arrival, the ceiling will be at least 2,000 feet above the airport elevation and the visibility will be at least 3 statute miles.

(ii) *For helicopters.* At the estimated time of arrival and for 1 hour after the estimated time of arrival, the ceiling will be at least 1,000 feet above the airport elevation, or at least 400 feet above the lowest applicable approach minima, whichever is higher, and the visibility will be at least 2 statute miles.

[Doc. No. 98-4390, 65 FR 3546, Jan. 21, 2000]

### §91.169 IFR flight plan: Information required.

(a) *Information required.* Unless otherwise authorized by ATC, each person filing an IFR flight plan must include in it the following information:

(1) Information required under §91.153 (a) of this part;

(2) Except as provided in paragraph (b) of this section, an alternate airport.

(b) Paragraph (a)(2) of this section does not apply if :

(1) Part 97 of this chapter prescribes a standard instrument approach procedure to, or a special instrument approach procedure has been issued by the Administrator to the operator for, the first airport of intended landing; and

(2) Appropriate weather reports or weather forecasts, or a combination of them, indicate the following:

(i) *For aircraft other than helicopters.* For at least 1 hour before and for 1 hour after the estimated time of arrival, the ceiling will be at least 2,000 feet above the airport elevation and the visibility will be at least 3 statute miles.

(ii) *For helicopters.* At the estimated time of arrival and for 1 hour after the estimated time of arrival, the ceiling will be at least 1,000 feet above the airport elevation, or at least 400 feet above the lowest applicable approach minima, whichever is higher, and the visibility will be at least 2 statute miles.

(c) *IFR alternate airport weather minima.* Unless otherwise authorized by the Administrator, no person may include an alternate airport in an IFR flight plan unless appropriate weather reports or weather forecasts, or a combination of them, indicate that, at the estimated time of arrival at the alternate airport, the ceiling and visibility at that airport will be at or above the following weather minima:

(1) If an instrument approach procedure has been published in part 97 of this chapter, or a special instrument approach procedure has been issued by the Administrator to the operator, for that airport, the following minima:

(i) *For aircraft other than helicopters:* The alternate airport minima specified in that procedure, or if none are specified the following standard approach minima:

(A) *For a precision approach procedure.* Ceiling 600 feet and visibility 2 statute miles.

(B) *For a nonprecision approach procedure.* Ceiling 800 feet and visibility 2 statute miles.

(ii) *For helicopters:* Ceiling 200 feet above the minimum for the approach to be flown, and visibility at least 1 statute mile but never less than the minimum visibility for the approach to be flown, and

(2) If no instrument approach procedure has been published in part 97 of this chapter and no special instrument approach procedure has been issued by the Administrator to the operator, for the alternate airport, the ceiling and visibility minima are those allowing descent from the MEA, approach, and landing under basic VFR.

(d) *Cancellation.* When a flight plan has been activated, the pilot in command, upon canceling or completing the flight under the flight plan, shall notify an FAA Flight Service Station or ATC facility.

[Doc. No. 18334, 54 FR 34294, Aug. 18, 1989, as amended by Amdt. 91–259, 65 FR 3546, Jan. 21, 2000]

### § 91.171 VOR equipment check for IFR operations.

(a) No person may operate a civil aircraft under IFR using the VOR system of radio navigation unless the VOR equipment of that aircraft—

(1) Is maintained, checked, and inspected under an approved procedure; or

(2) Has been operationally checked within the preceding 30 days, and was found to be within the limits of the permissible indicated bearing error set forth in paragraph (b) or (c) of this section.

(b) Except as provided in paragraph (c) of this section, each person conducting a VOR check under paragraph (a)(2) of this section shall—

(1) Use, at the airport of intended departure, an FAA-operated or approved test signal or a test signal radiated by a certificated and appropriately rated radio repair station or, outside the United States, a test signal operated or approved by an appropriate authority to check the VOR equipment (the maximum permissible indicated bearing error is plus or minus 4 degrees); or

(2) Use, at the airport of intended departure, a point on the airport surface designated as a VOR system checkpoint by the Administrator, or, outside the United States, by an appropriate authority (the maximum permissible bearing error is plus or minus 4 degrees);

(3) If neither a test signal nor a designated checkpoint on the surface is available, use an airborne checkpoint designated by the Administrator or, outside the United States, by an appropriate authority (the maximum permissible bearing error is plus or minus 6 degrees); or

(4) If no check signal or point is available, while in flight—

(i) Select a VOR radial that lies along the centerline of an established VOR airway;

(ii) Select a prominent ground point along the selected radial preferably more than 20 nautical miles from the VOR ground facility and maneuver the aircraft directly over the point at a reasonably low altitude; and

(iii) Note the VOR bearing indicated by the receiver when over the ground point (the maximum permissible variation between the published radial and the indicated bearing is 6 degrees).

(c) If dual system VOR (units independent of each other except for the antenna) is installed in the aircraft, the person checking the equipment may check one system against the other in place of the check procedures specified in paragraph (b) of this section. Both systems shall be tuned to the same VOR ground facility and note the indicated bearings to that station. The maximum permissible variation between the two indicated bearings is 4 degrees.

(d) Each person making the VOR operational check, as specified in paragraph (b) or (c) of this section, shall enter the date, place, bearing error, and sign the aircraft log or other record. In addition, if a test signal radiated by a repair station, as specified in paragraph (b)(1) of this section, is used, an entry must be made in the aircraft log or other record by the repair station certificate holder or the certificate holder's representative certifying to the bearing transmitted by the repair station for the check and the date of transmission.

(Approved by the Office of Management and Budget under control number 2120–0005)

### § 91.173 ATC clearance and flight plan required.

No person may operate an aircraft in controlled airspace under IFR unless that person has—

(a) Filed an IFR flight plan; and

(b) Received an appropriate ATC clearance.

### § 91.175 Takeoff and landing under IFR.

(a) *Instrument approaches to civil airports.* Unless otherwise authorized by the FAA, when it is necessary to use an instrument approach to a civil airport, each person operating an aircraft must use a standard instrument approach procedure prescribed in part 97 of this chapter for that airport. This paragraph does not apply to United States military aircraft.

(b) *Authorized DA/DH or MDA.* For the purpose of this section, when the approach procedure being used provides for and requires the use of a DA/DH or

MDA, the authorized DA/DH or MDA is the highest of the following:

(1) The DA/DH or MDA prescribed by the approach procedure.

(2) The DA/DH or MDA prescribed for the pilot in command.

(3) The DA/DH or MDA appropriate for the aircraft equipment available and used during the approach.

(c) *Operation below DA/ DH or MDA.* Except as provided in paragraph (l) of this section, where a DA/DH or MDA is applicable, no pilot may operate an aircraft, except a military aircraft of the United States, below the authorized MDA or continue an approach below the authorized DA/DH unless—

(1) The aircraft is continuously in a position from which a descent to a landing on the intended runway can be made at a normal rate of descent using normal maneuvers, and for operations conducted under part 121 or part 135 unless that descent rate will allow touchdown to occur within the touchdown zone of the runway of intended landing;

(2) The flight visibility is not less than the visibility prescribed in the standard instrument approach being used; and

(3) Except for a Category II or Category III approach where any necessary visual reference requirements are specified by the Administrator, at least one of the following visual references for the intended runway is distinctly visible and identifiable to the pilot:

(i) The approach light system, except that the pilot may not descend below 100 feet above the touchdown zone elevation using the approach lights as a reference unless the red terminating bars or the red side row bars are also distinctly visible and identifiable.

(ii) The threshold.

(iii) The threshold markings.

(iv) The threshold lights.

(v) The runway end identifier lights.

(vi) The visual approach slope indicator.

(vii) The touchdown zone or touchdown zone markings.

(viii) The touchdown zone lights.

(ix) The runway or runway markings.

(x) The runway lights.

(d) *Landing.* No pilot operating an aircraft, except a military aircraft of the United States, may land that aircraft when—

(1) For operations conducted under paragraph (l) of this section, the requirements of (l)(4) of this section are not met; or

(2) For all other part 91 operations and parts 121, 125, 129, and 135 operations, the flight visibility is less than the visibility prescribed in the standard instrument approach procedure being used.

(e) *Missed approach procedures.* Each pilot operating an aircraft, except a military aircraft of the United States, shall immediately execute an appropriate missed approach procedure when either of the following conditions exist:

(1) Whenever operating an aircraft pursuant to paragraph (c) or (l) of this section and the requirements of that paragraph are not met at either of the following times:

(i) When the aircraft is being operated below MDA; or

(ii) Upon arrival at the missed approach point, including a DA/DH where a DA/DH is specified and its use is required, and at any time after that until touchdown.

(2) Whenever an identifiable part of the airport is not distinctly visible to the pilot during a circling maneuver at or above MDA, unless the inability to see an identifiable part of the airport results only from a normal bank of the aircraft during the circling approach.

(f) *Civil airport takeoff minimums.* This paragraph applies to persons operating an aircraft under part 121, 125, 129, or 135 of this chapter.

(1) Unless otherwise authorized by the FAA, no pilot may takeoff from a civil airport under IFR unless the weather conditions at time of takeoff are at or above the weather minimums for IFR takeoff prescribed for that airport under part 97 of this chapter.

(2) If takeoff weather minimums are not prescribed under part 97 of this chapter for a particular airport, the following weather minimums apply to takeoffs under IFR:

(i) For aircraft, other than helicopters, having two engines or less—1 statute mile visibility.

(ii) For aircraft having more than two engines—½ statute mile visibility.

(iii) For helicopters—½ statute mile visibility.

(3) Except as provided in paragraph (f)(4) of this section, no pilot may takeoff under IFR from a civil airport having published obstacle departure procedures (ODPs) under part 97 of this chapter for the takeoff runway to be used, unless the pilot uses such ODPs.

(4) Notwithstanding the requirements of paragraph (f)(3) of this section, no pilot may takeoff from an airport under IFR unless:

(i) For part 121 and part 135 operators, the pilot uses a takeoff obstacle clearance or avoidance procedure that ensures compliance with the applicable airplane performance operating limitations requirements under part 121, subpart I or part 135, subpart I for takeoff at that airport; or

(ii) For part 129 operators, the pilot uses a takeoff obstacle clearance or avoidance procedure that ensures compliance with the airplane performance operating limitations prescribed by the State of the operator for takeoff at that airport.

(g) *Military airports.* Unless otherwise prescribed by the Administrator, each person operating a civil aircraft under IFR into or out of a military airport shall comply with the instrument approach procedures and the takeoff and landing minimum prescribed by the military authority having jurisdiction of that airport.

(h) *Comparable values of RVR and ground visibility.* (1) Except for Category II or Category III minimums, if RVR minimums for takeoff or landing are prescribed in an instrument approach procedure, but RVR is not reported for the runway of intended operation, the RVR minimum shall be converted to ground visibility in accordance with the table in paragraph (h)(2) of this section and shall be the visibility minimum for takeoff or landing on that runway.

(2)

| RVR (feet) | Visibility (statute miles) |
|---|---|
| 1,600 | 1/4 |
| 2,400 | 1/2 |
| 3,200 | 5/8 |
| 4,000 | 3/4 |
| 4,500 | 7/8 |
| 5,000 | 1 |
| 6,000 | 1 1/4 |

(i) *Operations on unpublished routes and use of radar in instrument approach procedures.* When radar is approved at certain locations for ATC purposes, it may be used not only for surveillance and precision radar approaches, as applicable, but also may be used in conjunction with instrument approach procedures predicated on other types of radio navigational aids. Radar vectors may be authorized to provide course guidance through the segments of an approach to the final course or fix. When operating on an unpublished route or while being radar vectored, the pilot, when an approach clearance is received, shall, in addition to complying with § 91.177, maintain the last altitude assigned to that pilot until the aircraft is established on a segment of a published route or instrument approach procedure unless a different altitude is assigned by ATC. After the aircraft is so established, published altitudes apply to descent within each succeeding route or approach segment unless a different altitude is assigned by ATC. Upon reaching the final approach course or fix, the pilot may either complete the instrument approach in accordance with a procedure approved for the facility or continue a surveillance or precision radar approach to a landing.

(j) *Limitation on procedure turns.* In the case of a radar vector to a final approach course or fix, a timed approach from a holding fix, or an approach for which the procedure specifies ''No PT,'' no pilot may make a procedure turn unless cleared to do so by ATC.

(k) *ILS components.* The basic components of an ILS are the localizer, glide slope, and outer marker, and, when installed for use with Category II or Category III instrument approach procedures, an inner marker. The following means may be used to substitute for the outer marker: Compass locator; precision approach radar (PAR) or airport surveillance radar (ASR); DME, VOR, or nondirectional beacon fixes authorized in the standard instrument approach procedure; or a suitable RNAV system in conjunction with a fix identified in the standard instrument approach procedure. Applicability of, and substitution for, the inner marker

for a Category II or III approach is determined by the appropriate 14 CFR part 97 approach procedure, letter of authorization, or operations specifications issued to an operator.

(l) *Approach to straight-in landing operations below DH, or MDA using an enhanced flight vision system (EFVS).* For straight-in instrument approach procedures other than Category II or Category III, no pilot operating under this section or §§121.651, 125.381, and 135.225 of this chapter may operate an aircraft at any airport below the authorized MDA or continue an approach below the authorized DH and land unless—

(1) The aircraft is continuously in a position from which a descent to a landing on the intended runway can be made at a normal rate of descent using normal maneuvers, and, for operations conducted under part 121 or part 135 of this chapter, the descent rate will allow touchdown to occur within the touchdown zone of the runway of intended landing;

(2) The pilot determines that the enhanced flight visibility observed by use of a certified enhanced flight vision system is not less than the visibility prescribed in the standard instrument approach procedure being used;

(3) The following visual references for the intended runway are distinctly visible and identifiable to the pilot using the enhanced flight vision system:

(i) The approach light system (if installed); or

(ii) The following visual references in both paragraphs (l)(3)(ii)(A) and (B) of this section:

(A) The runway threshold, identified by at least one of the following:

(*1*) The beginning of the runway landing surface;

(*2*) The threshold lights; or

(*3*) The runway end identifier lights.

(B) The touchdown zone, identified by at least one of the following:

(*1*) The runway touchdown zone landing surface;

(*2*) The touchdown zone lights;

(*3*) The touchdown zone markings; or

(*4*) The runway lights.

(4) At 100 feet above the touchdown zone elevation of the runway of intended landing and below that altitude, the flight visibility must be sufficient for the following to be distinctly visible and identifiable to the pilot without reliance on the enhanced flight vision system to continue to a landing:

(i) The lights or markings of the threshold; or

(ii) The lights or markings of the touchdown zone;

(5) The pilot(s) is qualified to use an EFVS as follows—

(i) For parts 119 and 125 certificate holders, the applicable training, testing and qualification provisions of parts 121, 125, and 135 of this chapter;

(ii) For foreign persons, in accordance with the requirements of the civil aviation authority of the State of the operator; or

(iii) For persons conducting any other operation, in accordance with the applicable currency and proficiency requirements of part 61 of this chapter;

(6) For parts 119 and 125 certificate holders, and part 129 operations specifications holders, their operations specifications authorize use of EFVS; and

(7) The aircraft is equipped with, and the pilot uses, an enhanced flight vision system, the display of which is suitable for maneuvering the aircraft and has either an FAA type design approval or, for a foreign-registered aircraft, the EFVS complies with all of the EFVS requirements of this chapter.

(m) For purposes of this section, ''enhanced flight vision system'' (EFVS) is an installed airborne system comprised of the following features and characteristics:

(1) An electronic means to provide a display of the forward external scene topography (the natural or manmade features of a place or region especially in a way to show their relative positions and elevation) through the use of imaging sensors, such as a forward-looking infrared, millimeter wave radiometry, millimeter wave radar, and low-light level image intensifying;

(2) The EFVS sensor imagery and aircraft flight symbology (*i.e.*, at least airspeed, vertical speed, aircraft attitude, heading, altitude, command guidance as appropriate for the approach to be flown, path deviation indications, and flight path vector, and flight path angle reference cue) are presented on a

head-up display, or an equivalent display, so that they are clearly visible to the pilot flying in his or her normal position and line of vision and looking forward along the flight path, to include:

(i) The displayed EFVS imagery, attitude symbology, flight path vector, and flight path angle reference cue, and other cues, which are referenced to this imagery and external scene topography, must be presented so that they are aligned with and scaled to the external view; and

(ii) The flight path angle reference cue must be displayed with the pitch scale, selectable by the pilot to the desired descent angle for the approach, and suitable for monitoring the vertical flight path of the aircraft on approaches without vertical guidance; and

(iii) The displayed imagery and aircraft flight symbology do not adversely obscure the pilot's outside view or field of view through the cockpit window;

(3) The EFVS includes the display element, sensors, computers and power supplies, indications, and controls. It may receive inputs from an airborne navigation system or flight guidance system; and

(4) The display characteristics and dynamics are suitable for manual control of the aircraft.

[Doc. No. 18334, 54 FR 34294, Aug. 18, 1989, as amended by Amdt. 91–267, 66 FR 21066, Apr. 27, 2001; Amdt. 91–281, 69 FR 1640, Jan. 9, 2004; Amdt. 91–296, 72 FR 31678, June 7, 2007]

### § 91.177 Minimum altitudes for IFR operations.

(a) *Operation of aircraft at minimum altitudes.* Except when necessary for takeoff or landing, no person may operate an aircraft under IFR below—

(1) The applicable minimum altitudes prescribed in parts 95 and 97 of this chapter. However, if both a MEA and a MOCA are prescribed for a particular route or route segment, a person may operate an aircraft below the MEA down to, but not below, the MOCA, provided the applicable navigation signals are available. For aircraft using VOR for navigation, this applies only when the aircraft is within 22 nautical miles of that VOR (based on the reasonable estimate by the pilot operating the aircraft of that distance); or

(2) If no applicable minimum altitude is prescribed in parts 95 and 97 of this chapter, then—

(i) In the case of operations over an area designated as a mountainous area in part 95 of this chapter, an altitude of 2,000 feet above the highest obstacle within a horizontal distance of 4 nautical miles from the course to be flown; or

(ii) In any other case, an altitude of 1,000 feet above the highest obstacle within a horizontal distance of 4 nautical miles from the course to be flown.

(b) *Climb.* Climb to a higher minimum IFR altitude shall begin immediately after passing the point beyond which that minimum altitude applies, except that when ground obstructions intervene, the point beyond which that higher minimum altitude applies shall be crossed at or above the applicable MCA.

[Doc. No. 18334, 54 FR 34294, Aug. 18, 1989, as amended by Amdt. 91–296, 72 FR 31678, June 7, 2007]

### § 91.179 IFR cruising altitude or flight level.

Unless otherwise authorized by ATC, the following rules apply—

(a) *In controlled airspace.* Each person operating an aircraft under IFR in level cruising flight in controlled airspace shall maintain the altitude or flight level assigned that aircraft by ATC. However, if the ATC clearance assigns ''VFR conditions on-top,'' that person shall maintain an altitude or flight level as prescribed by § 91.159.

(b) *In uncontrolled airspace.* Except while in a holding pattern of 2 minutes or less or while turning, each person operating an aircraft under IFR in level cruising flight in uncontrolled airspace shall maintain an appropriate altitude as follows:

(1) When operating below 18,000 feet MSL and—

(i) On a magnetic course of zero degrees through 179 degrees, any odd thousand foot MSL altitude (such as 3,000, 5,000, or 7,000); or

(ii) On a magnetic course of 180 degrees through 359 degrees, any even thousand foot MSL altitude (such as 2,000, 4,000, or 6,000).

(2) When operating at or above 18,000 feet MSL but below flight level 290, and—

(i) On a magnetic course of zero degrees through 179 degrees, any odd flight level (such as 190, 210, or 230); or

(ii) On a magnetic course of 180 degrees through 359 degrees, any even flight level (such as 180, 200, or 220).

(3) When operating at flight level 290 and above in non-RVSM airspace, and—

(i) On a magnetic course of zero degrees through 179 degrees, any flight level, at 4,000-foot intervals, beginning at and including flight level 290 (such as flight level 290, 330, or 370); or

(ii) On a magnetic course of 180 degrees through 359 degrees, any flight level, at 4,000-foot intervals, beginning at and including flight level 310 (such as flight level 310, 350, or 390).

(4) When operating at flight level 290 and above in airspace designated as Reduced Vertical Separation Minimum (RVSM) airspace and—

(i) On a magnetic course of zero degrees through 179 degrees, any odd flight level, at 2,000-foot intervals beginning at and including flight level 290 (such as flight level 290, 310, 330, 350, 370, 390, 410); or

(ii) On a magnetic course of 180 degrees through 359 degrees, any even flight level, at 2000-foot intervals beginning at and including flight level 300 (such as 300, 320, 340, 360, 380, 400).

[Doc. No. 18334, 54 FR 34294, Aug. 18, 1989, as amended by Amdt. 91–276, 68 FR 61321, Oct. 27, 2003; 68 FR 70133, Dec. 17, 2003; Amdt. 91–296, 72 FR 31679, June 7, 2007]

### §91.180 Operations within airspace designated as Reduced Vertical Separation Minimum airspace.

(a) Except as provided in paragraph (b) of this section, no person may operate a civil aircraft in airspace designated as Reduced Vertical Separation Minimum (RVSM) airspace unless:

(1) The operator and the operator's aircraft comply with the minimum standards of appendix G of this part; and

(2) The operator is authorized by the Administrator or the country of registry to conduct such operations.

(b) The Administrator may authorize a deviation from the requirements of this section.

[Amdt. 91–276, 68 FR 70133, Dec. 17, 2003]

### §91.181 Course to be flown.

Unless otherwise authorized by ATC, no person may operate an aircraft within controlled airspace under IFR except as follows:

(a) On an ATS route, along the centerline of that airway.

(b) On any other route, along the direct course between the navigational aids or fixes defining that route. However, this section does not prohibit maneuvering the aircraft to pass well clear of other air traffic or the maneuvering of the aircraft in VFR conditions to clear the intended flight path both before and during climb or descent.

[Doc. No. 18334, 54 FR 34294, Aug. 18, 1989, as amended by Amdt. 91–296, 72 FR 31679, June 7, 2007]

### §91.183 IFR communications.

Unless otherwise authorized by ATC, the pilot in command of each aircraft operated under IFR in controlled airspace must ensure that a continuous watch is maintained on the appropriate frequency and must report the following as soon as possible—

(a) The time and altitude of passing each designated reporting point, or the reporting points specified by ATC, except that while the aircraft is under radar control, only the passing of those reporting points specifically requested by ATC need be reported;

(b) Any unforecast weather conditions encountered; and

(c) Any other information relating to the safety of flight.

[Doc. No. 18334, 54 FR 34294, Aug. 18, 1989, as amended by Amdt. 91–296, 72 FR 31679, June 7, 2007]

### §91.185 IFR operations: Two-way radio communications failure.

(a) *General.* Unless otherwise authorized by ATC, each pilot who has two-way radio communications failure when operating under IFR shall comply with the rules of this section.

(b) *VFR conditions.* If the failure occurs in VFR conditions, or if VFR conditions are encountered after the failure, each pilot shall continue the flight under VFR and land as soon as practicable.

(c) *IFR conditions.* If the failure occurs in IFR conditions, or if paragraph (b) of this section cannot be complied with, each pilot shall continue the flight according to the following:

(1) *Route.* (i) By the route assigned in the last ATC clearance received;

(ii) If being radar vectored, by the direct route from the point of radio failure to the fix, route, or airway specified in the vector clearance;

(iii) In the absence of an assigned route, by the route that ATC has advised may be expected in a further clearance; or

(iv) In the absence of an assigned route or a route that ATC has advised may be expected in a further clearance, by the route filed in the flight plan.

(2) *Altitude.* At the highest of the following altitudes or flight levels for the route segment being flown:

(i) The altitude or flight level assigned in the last ATC clearance received;

(ii) The minimum altitude (converted, if appropriate, to minimum flight level as prescribed in § 91.121(c)) for IFR operations; or

(iii) The altitude or flight level ATC has advised may be expected in a further clearance.

(3) *Leave clearance limit.* (i) When the clearance limit is a fix from which an approach begins, commence descent or descent and approach as close as possible to the expect-further-clearance time if one has been received, or if one has not been received, as close as possible to the estimated time of arrival as calculated from the filed or amended (with ATC) estimated time en route.

(ii) If the clearance limit is not a fix from which an approach begins, leave the clearance limit at the expect-further-clearance time if one has been received, or if none has been received, upon arrival over the clearance limit, and proceed to a fix from which an approach begins and commence descent or descent and approach as close as possible to the estimated time of arrival as calculated from the filed or amended (with ATC) estimated time en route.

[Doc. No. 18334, 54 FR 34294, Aug. 18, 1989; Amdt. 91–211, 54 FR 41211, Oct. 5, 1989]

### § 91.187 Operation under IFR in controlled airspace: Malfunction reports.

(a) The pilot in command of each aircraft operated in controlled airspace under IFR shall report as soon as practical to ATC any malfunctions of navigational, approach, or communication equipment occurring in flight.

(b) In each report required by paragraph (a) of this section, the pilot in command shall include the—

(1) Aircraft identification;

(2) Equipment affected;

(3) Degree to which the capability of the pilot to operate under IFR in the ATC system is impaired; and

(4) Nature and extent of assistance desired from ATC.

### § 91.189 Category II and III operations: General operating rules.

(a) No person may operate a civil aircraft in a Category II or III operation unless—

(1) The flight crew of the aircraft consists of a pilot in command and a second in command who hold the appropriate authorizations and ratings prescribed in § 61.3 of this chapter;

(2) Each flight crewmember has adequate knowledge of, and familiarity with, the aircraft and the procedures to be used; and

(3) The instrument panel in front of the pilot who is controlling the aircraft has appropriate instrumentation for the type of flight control guidance system that is being used.

(b) Unless otherwise authorized by the Administrator, no person may operate a civil aircraft in a Category II or Category III operation unless each ground component required for that operation and the related airborne equipment is installed and operating.

(c) *Authorized DA/DH.* For the purpose of this section, when the approach procedure being used provides for and requires the use of a DA/DH, the authorized DA/DH is the highest of the following:

(1) The DA/DH prescribed by the approach procedure.

(2) The DA/DH prescribed for the pilot in command.

(3) The DA/DH for which the aircraft is equipped.

(d) Unless otherwise authorized by the Administrator, no pilot operating an aircraft in a Category II or Category III approach that provides and requires use of a DA/DH may continue the approach below the authorized decision height unless the following conditions are met:

(1) The aircraft is in a position from which a descent to a landing on the intended runway can be made at a normal rate of descent using normal maneuvers, and where that descent rate will allow touchdown to occur within the touchdown zone of the runway of intended landing.

(2) At least one of the following visual references for the intended runway is distinctly visible and identifiable to the pilot:

(i) The approach light system, except that the pilot may not descend below 100 feet above the touchdown zone elevation using the approach lights as a reference unless the red terminating bars or the red side row bars are also distinctly visible and identifiable.

(ii) The threshold.

(iii) The threshold markings.

(iv) The threshold lights.

(v) The touchdown zone or touchdown zone markings.

(vi) The touchdown zone lights.

(e) Unless otherwise authorized by the Administrator, each pilot operating an aircraft shall immediately execute an appropriate missed approach whenever, prior to touchdown, the requirements of paragraph (d) of this section are not met.

(f) No person operating an aircraft using a Category III approach without decision height may land that aircraft except in accordance with the provisions of the letter of authorization issued by the Administrator.

(g) Paragraphs (a) through (f) of this section do not apply to operations conducted by certificate holders operating under part 121, 125, 129, or 135 of this chapter, or holders of management specifications issued in accordance with subpart K of this part. Holders of operations specifications or management specifications may operate a civil aircraft in a Category II or Category III operation only in accordance with their operations specifications or management specifications, as applicable.

[Doc. No. 18334, 54 FR 34294, Aug. 18, 1989, as amended by Amdt. 91–280, 68 FR 54560, Sept. 17, 2003; Amdt. 91–296, 72 FR 31679, June 7, 2007]

### §91.191 Category II and Category III manual.

(a) Except as provided in paragraph (c) of this section, after August 4, 1997, no person may operate a U.S.-registered civil aircraft in a Category II or a Category III operation unless—

(1) There is available in the aircraft a current and approved Category II or Category III manual, as appropriate, for that aircraft;

(2) The operation is conducted in accordance with the procedures, instructions, and limitations in the appropriate manual; and

(3) The instruments and equipment listed in the manual that are required for a particular Category II or Category III operation have been inspected and maintained in accordance with the maintenance program contained in the manual.

(b) Each operator must keep a current copy of each approved manual at its principal base of operations and must make each manual available for inspection upon request by the Administrator.

(c) This section does not apply to operations conducted by a certificate holder operating under part 121 or part 135 of this chapter or a holder of management specifications issued in accordance with subpart K of this part.

[Doc. No. 26933, 61 FR 34560, July 2, 1996, as amended by Amdt. 91–280, 68 FR 54560, Sept. 17, 2003]

### §91.193 Certificate of authorization for certain Category II operations.

The Administrator may issue a certificate of authorization authorizing deviations from the requirements of §§91.189, 91.191, and 91.205(f) for the operation of small aircraft identified as Category A aircraft in §97.3 of this chapter in Category II operations if the Administrator finds that the proposed operation can be safely conducted under the terms of the certificate.

Such authorization does not permit operation of the aircraft carrying persons or property for compensation or hire.

**§§ 91.195–91.199 [Reserved]**

## Subpart C—Equipment, Instrument, and Certificate Requirements

SOURCE: Docket No. 18334, 54 FR 34304, Aug. 18, 1989, unless otherwise noted.

**§ 91.201 [Reserved]**

**§ 91.203 Civil aircraft: Certifications required.**

(a) Except as provided in § 91.715, no person may operate a civil aircraft unless it has within it the following:

(1) An appropriate and current airworthiness certificate. Each U.S. airworthiness certificate used to comply with this subparagraph (except a special flight permit, a copy of the applicable operations specifications issued under § 21.197(c) of this chapter, appropriate sections of the air carrier manual required by parts 121 and 135 of this chapter containing that portion of the operations specifications issued under § 21.197(c), or an authorization under § 91.611) must have on it the registration number assigned to the aircraft under part 47 of this chapter. However, the airworthiness certificate need not have on it an assigned special identification number before 10 days after that number is first affixed to the aircraft. A revised airworthiness certificate having on it an assigned special identification number, that has been affixed to an aircraft, may only be obtained upon application to an FAA Flight Standards district office.

(2) An effective U.S. registration certificate issued to its owner or, for operation within the United States, the second duplicate copy (pink) of the Aircraft Registration Application as provided for in § 47.31(b), or a registration certificate issued under the laws of a foreign country.

(b) No person may operate a civil aircraft unless the airworthiness certificate required by paragraph (a) of this section or a special flight authorization issued under § 91.715 is displayed at the cabin or cockpit entrance so that it is legible to passengers or crew.

(c) No person may operate an aircraft with a fuel tank installed within the passenger compartment or a baggage compartment unless the installation was accomplished pursuant to part 43 of this chapter, and a copy of FAA Form 337 authorizing that installation is on board the aircraft.

(d) No person may operate a civil airplane (domestic or foreign) into or out of an airport in the United States unless it complies with the fuel venting and exhaust emissions requirements of part 34 of this chapter.

[Doc. No. 18334, 54 FR 34292, Aug. 18, 1989, as amended by Amdt. 91–218, 55 FR 32861, Aug. 10, 1990]

**§ 91.205 Powered civil aircraft with standard category U.S. airworthiness certificates: Instrument and equipment requirements.**

(a) *General*. Except as provided in paragraphs (c)(3) and (e) of this section, no person may operate a powered civil aircraft with a standard category U.S. airworthiness certificate in any operation described in paragraphs (b) through (f) of this section unless that aircraft contains the instruments and equipment specified in those paragraphs (or FAA-approved equivalents) for that type of operation, and those instruments and items of equipment are in operable condition.

(b) *Visual-flight rules (day)*. For VFR flight during the day, the following instruments and equipment are required:

(1) Airspeed indicator.

(2) Altimeter.

(3) Magnetic direction indicator.

(4) Tachometer for each engine.

(5) Oil pressure gauge for each engine using pressure system.

(6) Temperature gauge for each liquid-cooled engine.

(7) Oil temperature gauge for each air-cooled engine.

(8) Manifold pressure gauge for each altitude engine.

(9) Fuel gauge indicating the quantity of fuel in each tank.

(10) Landing gear position indicator, if the aircraft has a retractable landing gear.

(11) For small civil airplanes certificated after March 11, 1996, in accordance with part 23 of this chapter, an approved aviation red or aviation white anticollision light system. In the event of failure of any light of the anticollision light system, operation of the aircraft may continue to a location where repairs or replacement can be made.

(12) If the aircraft is operated for hire over water and beyond power-off gliding distance from shore, approved flotation gear readily available to each occupant and, unless the aircraft is operating under part 121 of this subchapter, at least one pyrotechnic signaling device. As used in this section, ''shore'' means that area of the land adjacent to the water which is above the high water mark and excludes land areas which are intermittently under water.

(13) An approved safety belt with an approved metal-to-metal latching device for each occupant 2 years of age or older.

(14) For small civil airplanes manufactured after July 18, 1978, an approved shoulder harness for each front seat. The shoulder harness must be designed to protect the occupant from serious head injury when the occupant experiences the ultimate inertia forces specified in §23.561(b)(2) of this chapter. Each shoulder harness installed at a flight crewmember station must permit the crewmember, when seated and with the safety belt and shoulder harness fastened, to perform all functions necessary for flight operations. For purposes of this paragraph—

(i) The date of manufacture of an airplane is the date the inspection acceptance records reflect that the airplane is complete and meets the FAA-approved type design data; and

(ii) A front seat is a seat located at a flight crewmember station or any seat located alongside such a seat.

(15) An emergency locator transmitter, if required by §91.207.

(16) For normal, utility, and acrobatic category airplanes with a seating configuration, excluding pilot seats, of 9 or less, manufactured after December 12, 1986, a shoulder harness for—

(i) Each front seat that meets the requirements of §23.785 (g) and (h) of this chapter in effect on December 12, 1985;

(ii) Each additional seat that meets the requirements of §23.785(g) of this chapter in effect on December 12, 1985.

(17) For rotorcraft manufactured after September 16, 1992, a shoulder harness for each seat that meets the requirements of §27.2 or §29.2 of this chapter in effect on September 16, 1991.

(c) *Visual flight rules (night).* For VFR flight at night, the following instruments and equipment are required:

(1) Instruments and equipment specified in paragraph (b) of this section.

(2) Approved position lights.

(3) An approved aviation red or aviation white anticollision light system on all U.S.-registered civil aircraft. Anticollision light systems initially installed after August 11, 1971, on aircraft for which a type certificate was issued or applied for before August 11, 1971, must at least meet the anticollision light standards of part 23, 25, 27, or 29 of this chapter, as applicable, that were in effect on August 10, 1971, except that the color may be either aviation red or aviation white. In the event of failure of any light of the anticollision light system, operations with the aircraft may be continued to a stop where repairs or replacement can be made.

(4) If the aircraft is operated for hire, one electric landing light.

(5) An adequate source of electrical energy for all installed electrical and radio equipment.

(6) One spare set of fuses, or three spare fuses of each kind required, that are accessible to the pilot in flight.

(d) *Instrument flight rules.* For IFR flight, the following instruments and equipment are required:

(1) Instruments and equipment specified in paragraph (b) of this section, and, for night flight, instruments and equipment specified in paragraph (c) of this section.

(2) Two-way radio communication and navigation equipment suitable for the route to be flown.

(3) Gyroscopic rate-of-turn indicator, except on the following aircraft:

(i) Airplanes with a third attitude instrument system usable through flight attitudes of 360 degrees of pitch and roll and installed in accordance with

the instrument requirements prescribed in §121.305(j) of this chapter; and

(ii) Rotorcraft with a third attitude instrument system usable through flight attitudes of ±80 degrees of pitch and ±120 degrees of roll and installed in accordance with §29.1303(g) of this chapter.

(4) Slip-skid indicator.

(5) Sensitive altimeter adjustable for barometric pressure.

(6) A clock displaying hours, minutes, and seconds with a sweep-second pointer or digital presentation.

(7) Generator or alternator of adequate capacity.

(8) Gyroscopic pitch and bank indicator (artificial horizon).

(9) Gyroscopic direction indicator (directional gyro or equivalent).

(e) *Flight at and above 24,000 feet MSL (FL 240).* If VOR navigation equipment is required under paragraph (d)(2) of this section, no person may operate a U.S.-registered civil aircraft within the 50 states and the District of Columbia at or above FL 240 unless that aircraft is equipped with approved DME or a suitable RNAV system. When the DME or RNAV system required by this paragraph fails at and above FL 240, the pilot in command of the aircraft must notify ATC immediately, and then may continue operations at and above FL 240 to the next airport of intended landing where repairs or replacement of the equipment can be made.

(f) *Category II operations.* The requirements for Category II operations are the instruments and equipment specified in—

(1) Paragraph (d) of this section; and

(2) Appendix A to this part.

(g) *Category III operations.* The instruments and equipment required for Category III operations are specified in paragraph (d) of this section.

(h) *Exclusions.* Paragraphs (f) and (g) of this section do not apply to operations conducted by a holder of a certificate issued under part 121 or part 135 of this chapter.

[Doc. No. 18334, 54 FR 34292, Aug. 18, 1989, as amended by Amdt. 91–220, 55 FR 43310, Oct. 26, 1990; Amdt. 91–223, 56 FR 41052, Aug. 16, 1991; Amdt. 91–231, 57 FR 42672, Sept. 15, 1992; Amdt. 91–248, 61 FR 5171, Feb. 9, 1996; Amdt. 91–251, 61 FR 34560, July 2, 1996; Amdt. 91–285, 69 FR 77599, Dec. 27, 2004; Amdt. 91–296, 72 FR 31679, June 7, 2007]

### § 91.207 Emergency locator transmitters.

(a) Except as provided in paragraphs (e) and (f) of this section, no person may operate a U.S.-registered civil airplane unless—

(1) There is attached to the airplane an approved automatic type emergency locator transmitter that is in operable condition for the following operations, except that after June 21, 1995, an emergency locator transmitter that meets the requirements of TSO-C91 may not be used for new installations:

(i) Those operations governed by the supplemental air carrier and commercial operator rules of parts 121 and 125;

(ii) Charter flights governed by the domestic and flag air carrier rules of part 121 of this chapter; and

(iii) Operations governed by part 135 of this chapter; or

(2) For operations other than those specified in paragraph (a)(1) of this section, there must be attached to the airplane an approved personal type or an approved automatic type emergency locator transmitter that is in operable condition, except that after June 21, 1995, an emergency locator transmitter that meets the requirements of TSO-C91 may not be used for new installations.

(b) Each emergency locator transmitter required by paragraph (a) of this section must be attached to the airplane in such a manner that the probability of damage to the transmitter in the event of crash impact is minimized. Fixed and deployable automatic type transmitters must be attached to the airplane as far aft as practicable.

(c) Batteries used in the emergency locator transmitters required by paragraphs (a) and (b) of this section must be replaced (or recharged, if the batteries are rechargeable)—

(1) When the transmitter has been in use for more than 1 cumulative hour; or

(2) When 50 percent of their useful life (or, for rechargeable batteries, 50 percent of their useful life of charge) has expired, as established by the transmitter manufacturer under its approval.

The new expiration date for replacing (or recharging) the battery must be legibly marked on the outside of the transmitter and entered in the aircraft maintenance record. Paragraph (c)(2) of this section does not apply to batteries (such as water-activated batteries) that are essentially unaffected during probable storage intervals.

(d) Each emergency locator transmitter required by paragraph (a) of this section must be inspected within 12 calendar months after the last inspection for—

(1) Proper installation;

(2) Battery corrosion;

(3) Operation of the controls and crash sensor; and

(4) The presence of a sufficient signal radiated from its antenna.

(e) Notwithstanding paragraph (a) of this section, a person may—

(1) Ferry a newly acquired airplane from the place where possession of it was taken to a place where the emergency locator transmitter is to be installed; and

(2) Ferry an airplane with an inoperative emergency locator transmitter from a place where repairs or replacements cannot be made to a place where they can be made.

No person other than required crewmembers may be carried aboard an airplane being ferried under paragraph (e) of this section.

(f) Paragraph (a) of this section does not apply to—

(1) Before January 1, 2004, turbojet-powered aircraft;

(2) Aircraft while engaged in scheduled flights by scheduled air carriers;

(3) Aircraft while engaged in training operations conducted entirely within a 50-nautical mile radius of the airport from which such local flight operations began;

(4) Aircraft while engaged in flight operations incident to design and testing;

(5) New aircraft while engaged in flight operations incident to their manufacture, preparation, and delivery;

(6) Aircraft while engaged in flight operations incident to the aerial application of chemicals and other substances for agricultural purposes;

(7) Aircraft certificated by the Administrator for research and development purposes;

(8) Aircraft while used for showing compliance with regulations, crew training, exhibition, air racing, or market surveys;

(9) Aircraft equipped to carry not more than one person.

(10) An aircraft during any period for which the transmitter has been temporarily removed for inspection, repair, modification, or replacement, subject to the following:

(i) No person may operate the aircraft unless the aircraft records contain an entry which includes the date of initial removal, the make, model, serial number, and reason for removing the transmitter, and a placard located in view of the pilot to show ''ELT not installed.''

(ii) No person may operate the aircraft more than 90 days after the ELT is initially removed from the aircraft; and

(11) On and after January 1, 2004, aircraft with a maximum payload capacity of more than 18,000 pounds when used in air transportation.

[Doc. No. 18334, 54 FR 34304, Aug. 18, 1989, as amended by Amdt. 91–242, 59 FR 32057, June 21, 1994; 59 FR 34578, July 6, 1994; Amdt. 91–265, 65 FR 81319, Dec. 22, 2000; 66 FR 16316, Mar. 23, 2001]

### § 91.209 Aircraft lights.

No person may:

(a) During the period from sunset to sunrise (or, in Alaska, during the period a prominent unlighted object cannot be seen from a distance of 3 statute miles or the sun is more than 6 degrees below the horizon)—

(1) Operate an aircraft unless it has lighted position lights;

(2) Park or move an aircraft in, or in dangerous proximity to, a night flight operations area of an airport unless the aircraft—

(i) Is clearly illuminated;

(ii) Has lighted position lights; or

(iii) is in an area that is marked by obstruction lights;

(3) Anchor an aircraft unless the aircraft—

(i) Has lighted anchor lights; or

(ii) Is in an area where anchor lights are not required on vessels; or

(b) Operate an aircraft that is equipped with an anticollision light system, unless it has lighted anticollision lights. However, the anticollision lights need not be lighted when the pilot-in-command determines that, because of operating conditions, it would be in the interest of safety to turn the lights off.

[Doc. No. 27806, 61 FR 5171, Feb. 9, 1996]

### § 91.211 Supplemental oxygen.

(a) *General*. No person may operate a civil aircraft of U.S. registry—

(1) At cabin pressure altitudes above 12,500 feet (MSL) up to and including 14,000 feet (MSL) unless the required minimum flight crew is provided with and uses supplemental oxygen for that part of the flight at those altitudes that is of more than 30 minutes duration;

(2) At cabin pressure altitudes above 14,000 feet (MSL) unless the required minimum flight crew is provided with and uses supplemental oxygen during the entire flight time at those altitudes; and

(3) At cabin pressure altitudes above 15,000 feet (MSL) unless each occupant of the aircraft is provided with supplemental oxygen.

(b) *Pressurized cabin aircraft*. (1) No person may operate a civil aircraft of U.S. registry with a pressurized cabin—

(i) At flight altitudes above flight level 250 unless at least a 10-minute supply of supplemental oxygen, in addition to any oxygen required to satisfy paragraph (a) of this section, is available for each occupant of the aircraft for use in the event that a descent is necessitated by loss of cabin pressurization; and

(ii) At flight altitudes above flight level 350 unless one pilot at the controls of the airplane is wearing and using an oxygen mask that is secured and sealed and that either supplies oxygen at all times or automatically supplies oxygen whenever the cabin pressure altitude of the airplane exceeds 14,000 feet (MSL), except that the one pilot need not wear and use an oxygen mask while at or below flight level 410 if there are two pilots at the controls and each pilot has a quick-donning type of oxygen mask that can be placed on the face with one hand from the ready position within 5 seconds, supplying oxygen and properly secured and sealed.

(2) Notwithstanding paragraph (b)(1)(ii) of this section, if for any reason at any time it is necessary for one pilot to leave the controls of the aircraft when operating at flight altitudes above flight level 350, the remaining pilot at the controls shall put on and use an oxygen mask until the other pilot has returned to that crewmember's station.

### § 91.213 Inoperative instruments and equipment.

(a) Except as provided in paragraph (d) of this section, no person may take off an aircraft with inoperative instruments or equipment installed unless the following conditions are met:

(1) An approved Minimum Equipment List exists for that aircraft.

(2) The aircraft has within it a letter of authorization, issued by the FAA Flight Standards district office having jurisdiction over the area in which the operator is located, authorizing operation of the aircraft under the Minimum Equipment List. The letter of authorization may be obtained by written request of the airworthiness certificate holder. The Minimum Equipment List and the letter of authorization constitute a supplemental type certificate for the aircraft.

(3) The approved Minimum Equipment List must—

(i) Be prepared in accordance with the limitations specified in paragraph (b) of this section; and

(ii) Provide for the operation of the aircraft with the instruments and equipment in an inoperable condition.

(4) The aircraft records available to the pilot must include an entry describing the inoperable instruments and equipment.

(5) The aircraft is operated under all applicable conditions and limitations contained in the Minimum Equipment

List and the letter authorizing the use of the list.

(b) The following instruments and equipment may not be included in a Minimum Equipment List:

(1) Instruments and equipment that are either specifically or otherwise required by the airworthiness requirements under which the aircraft is type certificated and which are essential for safe operations under all operating conditions.

(2) Instruments and equipment required by an airworthiness directive to be in operable condition unless the airworthiness directive provides otherwise.

(3) Instruments and equipment required for specific operations by this part.

(c) A person authorized to use an approved Minimum Equipment List issued for a specific aircraft under subpart K of this part, part 121, 125, or 135 of this chapter must use that Minimum Equipment List to comply with the requirements in this section.

(d) Except for operations conducted in accordance with paragraph (a) or (c) of this section, a person may takeoff an aircraft in operations conducted under this part with inoperative instruments and equipment without an approved Minimum Equipment List provided—

(1) The flight operation is conducted in a—

(i) Rotorcraft, non-turbine-powered airplane, glider, lighter-than-air aircraft, powered parachute, or weight-shift-control aircraft, for which a master minimum equipment list has not been developed; or

(ii) Small rotorcraft, nonturbine-powered small airplane, glider, or lighter-than-air aircraft for which a Master Minimum Equipment List has been developed; and

(2) The inoperative instruments and equipment are not—

(i) Part of the VFR-day type certification instruments and equipment prescribed in the applicable airworthiness regulations under which the aircraft was type certificated;

(ii) Indicated as required on the aircraft's equipment list, or on the Kinds of Operations Equipment List for the kind of flight operation being conducted;

(iii) Required by §91.205 or any other rule of this part for the specific kind of flight operation being conducted; or

(iv) Required to be operational by an airworthiness directive; and

(3) The inoperative instruments and equipment are—

(i) Removed from the aircraft, the cockpit control placarded, and the maintenance recorded in accordance with §43.9 of this chapter; or

(ii) Deactivated and placarded ''Inoperative.'' If deactivation of the inoperative instrument or equipment involves maintenance, it must be accomplished and recorded in accordance with part 43 of this chapter; and

(4) A determination is made by a pilot, who is certificated and appropriately rated under part 61 of this chapter, or by a person, who is certificated and appropriately rated to perform maintenance on the aircraft, that the inoperative instrument or equipment does not constitute a hazard to the aircraft.

An aircraft with inoperative instruments or equipment as provided in paragraph (d) of this section is considered to be in a properly altered condition acceptable to the Administrator.

(e) Notwithstanding any other provision of this section, an aircraft with inoperable instruments or equipment may be operated under a special flight permit issued in accordance with §§21.197 and 21.199 of this chapter.

[Doc. No. 18334, 54 FR 34304, Aug. 18, 1989, as amended by Amdt. 91–280, 68 FR 54560, Sept. 17, 2003; Amdt. 91–282, 69 FR 44880, July 27, 2004]

### §91.215 ATC transponder and altitude reporting equipment and use.

(a) *All airspace: U.S.-registered civil aircraft.* For operations not conducted under part 121 or 135 of this chapter, ATC transponder equipment installed must meet the performance and environmental requirements of any class of TSO-C74b (Mode A) or any class of TSO-C74c (Mode A with altitude reporting capability) as appropriate, or the appropriate class of TSO-C112 (Mode S).

(b) *All airspace.* Unless otherwise authorized or directed by ATC, no person may operate an aircraft in the airspace described in paragraphs (b)(1) through

(b)(5) of this section, unless that aircraft is equipped with an operable coded radar beacon transponder having either Mode 3/A 4096 code capability, replying to Mode 3/A interrogations with the code specified by ATC, or a Mode S capability, replying to Mode 3/A interrogations with the code specified by ATC and intermode and Mode S interrogations in accordance with the applicable provisions specified in TSO C–112, and that aircraft is equipped with automatic pressure altitude reporting equipment having a Mode C capability that automatically replies to Mode C interrogations by transmitting pressure altitude information in 100-foot increments. This requirement applies—

(1) *All aircraft*. In Class A, Class B, and Class C airspace areas;

(2) *All aircraft*. In all airspace within 30 nautical miles of an airport listed in appendix D, section 1 of this part from the surface upward to 10,000 feet MSL;

(3) Notwithstanding paragraph (b)(2) of this section, any aircraft which was not originally certificated with an engine-driven electrical system or which has not subsequently been certified with such a system installed, balloon or glider may conduct operations in the airspace within 30 nautical miles of an airport listed in appendix D, section 1 of this part provided such operations are conducted—

(i) Outside any Class A, Class B, or Class C airspace area; and

(ii) Below the altitude of the ceiling of a Class B or Class C airspace area designated for an airport or 10,000 feet MSL, whichever is lower; and

(4) All aircraft in all airspace above the ceiling and within the lateral boundaries of a Class B or Class C airspace area designated for an airport upward to 10,000 feet MSL; and

(5) All aircraft except any aircraft which was not originally certificated with an engine-driven electrical system or which has not subsequently been certified with such a system installed, balloon, or glider—

(i) In all airspace of the 48 contiguous states and the District of Columbia at and above 10,000 feet MSL, excluding the airspace at and below 2,500 feet above the surface; and

(ii) In the airspace from the surface to 10,000 feet MSL within a 10-nautical-mile radius of any airport listed in appendix D, section 2 of this part, excluding the airspace below 1,200 feet outside of the lateral boundaries of the surface area of the airspace designated for that airport.

(c) *Transponder-on operation*. While in the airspace as specified in paragraph (b) of this section or in all controlled airspace, each person operating an aircraft equipped with an operable ATC transponder maintained in accordance with § 91.413 of this part shall operate the transponder, including Mode C equipment if installed, and shall reply on the appropriate code or as assigned by ATC.

(d) *ATC authorized deviations*. Requests for ATC authorized deviations must be made to the ATC facility having jurisdiction over the concerned airspace within the time periods specified as follows:

(1) For operation of an aircraft with an operating transponder but without operating automatic pressure altitude reporting equipment having a Mode C capability, the request may be made at any time.

(2) For operation of an aircraft with an inoperative transponder to the airport of ultimate destination, including any intermediate stops, or to proceed to a place where suitable repairs can be made or both, the request may be made at any time.

(3) For operation of an aircraft that is not equipped with a transponder, the request must be made at least one hour before the proposed operation.

(Approved by the Office of Management and Budget under control number 2120–0005)

[Doc. No. 18334, 54 FR 34304, Aug. 18, 1989, as amended by Amdt. 91–221, 56 FR 469, Jan. 4, 1991; Amdt. 91–227, 56 FR 65660, Dec. 17, 1991; Amdt. 91–227, 7 FR 328, Jan. 3, 1992; Amdt. 91–229, 57 FR 34618, Aug. 5, 1992; Amdt. 91–267, 66 FR 21066, Apr. 27, 2001]

### § 91.217 Data correspondence between automatically reported pressure altitude data and the pilot's altitude reference.

No person may operate any automatic pressure altitude reporting equipment associated with a radar beacon transponder—

(a) When deactivation of that equipment is directed by ATC;

(b) Unless, as installed, that equipment was tested and calibrated to transmit altitude data corresponding within 125 feet (on a 95 percent probability basis) of the indicated or calibrated datum of the altimeter normally used to maintain flight altitude, with that altimeter referenced to 29.92 inches of mercury for altitudes from sea level to the maximum operating altitude of the aircraft; or

(c) Unless the altimeters and digitizers in that equipment meet the standards of TSO-C10b and TSO-C88, respectively.

### §91.219 Altitude alerting system or device: Turbojet-powered civil airplanes.

(a) Except as provided in paragraph (d) of this section, no person may operate a turbojet-powered U.S.-registered civil airplane unless that airplane is equipped with an approved altitude alerting system or device that is in operable condition and meets the requirements of paragraph (b) of this section.

(b) Each altitude alerting system or device required by paragraph (a) of this section must be able to—

(1) Alert the pilot—

(i) Upon approaching a preselected altitude in either ascent or descent, by a sequence of both aural and visual signals in sufficient time to establish level flight at that preselected altitude; or

(ii) Upon approaching a preselected altitude in either ascent or descent, by a sequence of visual signals in sufficient time to establish level flight at that preselected altitude, and when deviating above and below that preselected altitude, by an aural signal;

(2) Provide the required signals from sea level to the highest operating altitude approved for the airplane in which it is installed;

(3) Preselect altitudes in increments that are commensurate with the altitudes at which the aircraft is operated;

(4) Be tested without special equipment to determine proper operation of the alerting signals; and

(5) Accept necessary barometric pressure settings if the system or device operates on barometric pressure. However, for operation below 3,000 feet AGL, the system or device need only provide one signal, either visual or aural, to comply with this paragraph. A radio altimeter may be included to provide the signal if the operator has an approved procedure for its use to determine DA/DH or MDA, as appropriate.

(c) Each operator to which this section applies must establish and assign procedures for the use of the altitude alerting system or device and each flight crewmember must comply with those procedures assigned to him.

(d) Paragraph (a) of this section does not apply to any operation of an airplane that has an experimental certificate or to the operation of any airplane for the following purposes:

(1) Ferrying a newly acquired airplane from the place where possession of it was taken to a place where the altitude alerting system or device is to be installed.

(2) Continuing a flight as originally planned, if the altitude alerting system or device becomes inoperative after the airplane has taken off; however, the flight may not depart from a place where repair or replacement can be made.

(3) Ferrying an airplane with any inoperative altitude alerting system or device from a place where repairs or replacements cannot be made to a place where it can be made.

(4) Conducting an airworthiness flight test of the airplane.

(5) Ferrying an airplane to a place outside the United States for the purpose of registering it in a foreign country.

(6) Conducting a sales demonstration of the operation of the airplane.

(7) Training foreign flight crews in the operation of the airplane before ferrying it to a place outside the United States for the purpose of registering it in a foreign country.

[Doc. No. 18334, 54 FR 34304, Aug. 18, 1989, as amended by Amdt. 91–296, 72 FR 31679, June 7, 2007]

### § 91.221 Traffic alert and collision avoidance system equipment and use.

(a) *All airspace: U.S.-registered civil aircraft*. Any traffic alert and collision avoidance system installed in a U.S.-registered civil aircraft must be approved by the Administrator.

(b) *Traffic alert and collision avoidance system, operation required*. Each person operating an aircraft equipped with an operable traffic alert and collision avoidance system shall have that system on and operating.

### § 91.223 Terrain awareness and warning system.

(a) *Airplanes manufactured after March 29, 2002*. Except as provided in paragraph (d) of this section, no person may operate a turbine-powered U.S.-registered airplane configured with six or more passenger seats, excluding any pilot seat, unless that airplane is equipped with an approved terrain awareness and warning system that as a minimum meets the requirements for Class B equipment in Technical Standard Order (TSO)–C151.

(b) *Airplanes manufactured on or before March 29, 2002*. Except as provided in paragraph (d) of this section, no person may operate a turbine-powered U.S.-registered airplane configured with six or more passenger seats, excluding any pilot seat, after March 29, 2005, unless that airplane is equipped with an approved terrain awareness and warning system that as a minimum meets the requirements for Class B equipment in Technical Standard Order (TSO)–C151.

(Approved by the Office of Management and Budget under control number 2120–0631)

(c) *Airplane Flight Manual*. The Airplane Flight Manual shall contain appropriate procedures for—

(1) The use of the terrain awareness and warning system; and

(2) Proper flight crew reaction in response to the terrain awareness and warning system audio and visual warnings.

(d) *Exceptions*. Paragraphs (a) and (b) of this section do not apply to—

(1) Parachuting operations when conducted entirely within a 50 nautical mile radius of the airport from which such local flight operations began.

(2) Firefighting operations.

(3) Flight operations when incident to the aerial application of chemicals and other substances.

[Doc. No. 29312, 65 FR 16755, Mar. 29, 2000]

### §§ 91.224–91.299 [Reserved]

## Subpart D—Special Flight Operations

SOURCE: Docket No. 18334, 54 FR 34308, Aug. 18, 1989, unless otherwise noted.

### § 91.301 [Reserved]

### § 91.303 Aerobatic flight.

No person may operate an aircraft in aerobatic flight—

(a) Over any congested area of a city, town, or settlement;

(b) Over an open air assembly of persons;

(c) Within the lateral boundaries of the surface areas of Class B, Class C, Class D, or Class E airspace designated for an airport;

(d) Within 4 nautical miles of the center line of any Federal airway;

(e) Below an altitude of 1,500 feet above the surface; or

(f) When flight visibility is less than 3 statute miles.

For the purposes of this section, aerobatic flight means an intentional maneuver involving an abrupt change in an aircraft's attitude, an abnormal attitude, or abnormal acceleration, not necessary for normal flight.

[Doc. No. 18834, 54 FR 34308, Aug. 18, 1989, as amended by Amdt. 91–227, 56 FR 65661, Dec. 17, 1991]

### § 91.305 Flight test areas.

No person may flight test an aircraft except over open water, or sparsely populated areas, having light air traffic.

### § 91.307 Parachutes and parachuting.

(a) No pilot of a civil aircraft may allow a parachute that is available for emergency use to be carried in that aircraft unless it is an approved type and has been packed by a certificated and appropriately rated parachute rigger—

(1) Within the preceding 180 days, if its canopy, shrouds, and harness are composed exclusively of nylon, rayon, or other similar synthetic fiber or materials that are substantially resistant to damage from mold, mildew, or other fungi and other rotting agents propagated in a moist environment; or

(2) Within the preceding 60 days, if any part of the parachute is composed of silk, pongee, or other natural fiber or materials not specified in paragraph (a)(1) of this section.

(b) Except in an emergency, no pilot in command may allow, and no person may conduct, a parachute operation from an aircraft within the United States except in accordance with part 105 of this chapter.

(c) Unless each occupant of the aircraft is wearing an approved parachute, no pilot of a civil aircraft carrying any person (other than a crewmember) may execute any intentional maneuver that exceeds—

(1) A bank of 60 degrees relative to the horizon; or

(2) A nose-up or nose-down attitude of 30 degrees relative to the horizon.

(d) Paragraph (c) of this section does not apply to—

(1) Flight tests for pilot certification or rating; or

(2) Spins and other flight maneuvers required by the regulations for any certificate or rating when given by—

(i) A certificated flight instructor; or

(ii) An airline transport pilot instructing in accordance with §61.67 of this chapter.

(e) For the purposes of this section, *approved parachute* means—

(1) A parachute manufactured under a type certificate or a technical standard order (C–23 series); or

(2) A personnel-carrying military parachute identified by an NAF, AAF, or AN drawing number, an AAF order number, or any other military designation or specification number.

[Doc. No. 18334, 54 FR 34308, Aug. 18, 1989, as amended by Amdt. 91–255, 62 FR 68137, Dec. 30, 1997; Amdt. 91–268, 66 FR 23553, May 9, 2001; Amdt. 91–305, 73 FR 69530, Nov. 19, 2008]

**§91.309 Towing: Gliders and unpowered ultralight vehicles.**

(a) No person may operate a civil aircraft towing a glider or unpowered ultralight vehicle unless—

(1) The pilot in command of the towing aircraft is qualified under §61.69 of this chapter;

(2) The towing aircraft is equipped with a tow-hitch of a kind, and installed in a manner, that is approved by the Administrator;

(3) The towline used has breaking strength not less than 80 percent of the maximum certificated operating weight of the glider or unpowered ultralight vehicle and not more than twice this operating weight. However, the towline used may have a breaking strength more than twice the maximum certificated operating weight of the glider or unpowered ultralight vehicle if—

(i) A safety link is installed at the point of attachment of the towline to the glider or unpowered ultralight vehicle with a breaking strength not less than 80 percent of the maximum certificated operating weight of the glider or unpowered ultralight vehicle and not greater than twice this operating weight;

(ii) A safety link is installed at the point of attachment of the towline to the towing aircraft with a breaking strength greater, but not more than 25 percent greater, than that of the safety link at the towed glider or unpowered ultralight vehicle end of the towline and not greater than twice the maximum certificated operating weight of the glider or unpowered ultralight vehicle;

(4) Before conducting any towing operation within the lateral boundaries of the surface areas of Class B, Class C, Class D, or Class E airspace designated for an airport, or before making each towing flight within such controlled airspace if required by ATC, the pilot in command notifies the control tower. If a control tower does not exist or is not in operation, the pilot in command must notify the FAA flight service station serving that controlled airspace before conducting any towing operations in that airspace; and

(5) The pilots of the towing aircraft and the glider or unpowered ultralight

vehicle have agreed upon a general course of action, including takeoff and release signals, airspeeds, and emergency procedures for each pilot.

(b) No pilot of a civil aircraft may intentionally release a towline, after release of a glider or unpowered ultralight vehicle, in a manner that endangers the life or property of another.

[Doc. No. 18834, 54 FR 34308, Aug. 18, 1989, as amended by Amdt. 91–227, 56 FR 65661, Dec. 17, 1991; Amdt. 91–282, 69 FR 44880, July 27, 2004]

### § 91.311 Towing: Other than under § 91.309.

No pilot of a civil aircraft may tow anything with that aircraft (other than under § 91.309) except in accordance with the terms of a certificate of waiver issued by the Administrator.

### § 91.313 Restricted category civil aircraft: Operating limitations.

(a) No person may operate a restricted category civil aircraft—

(1) For other than the special purpose for which it is certificated; or

(2) In an operation other than one necessary to accomplish the work activity directly associated with that special purpose.

(b) For the purpose of paragraph (a) of this section, operating a restricted category civil aircraft to provide flight crewmember training in a special purpose operation for which the aircraft is certificated is considered to be an operation for that special purpose.

(c) No person may operate a restricted category civil aircraft carrying persons or property for compensation or hire. For the purposes of this paragraph, a special purpose operation involving the carriage of persons or material necessary to accomplish that operation, such as crop dusting, seeding, spraying, and banner towing (including the carrying of required persons or material to the location of that operation), and operation for the purpose of providing flight crewmember training in a special purpose operation, are not considered to be the carriage of persons or property for compensation or hire.

(d) No person may be carried on a restricted category civil aircraft unless that person—

(1) Is a flight crewmember;

(2) Is a flight crewmember trainee;

(3) Performs an essential function in connection with a special purpose operation for which the aircraft is certificated; or

(4) Is necessary to accomplish the work activity directly associated with that special purpose.

(e) Except when operating in accordance with the terms and conditions of a certificate of waiver or special operating limitations issued by the Administrator, no person may operate a restricted category civil aircraft within the United States—

(1) Over a densely populated area;

(2) In a congested airway; or

(3) Near a busy airport where passenger transport operations are conducted.

(f) This section does not apply to nonpassenger-carrying civil rotorcraft external-load operations conducted under part 133 of this chapter.

(g) No person may operate a small restricted-category civil airplane manufactured after July 18, 1978, unless an approved shoulder harness is installed for each front seat. The shoulder harness must be designed to protect each occupant from serious head injury when the occupant experiences the ultimate inertia forces specified in § 23.561(b)(2) of this chapter. The shoulder harness installation at each flight crewmember station must permit the crewmember, when seated and with the safety belt and shoulder harness fastened, to perform all functions necessary for flight operation. For purposes of this paragraph—

(1) The date of manufacture of an airplane is the date the inspection acceptance records reflect that the airplane is complete and meets the FAA-approved type design data; and

(2) A front seat is a seat located at a flight crewmember station or any seat located alongside such a seat.

### § 91.315 Limited category civil aircraft: Operating limitations.

No person may operate a limited category civil aircraft carrying persons or property for compensation or hire.

### §91.317 Provisionally certificated civil aircraft: Operating limitations.

(a) No person may operate a provisionally certificated civil aircraft unless that person is eligible for a provisional airworthiness certificate under §21.213 of this chapter.

(b) No person may operate a provisionally certificated civil aircraft outside the United States unless that person has specific authority to do so from the Administrator and each foreign country involved.

(c) Unless otherwise authorized by the Director, Flight Standards Service, no person may operate a provisionally certificated civil aircraft in air transportation.

(d) Unless otherwise authorized by the Administrator, no person may operate a provisionally certificated civil aircraft except—

(1) In direct conjunction with the type or supplemental type certification of that aircraft;

(2) For training flight crews, including simulated air carrier operations;

(3) Demonstration flight by the manufacturer for prospective purchasers;

(4) Market surveys by the manufacturer;

(5) Flight checking of instruments, accessories, and equipment that do not affect the basic airworthiness of the aircraft; or

(6) Service testing of the aircraft.

(e) Each person operating a provisionally certificated civil aircraft shall operate within the prescribed limitations displayed in the aircraft or set forth in the provisional aircraft flight manual or other appropriate document. However, when operating in direct conjunction with the type or supplemental type certification of the aircraft, that person shall operate under the experimental aircraft limitations of §21.191 of this chapter and when flight testing, shall operate under the requirements of §91.305 of this part.

(f) Each person operating a provisionally certificated civil aircraft shall establish approved procedures for—

(1) The use and guidance of flight and ground personnel in operating under this section; and

(2) Operating in and out of airports where takeoffs or approaches over populated areas are necessary. No person may operate that aircraft except in compliance with the approved procedures.

(g) Each person operating a provisionally certificated civil aircraft shall ensure that each flight crewmember is properly certificated and has adequate knowledge of, and familiarity with, the aircraft and procedures to be used by that crewmember.

(h) Each person operating a provisionally certificated civil aircraft shall maintain it as required by applicable regulations and as may be specially prescribed by the Administrator.

(i) Whenever the manufacturer, or the Administrator, determines that a change in design, construction, or operation is necessary to ensure safe operation, no person may operate a provisionally certificated civil aircraft until that change has been made and approved. Section 21.99 of this chapter applies to operations under this section.

(j) Each person operating a provisionally certificated civil aircraft—

(1) May carry in that aircraft only persons who have a proper interest in the operations allowed by this section or who are specifically authorized by both the manufacturer and the Administrator; and

(2) Shall advise each person carried that the aircraft is provisionally certificated.

(k) The Administrator may prescribe additional limitations or procedures that the Administrator considers necessary, including limitations on the number of persons who may be carried in the aircraft.

(Approved by the Office of Management and Budget under control number 2120–0005)

[Doc. No. 18334, 54 FR 34308, Aug. 18, 1989, as amended by Amdt. 91–212, 54 FR 39293, Sept. 25, 1989]

### §91.319 Aircraft having experimental certificates: Operating limitations.

(a) No person may operate an aircraft that has an experimental certificate—

(1) For other than the purpose for which the certificate was issued; or

(2) Carrying persons or property for compensation or hire.

(b) No person may operate an aircraft that has an experimental certificate outside of an area assigned by the Administrator until it is shown that—

(1) The aircraft is controllable throughout its normal range of speeds and throughout all the maneuvers to be executed; and

(2) The aircraft has no hazardous operating characteristics or design features.

(c) Unless otherwise authorized by the Administrator in special operating limitations, no person may operate an aircraft that has an experimental certificate over a densely populated area or in a congested airway. The Administrator may issue special operating limitations for particular aircraft to permit takeoffs and landings to be conducted over a densely populated area or in a congested airway, in accordance with terms and conditions specified in the authorization in the interest of safety in air commerce.

(d) Each person operating an aircraft that has an experimental certificate shall—

(1) Advise each person carried of the experimental nature of the aircraft;

(2) Operate under VFR, day only, unless otherwise specifically authorized by the Administrator; and

(3) Notify the control tower of the experimental nature of the aircraft when operating the aircraft into or out of airports with operating control towers.

(e) No person may operate an aircraft that is issued an experimental certificate under § 21.191(i) of this chapter for compensation or hire, except a person may operate an aircraft issued an experimental certificate under § 21.191(i)(1) for compensation or hire to—

(1) Tow a glider that is a light-sport aircraft or unpowered ultralight vehicle in accordance with § 91.309; or

(2) Conduct flight training in an aircraft which that person provides prior to January 31, 2010.

(f) No person may lease an aircraft that is issued an experimental certificate under § 21.191(i) of this chapter, except in accordance with paragraph (e)(1) of this section.

(g) No person may operate an aircraft issued an experimental certificate under § 21.191(i)(1) of this chapter to tow a glider that is a light-sport aircraft or unpowered ultralight vehicle for compensation or hire or to conduct flight training for compensation or hire in an aircraft which that persons provides unless within the preceding 100 hours of time in service the aircraft has—

(1) Been inspected by a certificated repairman (light-sport aircraft) with a maintenance rating, an appropriately rated mechanic, or an appropriately rated repair station in accordance with inspection procedures developed by the aircraft manufacturer or a person acceptable to the FAA; or

(2) Received an inspection for the issuance of an airworthiness certificate in accordance with part 21 of this chapter.

(h) The FAA may issue deviation authority providing relief from the provisions of paragraph (a) of this section for the purpose of conducting flight training. The FAA will issue this deviation authority as a letter of deviation authority.

(1) The FAA may cancel or amend a letter of deviation authority at any time.

(2) An applicant must submit a request for deviation authority to the FAA at least 60 days before the date of intended operations. A request for deviation authority must contain a complete description of the proposed operation and justification that establishes a level of safety equivalent to that provided under the regulations for the deviation requested.

(i) The Administrator may prescribe additional limitations that the Administrator considers necessary, including limitations on the persons that may be carried in the aircraft.

(Approved by the Office of Management and Budget under control number 2120–0005)

[Doc. No. 18334, 54 FR 34308, Aug. 18, 1989, as amended by Amdt. 91–282, 69 FR 44881, July 27, 2004]

### § 91.321 Carriage of candidates in elections.

(a) As an aircraft operator, you may receive payment for carrying a candidate, agent of a candidate, or person traveling on behalf of a candidate, running for Federal, State, or local election, without having to comply with the rules in parts 121, 125 or 135 of this chapter, under the following conditions:

(1) Your primary business is not as an air carrier or commercial operator;

(2) You carry the candidate, agent, or person traveling on behalf of a candidate, under the rules of part 91; and

(3) By Federal, state or local law, you are required to receive payment for carrying the candidate, agent, or person traveling on behalf of a candidate. For federal elections, the payment may not exceed the amount required by the Federal Election Commission. For a state or local election, the payment may not exceed the amount required under the applicable state or local law.

(b) For the purposes of this section, for Federal elections, the terms *candidate* and *election* have the same meaning as set forth in the regulations of the Federal Election Commission. For State or local elections, the terms *candidate* and *election* have the same meaning as provided by the applicable State or local law and those terms relate to candidates for election to public office in State and local government elections.

[Doc. No. FAA–2005–20168, 70 FR 4982, Jan. 31, 2005]

### § 91.323 Increased maximum certificated weights for certain airplanes operated in Alaska.

(a) Notwithstanding any other provision of the Federal Aviation Regulations, the Administrator will approve, as provided in this section, an increase in the maximum certificated weight of an airplane type certificated under Aeronautics Bulletin No. 7–A of the U.S. Department of Commerce dated January 1, 1931, as amended, or under the normal category of part 4a of the former Civil Air Regulations (14 CFR part 4a, 1964 ed.) if that airplane is operated in the State of Alaska by—

(1) A certificate holder conducting operations under part 121 or part 135 of this chapter; or

(2) The U.S. Department of Interior in conducting its game and fish law enforcement activities or its management, fire detection, and fire suppression activities concerning public lands.

(b) The maximum certificated weight approved under this section may not exceed—

(1) 12,500 pounds;

(2) 115 percent of the maximum weight listed in the FAA aircraft specifications;

(3) The weight at which the airplane meets the positive maneuvering load factor requirement for the normal category specified in § 23.337 of this chapter; or

(4) The weight at which the airplane meets the climb performance requirements under which it was type certificated.

(c) In determining the maximum certificated weight, the Administrator considers the structural soundness of the airplane and the terrain to be traversed.

(d) The maximum certificated weight determined under this section is added to the airplane's operation limitations and is identified as the maximum weight authorized for operations within the State of Alaska.

[Doc. No. 18334, 54 FR 34308, Aug. 18, 1989; Amdt. 91–211, 54 FR 41211, Oct. 5, 1989, as amended by Amdt. 91–253, 62 FR 13253, Mar. 19, 1997]

### § 91.325 Primary category aircraft: Operating limitations.

(a) No person may operate a primary category aircraft carrying persons or property for compensation or hire.

(b) No person may operate a primary category aircraft that is maintained by the pilot-owner under an approved special inspection and maintenance program except—

(1) The pilot-owner; or

(2) A designee of the pilot-owner, provided that the pilot-owner does not receive compensation for the use of the aircraft.

[Doc. No. 23345, 57 FR 41370, Sept. 9, 1992]

### § 91.327 Aircraft having a special airworthiness certificate in the light-sport category: Operating limitations.

(a) No person may operate an aircraft that has a special airworthiness certificate in the light-sport category for compensation or hire except—

(1) To tow a glider or an unpowered ultralight vehicle in accordance with § 91.309 of this chapter; or

(2) To conduct flight training.

(b) No person may operate an aircraft that has a special airworthiness certificate in the light-sport category unless—

(1) The aircraft is maintained by a certificated repairman with a light-sport aircraft maintenance rating, an appropriately rated mechanic, or an appropriately rated repair station in accordance with the applicable provisions of part 43 of this chapter and maintenance and inspection procedures developed by the aircraft manufacturer or a person acceptable to the FAA;

(2) A condition inspection is performed once every 12 calendar months by a certificated repairman (light-sport aircraft) with a maintenance rating, an appropriately rated mechanic, or an appropriately rated repair station in accordance with inspection procedures developed by the aircraft manufacturer or a person acceptable to the FAA;

(3) The owner or operator complies with all applicable airworthiness directives;

(4) The owner or operator complies with each safety directive applicable to the aircraft that corrects an existing unsafe condition. In lieu of complying with a safety directive an owner or operator may—

(i) Correct the unsafe condition in a manner different from that specified in the safety directive provided the person issuing the directive concurs with the action; or

(ii) Obtain an FAA waiver from the provisions of the safety directive based on a conclusion that the safety directive was issued without adhering to the applicable consensus standard;

(5) Each alteration accomplished after the aircraft's date of manufacture meets the applicable and current consensus standard and has been authorized by either the manufacturer or a person acceptable to the FAA;

(6) Each major alteration to an aircraft product produced under a consensus standard is authorized, performed and inspected in accordance with maintenance and inspection procedures developed by the manufacturer or a person acceptable to the FAA; and

(7) The owner or operator complies with the requirements for the recording of major repairs and major alterations performed on type-certificated products in accordance with § 43.9(d) of this chapter, and with the retention requirements in § 91.417.

(c) No person may operate an aircraft issued a special airworthiness certificate in the light-sport category to tow a glider or unpowered ultralight vehicle for compensation or hire or conduct flight training for compensation or hire in an aircraft which that persons provides unless within the preceding 100 hours of time in service the aircraft has—

(1) Been inspected by a certificated repairman with a light-sport aircraft maintenance rating, an appropriately rated mechanic, or an appropriately rated repair station in accordance with inspection procedures developed by the aircraft manufacturer or a person acceptable to the FAA and been approved for return to service in accordance with part 43 of this chapter; or

(2) Received an inspection for the issuance of an airworthiness certificate in accordance with part 21 of this chapter.

(d) Each person operating an aircraft issued a special airworthiness certificate in the light-sport category must operate the aircraft in accordance with the aircraft's operating instructions, including any provisions for necessary operating equipment specified in the aircraft's equipment list.

(e) Each person operating an aircraft issued a special airworthiness certificate in the light-sport category must advise each person carried of the special nature of the aircraft and that the aircraft does not meet the airworthiness requirements for an aircraft issued a standard airworthiness certificate.

(f) The FAA may prescribe additional limitations that it considers necessary.

[Doc. No. FAA–2001–11133, 69 FR 44881, July 27, 2004]

### §§ 91.328–91.399 [Reserved]

## Subpart E—Maintenance, Preventive Maintenance, and Alterations

SOURCE: Docket No. 18334, 54 FR 34311, Aug. 18, 1989, unless otherwise noted.

### § 91.401 Applicability.

(a) This subpart prescribes rules governing the maintenance, preventive maintenance, and alterations of U.S.-registered civil aircraft operating within or outside of the United States.

(b) Sections 91.405, 91.409, 91.411, 91.417, and 91.419 of this subpart do not apply to an aircraft maintained in accordance with a continuous airworthiness maintenance program as provided in part 121, 129, or §§ 91.1411 or 135.411(a)(2) of this chapter.

(c) Sections 91.405 and 91.409 of this part do not apply to an airplane inspected in accordance with part 125 of this chapter.

[Doc. No. 18334, 54 FR 34311, Aug. 18, 1989, as amended by Amdt. 91–267, 66 FR 21066, Apr. 27, 2001; Amdt. 91–280, 68 FR 54560, Sept. 17, 2003]

### § 91.403 General.

(a) The owner or operator of an aircraft is primarily responsible for maintaining that aircraft in an airworthy condition, including compliance with part 39 of this chapter.

(b) No person may perform maintenance, preventive maintenance, or alterations on an aircraft other than as prescribed in this subpart and other applicable regulations, including part 43 of this chapter.

(c) No person may operate an aircraft for which a manufacturer's maintenance manual or instructions for continued airworthiness has been issued that contains an airworthiness limitations section unless the mandatory replacement times, inspection intervals, and related procedures specified in that section or alternative inspection intervals and related procedures set forth in an operations specification approved by the Administrator under part 121 or 135 of this chapter or in accordance with an inspection program approved under § 91.409(e) have been complied with.

(d) A person must not alter an aircraft based on a supplemental type certificate unless the owner or operator of the aircraft is the holder of the supplemental type certificate, or has written permission from the holder.

[Doc. No. 18334, 54 FR 34311, Aug. 18, 1989, as amended by Amdt. 91–267, 66 FR 21066, Apr. 27, 2001; Amdt. 91–293, 71 FR 56005, Sept. 26, 2006]

### § 91.405 Maintenance required.

Each owner or operator of an aircraft—

(a) Shall have that aircraft inspected as prescribed in subpart E of this part and shall between required inspections, except as provided in paragraph (c) of this section, have discrepancies repaired as prescribed in part 43 of this chapter;

(b) Shall ensure that maintenance personnel make appropriate entries in the aircraft maintenance records indicating the aircraft has been approved for return to service;

(c) Shall have any inoperative instrument or item of equipment, permitted to be inoperative by § 91.213(d)(2) of this part, repaired, replaced, removed, or inspected at the next required inspection; and

(d) When listed discrepancies include inoperative instruments or equipment, shall ensure that a placard has been installed as required by § 43.11 of this chapter.

### § 91.407 Operation after maintenance, preventive maintenance, rebuilding, or alteration.

(a) No person may operate any aircraft that has undergone maintenance, preventive maintenance, rebuilding, or alteration unless—

(1) It has been approved for return to service by a person authorized under § 43.7 of this chapter; and

(2) The maintenance record entry required by § 43.9 or § 43.11, as applicable, of this chapter has been made.

(b) No person may carry any person (other than crewmembers) in an aircraft that has been maintained, rebuilt, or altered in a manner that may have appreciably changed its flight characteristics or substantially affected its operation in flight until an appropriately rated pilot with at least a private pilot certificate flies the aircraft, makes an operational check of

the maintenance performed or alteration made, and logs the flight in the aircraft records.

(c) The aircraft does not have to be flown as required by paragraph (b) of this section if, prior to flight, ground tests, inspection, or both show conclusively that the maintenance, preventive maintenance, rebuilding, or alteration has not appreciably changed the flight characteristics or substantially affected the flight operation of the aircraft.

(Approved by the Office of Management and Budget under control number 2120–0005)

### § 91.409 Inspections.

(a) Except as provided in paragraph (c) of this section, no person may operate an aircraft unless, within the preceding 12 calendar months, it has had—

(1) An annual inspection in accordance with part 43 of this chapter and has been approved for return to service by a person authorized by § 43.7 of this chapter; or

(2) An inspection for the issuance of an airworthiness certificate in accordance with part 21 of this chapter.

No inspection performed under paragraph (b) of this section may be substituted for any inspection required by this paragraph unless it is performed by a person authorized to perform annual inspections and is entered as an ''annual'' inspection in the required maintenance records.

(b) Except as provided in paragraph (c) of this section, no person may operate an aircraft carrying any person (other than a crewmember) for hire, and no person may give flight instruction for hire in an aircraft which that person provides, unless within the preceding 100 hours of time in service the aircraft has received an annual or 100-hour inspection and been approved for return to service in accordance with part 43 of this chapter or has received an inspection for the issuance of an airworthiness certificate in accordance with part 21 of this chapter. The 100-hour limitation may be exceeded by not more than 10 hours while en route to reach a place where the inspection can be done. The excess time used to reach a place where the inspection can be done must be included in computing the next 100 hours of time in service.

(c) Paragraphs (a) and (b) of this section do not apply to—

(1) An aircraft that carries a special flight permit, a current experimental certificate, or a light-sport or provisional airworthiness certificate;

(2) An aircraft inspected in accordance with an approved aircraft inspection program under part 125 or 135 of this chapter and so identified by the registration number in the operations specifications of the certificate holder having the approved inspection program;

(3) An aircraft subject to the requirements of paragraph (d) or (e) of this section; or

(4) Turbine-powered rotorcraft when the operator elects to inspect that rotorcraft in accordance with paragraph (e) of this section.

(d) *Progressive inspection.* Each registered owner or operator of an aircraft desiring to use a progressive inspection program must submit a written request to the FAA Flight Standards district office having jurisdiction over the area in which the applicant is located, and shall provide—

(1) A certificated mechanic holding an inspection authorization, a certificated airframe repair station, or the manufacturer of the aircraft to supervise or conduct the progressive inspection;

(2) A current inspection procedures manual available and readily understandable to pilot and maintenance personnel containing, in detail—

(i) An explanation of the progressive inspection, including the continuity of inspection responsibility, the making of reports, and the keeping of records and technical reference material;

(ii) An inspection schedule, specifying the intervals in hours or days when routine and detailed inspections will be performed and including instructions for exceeding an inspection interval by not more than 10 hours while en route and for changing an inspection interval because of service experience;

(iii) Sample routine and detailed inspection forms and instructions for their use; and

(iv) Sample reports and records and instructions for their use;

(3) Enough housing and equipment for necessary disassembly and proper inspection of the aircraft; and

(4) Appropriate current technical information for the aircraft.

The frequency and detail of the progressive inspection shall provide for the complete inspection of the aircraft within each 12 calendar months and be consistent with the manufacturer's recommendations, field service experience, and the kind of operation in which the aircraft is engaged. The progressive inspection schedule must ensure that the aircraft, at all times, will be airworthy and will conform to all applicable FAA aircraft specifications, type certificate data sheets, airworthiness directives, and other approved data. If the progressive inspection is discontinued, the owner or operator shall immediately notify the local FAA Flight Standards district office, in writing, of the discontinuance. After the discontinuance, the first annual inspection under §91.409(a)(1) is due within 12 calendar months after the last complete inspection of the aircraft under the progressive inspection. The 100-hour inspection under §91.409(b) is due within 100 hours after that complete inspection. A complete inspection of the aircraft, for the purpose of determining when the annual and 100-hour inspections are due, requires a detailed inspection of the aircraft and all its components in accordance with the progressive inspection. A routine inspection of the aircraft and a detailed inspection of several components is not considered to be a complete inspection.

(e) *Large airplanes (to which part 125 is not applicable), turbojet multiengine airplanes, turbopropeller-powered multiengine airplanes, and turbine-powered rotorcraft.* No person may operate a large airplane, turbojet multiengine airplane, turbopropeller-powered multiengine airplane, or turbine-powered rotorcraft unless the replacement times for life-limited parts specified in the aircraft specifications, type data sheets, or other documents approved by the Administrator are complied with and the airplane or turbine-powered rotorcraft, including the airframe, engines, propellers, rotors, appliances, survival equipment, and emergency equipment, is inspected in accordance with an inspection program selected under the provisions of paragraph (f) of this section, except that, the owner or operator of a turbine-powered rotorcraft may elect to use the inspection provisions of §91.409(a), (b), (c), or (d) in lieu of an inspection option of §91.409(f).

(f) *Selection of inspection program under paragraph (e) of this section.* The registered owner or operator of each airplane or turbine-powered rotorcraft described in paragraph (e) of this section must select, identify in the aircraft maintenance records, and use one of the following programs for the inspection of the aircraft:

(1) A continuous airworthiness inspection program that is part of a continuous airworthiness maintenance program currently in use by a person holding an air carrier operating certificate or an operating certificate issued under part 121 or 135 of this chapter and operating that make and model aircraft under part 121 of this chapter or operating that make and model under part 135 of this chapter and maintaining it under §135.411(a)(2) of this chapter.

(2) An approved aircraft inspection program approved under §135.419 of this chapter and currently in use by a person holding an operating certificate issued under part 135 of this chapter.

(3) A current inspection program recommended by the manufacturer.

(4) Any other inspection program established by the registered owner or operator of that airplane or turbine-powered rotorcraft and approved by the Administrator under paragraph (g) of this section. However, the Administrator may require revision of this inspection program in accordance with the provisions of §91.415.

Each operator shall include in the selected program the name and address of the person responsible for scheduling the inspections required by the program and make a copy of that program available to the person performing inspections on the aircraft and, upon request, to the Administrator.

(g) *Inspection program approved under paragraph (e) of this section.* Each operator of an airplane or turbine-powered rotorcraft desiring to establish or change an approved inspection program

under paragraph (f)(4) of this section must submit the program for approval to the local FAA Flight Standards district office having jurisdiction over the area in which the aircraft is based. The program must be in writing and include at least the following information:

(1) Instructions and procedures for the conduct of inspections for the particular make and model airplane or turbine-powered rotorcraft, including necessary tests and checks. The instructions and procedures must set forth in detail the parts and areas of the airframe, engines, propellers, rotors, and appliances, including survival and emergency equipment required to be inspected.

(2) A schedule for performing the inspections that must be performed under the program expressed in terms of the time in service, calendar time, number of system operations, or any combination of these.

(h) *Changes from one inspection program to another*. When an operator changes from one inspection program under paragraph (f) of this section to another, the time in service, calendar times, or cycles of operation accumulated under the previous program must be applied in determining inspection due times under the new program.

(Approved by the Office of Management and Budget under control number 2120–0005)

[Doc. No. 18334, 54 FR 34311, Aug. 18, 1989; Amdt. 91–211, 54 FR 41211, Oct. 5, 1989; Amdt. 91–267, 66 FR 21066, Apr. 27, 2001; Amdt. 91–282, 69 FR 44882, July 27, 2004]

### § 91.410 [Reserved]

### § 91.411 Altimeter system and altitude reporting equipment tests and inspections.

(a) No person may operate an airplane, or helicopter, in controlled airspace under IFR unless—

(1) Within the preceding 24 calendar months, each static pressure system, each altimeter instrument, and each automatic pressure altitude reporting system has been tested and inspected and found to comply with appendices E and F of part 43 of this chapter;

(2) Except for the use of system drain and alternate static pressure valves, following any opening and closing of the static pressure system, that system has been tested and inspected and found to comply with paragraph (a), appendix E, of part 43 of this chapter; and

(3) Following installation or maintenance on the automatic pressure altitude reporting system of the ATC transponder where data correspondence error could be introduced, the integrated system has been tested, inspected, and found to comply with paragraph (c), appendix E, of part 43 of this chapter.

(b) The tests required by paragraph (a) of this section must be conducted by—

(1) The manufacturer of the airplane, or helicopter, on which the tests and inspections are to be performed;

(2) A certificated repair station properly equipped to perform those functions and holding—

(i) An instrument rating, Class I;

(ii) A limited instrument rating appropriate to the make and model of appliance to be tested;

(iii) A limited rating appropriate to the test to be performed;

(iv) An airframe rating appropriate to the airplane, or helicopter, to be tested; or

(3) A certificated mechanic with an airframe rating (static pressure system tests and inspections only).

(c) Altimeter and altitude reporting equipment approved under Technical Standard Orders are considered to be tested and inspected as of the date of their manufacture.

(d) No person may operate an airplane, or helicopter, in controlled airspace under IFR at an altitude above the maximum altitude at which all altimeters and the automatic altitude reporting system of that airplane, or helicopter, have been tested.

[Docket No. 18334, 54 FR 34308, Aug. 18, 1989, as amended by Amdt. 91–269, 66 FR 41116, Aug. 6, 2001; 72 FR 7739, Feb. 20, 2007]

### § 91.413 ATC transponder tests and inspections.

(a) No persons may use an ATC transponder that is specified in 91.215(a), 121.345(c), or § 135.143(c) of this chapter unless, within the preceding 24 calendar months, the ATC transponder has been tested and inspected and

found to comply with appendix F of part 43 of this chapter; and

(b) Following any installation or maintenance on an ATC transponder where data correspondence error could be introduced, the integrated system has been tested, inspected, and found to comply with paragraph (c), appendix E, of part 43 of this chapter.

(c) The tests and inspections specified in this section must be conducted by—

(1) A certificated repair station properly equipped to perform those functions and holding—

(i) A radio rating, Class III;

(ii) A limited radio rating appropriate to the make and model transponder to be tested;

(iii) A limited rating appropriate to the test to be performed;

(2) A holder of a continuous airworthiness maintenance program as provided in part 121 or §135.411(a)(2) of this chapter; or

(3) The manufacturer of the aircraft on which the transponder to be tested is installed, if the transponder was installed by that manufacturer.

[Doc. No. 18334, 54 FR 34311, Aug. 18, 1989, as amended by Amdt. 91–267, 66 FR 21066, Apr. 27, 2001; Amdt. 91–269, 66 FR 41116, Aug. 6, 2001]

### §91.415 Changes to aircraft inspection programs.

(a) Whenever the Administrator finds that revisions to an approved aircraft inspection program under §91.409(f)(4) or §91.1109 are necessary for the continued adequacy of the program, the owner or operator must, after notification by the Administrator, make any changes in the program found to be necessary by the Administrator.

(b) The owner or operator may petition the Administrator to reconsider the notice to make any changes in a program in accordance with paragraph (a) of this section.

(c) The petition must be filed with the Director, Flight Standards Service within 30 days after the certificate holder or fractional ownership program manager receives the notice.

(d) Except in the case of an emergency requiring immediate action in the interest of safety, the filing of the petition stays the notice pending a decision by the Administrator.

[Doc. No. 18334, 54 FR 34311, Aug. 18, 1989, as amended by Amdt. 91–280, 68 FR 54560, Sept. 17, 2003]

### §91.417 Maintenance records.

(a) Except for work performed in accordance with §§91.411 and 91.413, each registered owner or operator shall keep the following records for the periods specified in paragraph (b) of this section:

(1) Records of the maintenance, preventive maintenance, and alteration and records of the 100-hour, annual, progressive, and other required or approved inspections, as appropriate, for each aircraft (including the airframe) and each engine, propeller, rotor, and appliance of an aircraft. The records must include—

(i) A description (or reference to data acceptable to the Administrator) of the work performed; and

(ii) The date of completion of the work performed; and

(iii) The signature, and certificate number of the person approving the aircraft for return to service.

(2) Records containing the following information:

(i) The total time in service of the airframe, each engine, each propeller, and each rotor.

(ii) The current status of life-limited parts of each airframe, engine, propeller, rotor, and appliance.

(iii) The time since last overhaul of all items installed on the aircraft which are required to be overhauled on a specified time basis.

(iv) The current inspection status of the aircraft, including the time since the last inspection required by the inspection program under which the aircraft and its appliances are maintained.

(v) The current status of applicable airworthiness directives (AD) including, for each, the method of compliance, the AD number, and revision date. If the AD involves recurring action, the time and date when the next action is required.

(vi) Copies of the forms prescribed by §43.9(a) of this chapter for each major

alteration to the airframe and currently installed engines, rotors, propellers, and appliances.

(b) The owner or operator shall retain the following records for the periods prescribed:

(1) The records specified in paragraph (a)(1) of this section shall be retained until the work is repeated or superseded by other work or for 1 year after the work is performed.

(2) The records specified in paragraph (a)(2) of this section shall be retained and transferred with the aircraft at the time the aircraft is sold.

(3) A list of defects furnished to a registered owner or operator under § 43.11 of this chapter shall be retained until the defects are repaired and the aircraft is approved for return to service.

(c) The owner or operator shall make all maintenance records required to be kept by this section available for inspection by the Administrator or any authorized representative of the National Transportation Safety Board (NTSB). In addition, the owner or operator shall present Form 337 described in paragraph (d) of this section for inspection upon request of any law enforcement officer.

(d) When a fuel tank is installed within the passenger compartment or a baggage compartment pursuant to part 43 of this chapter, a copy of FAA Form 337 shall be kept on board the modified aircraft by the owner or operator.

(Approved by the Office of Management and Budget under control number 2120–0005)

### § 91.419 Transfer of maintenance records.

Any owner or operator who sells a U.S.-registered aircraft shall transfer to the purchaser, at the time of sale, the following records of that aircraft, in plain language form or in coded form at the election of the purchaser, if the coded form provides for the preservation and retrieval of information in a manner acceptable to the Administrator:

(a) The records specified in § 91.417(a)(2).

(b) The records specified in § 91.417(a)(1) which are not included in the records covered by paragraph (a) of this section, except that the purchaser may permit the seller to keep physical custody of such records. However, custody of records by the seller does not relieve the purchaser of the responsibility under § 91.417(c) to make the records available for inspection by the Administrator or any authorized representative of the National Transportation Safety Board (NTSB).

### § 91.421 Rebuilt engine maintenance records.

(a) The owner or operator may use a new maintenance record, without previous operating history, for an aircraft engine rebuilt by the manufacturer or by an agency approved by the manufacturer.

(b) Each manufacturer or agency that grants zero time to an engine rebuilt by it shall enter in the new record—

(1) A signed statement of the date the engine was rebuilt;

(2) Each change made as required by airworthiness directives; and

(3) Each change made in compliance with manufacturer's service bulletins, if the entry is specifically requested in that bulletin.

(c) For the purposes of this section, a rebuilt engine is a used engine that has been completely disassembled, inspected, repaired as necessary, reassembled, tested, and approved in the same manner and to the same tolerances and limits as a new engine with either new or used parts. However, all parts used in it must conform to the production drawing tolerances and limits for new parts or be of approved oversized or undersized dimensions for a new engine.

### §§ 91.423–91.499 [Reserved]

## Subpart F—Large and Turbine-Powered Multiengine Airplanes and Fractional Ownership Program Aircraft

SOURCE: Docket No. 18334, 54 FR 34314, Aug. 18, 1989, unless otherwise noted.

### § 91.501 Applicability.

(a) This subpart prescribes operating rules, in addition to those prescribed in other subparts of this part, governing the operation of large airplanes of U.S.

registry, turbojet-powered multiengine civil airplanes of U.S. registry, and fractional ownership program aircraft of U.S. registry that are operating under subpart K of this part in operations not involving common carriage. The operating rules in this subpart do not apply to those aircraft when they are required to be operated under parts 121, 125, 129, 135, and 137 of this chapter. (Section 91.409 prescribes an inspection program for large and for turbine-powered (turbojet and turboprop) multiengine airplanes and turbine-powered rotorcraft of U.S. registry when they are operated under this part or part 129 or 137.)

(b) Operations that may be conducted under the rules in this subpart instead of those in parts 121, 129, 135, and 137 of this chapter when common carriage is not involved, include—

(1) Ferry or training flights;

(2) Aerial work operations such as aerial photography or survey, or pipeline patrol, but not including fire fighting operations;

(3) Flights for the demonstration of an airplane to prospective customers when no charge is made except for those specified in paragraph (d) of this section;

(4) Flights conducted by the operator of an airplane for his personal transportation, or the transportation of his guests when no charge, assessment, or fee is made for the transportation;

(5) Carriage of officials, employees, guests, and property of a company on an airplane operated by that company, or the parent or a subsidiary of the company or a subsidiary of the parent, when the carriage is within the scope of, and incidental to, the business of the company (other than transportation by air) and no charge, assessment or fee is made for the carriage in excess of the cost of owning, operating, and maintaining the airplane, except that no charge of any kind may be made for the carriage of a guest of a company, when the carriage is not within the scope of, and incidental to, the business of that company;

(6) The carriage of company officials, employees, and guests of the company on an airplane operated under a time sharing, interchange, or joint ownership agreement as defined in paragraph (c) of this section;

(7) The carriage of property (other than mail) on an airplane operated by a person in the furtherance of a business or employment (other than transportation by air) when the carriage is within the scope of, and incidental to, that business or employment and no charge, assessment, or fee is made for the carriage other than those specified in paragraph (d) of this section;

(8) The carriage on an airplane of an athletic team, sports group, choral group, or similar group having a common purpose or objective when there is no charge, assessment, or fee of any kind made by any person for that carriage; and

(9) The carriage of persons on an airplane operated by a person in the furtherance of a business other than transportation by air for the purpose of selling them land, goods, or property, including franchises or distributorships, when the carriage is within the scope of, and incidental to, that business and no charge, assessment, or fee is made for that carriage.

(10) Any operation identified in paragraphs (b)(1) through (b)(9) of this section when conducted—

(i) By a fractional ownership program manager, or

(ii) By a fractional owner in a fractional ownership program aircraft operated under subpart K of this part, except that a flight under a joint ownership arrangement under paragraph (b)(6) of this section may not be conducted. For a flight under an interchange agreement under paragraph (b)(6) of this section, the exchange of equal time for the operation must be properly accounted for as part of the total hours associated with the fractional owner's share of ownership.

(c) As used in this section—

(1) A *time sharing agreement* means an arrangement whereby a person leases his airplane with flight crew to another person, and no charge is made for the flights conducted under that arrangement other than those specified in paragraph (d) of this section;

(2) An *interchange agreement* means an arrangement whereby a person leases his airplane to another person in exchange for equal time, when needed, on

the other person's airplane, and no charge, assessment, or fee is made, except that a charge may be made not to exceed the difference between the cost of owning, operating, and maintaining the two airplanes;

(3) A *joint ownership agreement* means an arrangement whereby one of the registered joint owners of an airplane employs and furnishes the flight crew for that airplane and each of the registered joint owners pays a share of the charge specified in the agreement.

(d) The following may be charged, as expenses of a specific flight, for transportation as authorized by paragraphs (b) (3) and (7) and (c)(1) of this section:

(1) Fuel, oil, lubricants, and other additives.

(2) Travel expenses of the crew, including food, lodging, and ground transportation.

(3) Hangar and tie-down costs away from the aircraft's base of operation.

(4) Insurance obtained for the specific flight.

(5) Landing fees, airport taxes, and similar assessments.

(6) Customs, foreign permit, and similar fees directly related to the flight.

(7) In flight food and beverages.

(8) Passenger ground transportation.

(9) Flight planning and weather contract services.

(10) An additional charge equal to 100 percent of the expenses listed in paragraph (d)(1) of this section.

[Doc. No. 18334, 54 FR 34314, Aug. 18, 1989, as amended by Amdt. 91–280, 68 FR 54560, Sept. 17, 2003]

### § 91.503 Flying equipment and operating information.

(a) The pilot in command of an airplane shall ensure that the following flying equipment and aeronautical charts and data, in current and appropriate form, are accessible for each flight at the pilot station of the airplane:

(1) A flashlight having at least two size ''D'' cells, or the equivalent, that is in good working order.

(2) A cockpit checklist containing the procedures required by paragraph (b) of this section.

(3) Pertinent aeronautical charts.

(4) For IFR, VFR over-the-top, or night operations, each pertinent navigational en route, terminal area, and approach and letdown chart.

(5) In the case of multiengine airplanes, one-engine inoperative climb performance data.

(b) Each cockpit checklist must contain the following procedures and shall be used by the flight crewmembers when operating the airplane:

(1) Before starting engines.

(2) Before takeoff.

(3) Cruise.

(4) Before landing.

(5) After landing.

(6) Stopping engines.

(7) Emergencies.

(c) Each emergency cockpit checklist procedure required by paragraph (b)(7) of this section must contain the following procedures, as appropriate:

(1) Emergency operation of fuel, hydraulic, electrical, and mechanical systems.

(2) Emergency operation of instruments and controls.

(3) Engine inoperative procedures.

(4) Any other procedures necessary for safety.

(d) The equipment, charts, and data prescribed in this section shall be used by the pilot in command and other members of the flight crew, when pertinent.

### § 91.505 Familiarity with operating limitations and emergency equipment.

(a) Each pilot in command of an airplane shall, before beginning a flight, become familiar with the Airplane Flight Manual for that airplane, if one is required, and with any placards, listings, instrument markings, or any combination thereof, containing each operating limitation prescribed for that airplane by the Administrator, including those specified in § 91.9(b).

(b) Each required member of the crew shall, before beginning a flight, become familiar with the emergency equipment installed on the airplane to which that crewmember is assigned and with the procedures to be followed for the use of that equipment in an emergency situation.

**§91.507 Equipment requirements: Over-the-top or night VFR operations.**

No person may operate an airplane over-the-top or at night under VFR unless that airplane is equipped with the instruments and equipment required for IFR operations under §91.205(d) and one electric landing light for night operations. Each required instrument and item of equipment must be in operable condition.

**§91.509 Survival equipment for overwater operations.**

(a) No person may take off an airplane for a flight over water more than 50 nautical miles from the nearest shore unless that airplane is equipped with a life preserver or an approved flotation means for each occupant of the airplane.

(b) Except as provided in paragraph (c) of this section, no person may take off an airplane for flight over water more than 30 minutes flying time or 100 nautical miles from the nearest shore, whichever is less, unless it has on board the following survival equipment:

(1) A life preserver, equipped with an approved survivor locator light, for each occupant of the airplane.

(2) Enough liferafts (each equipped with an approved survival locator light) of a rated capacity and buoyancy to accommodate the occupants of the airplane.

(3) At least one pyrotechnic signaling device for each liferaft.

(4) One self-buoyant, water-resistant, portable emergency radio signaling device that is capable of transmission on the appropriate emergency frequency or frequencies and not dependent upon the airplane power supply.

(5) A lifeline stored in accordance with §25.1411(g) of this chapter.

(c) A fractional ownership program manager under subpart K of this part may apply for a deviation from paragraphs (b)(2) through (5) of this section for a particular over water operation or the Administrator may amend the management specifications to require the carriage of all or any specific items of the equipment listed in paragraphs (b)(2) through (5) of this section.

(d) The required life rafts, life preservers, and signaling devices must be installed in conspicuously marked locations and easily accessible in the event of a ditching without appreciable time for preparatory procedures.

(e) A survival kit, appropriately equipped for the route to be flown, must be attached to each required life raft.

(f) As used in this section, the term shore means that area of the land adjacent to the water that is above the high water mark and excludes land areas that are intermittently under water.

[Doc. No. 18334, 54 FR 34314, Aug. 18, 1989, as amended by Amdt. 91–280, 68 FR 54561, Sept. 17, 2003]

**§91.511 Communication and navigation equipment for overwater operations.**

(a) Except as provided in paragraphs (c), (d), and (f) of this section, no person may take off an airplane for a flight over water more than 30 minutes flying time or 100 nautical miles from the nearest shore unless it has at least the following operable equipment:

(1) Radio communication equipment appropriate to the facilities to be used and able to transmit to, and receive from, at least one communication facility from any place along the route:

(i) Two transmitters.

(ii) Two microphones.

(iii) Two headsets or one headset and one speaker.

(iv) Two independent receivers.

(2) Appropriate electronic navigational equipment consisting of at least two independent electronic navigation units capable of providing the pilot with the information necessary to navigate the airplane within the airspace assigned by air traffic control. However, a receiver that can receive both communications and required navigational signals may be used in place of a separate communications receiver and a separate navigational signal receiver or unit.

(b) For the purposes of paragraphs (a)(1)(iv) and (a)(2) of this section, a receiver or electronic navigation unit is independent if the function of any part

of it does not depend on the functioning of any part of another receiver or electronic navigation unit.

(c) Notwithstanding the provisions of paragraph (a) of this section, a person may operate an airplane on which no passengers are carried from a place where repairs or replacement cannot be made to a place where they can be made, if not more than one of each of the dual items of radio communication and navigational equipment specified in paragraphs (a)(1) (i) through (iv) and (a)(2) of this section malfunctions or becomes inoperative.

(d) Notwithstanding the provisions of paragraph (a) of this section, when both VHF and HF communications equipment are required for the route and the airplane has two VHF transmitters and two VHF receivers for communications, only one HF transmitter and one HF receiver is required for communications.

(e) As used in this section, the term *shore* means that area of the land adjacent to the water which is above the high-water mark and excludes land areas which are intermittently under water.

(f) Notwithstanding the requirements in paragraph (a)(2) of this section, a person may operate in the Gulf of Mexico, the Caribbean Sea, and the Atlantic Ocean west of a line which extends from 44°47′00″ N / 67°00′00″ W to 39°00′00″ N / 67°00′00″ W to 38°30′00″ N / 60°00′00″ W south along the 60°00′00″ W longitude line to the point where the line intersects with the northern coast of South America, when:

(1) A single long-range navigation system is installed, operational, and appropriate for the route; and

(2) Flight conditions and the aircraft's capabilities are such that no more than a 30-minute gap in two-way radio very high frequency communications is expected to exist.

[Doc. No. 18334, 54 FR 34314, Aug. 18, 1989, as amended by Amdt. 91–249, 61 FR 7190, Feb. 26, 1996; Amdt. 91–296, 72 FR 31679, June 7, 2007]

### § 91.513 Emergency equipment.

(a) No person may operate an airplane unless it is equipped with the emergency equipment listed in this section.

(b) Each item of equipment—

(1) Must be inspected in accordance with § 91.409 to ensure its continued serviceability and immediate readiness for its intended purposes;

(2) Must be readily accessible to the crew;

(3) Must clearly indicate its method of operation; and

(4) When carried in a compartment or container, must have that compartment or container marked as to contents and date of last inspection.

(c) Hand fire extinguishers must be provided for use in crew, passenger, and cargo compartments in accordance with the following:

(1) The type and quantity of extinguishing agent must be suitable for the kinds of fires likely to occur in the compartment where the extinguisher is intended to be used.

(2) At least one hand fire extinguisher must be provided and located on or near the flight deck in a place that is readily accessible to the flight crew.

(3) At least one hand fire extinguisher must be conveniently located in the passenger compartment of each airplane accommodating more than six but less than 31 passengers, and at least two hand fire extinguishers must be conveniently located in the passenger compartment of each airplane accommodating more than 30 passengers.

(4) Hand fire extinguishers must be installed and secured in such a manner that they will not interfere with the safe operation of the airplane or adversely affect the safety of the crew and passengers. They must be readily accessible and, unless the locations of the fire extinguishers are obvious, their stowage provisions must be properly identified.

(d) First aid kits for treatment of injuries likely to occur in flight or in minor accidents must be provided.

(e) Each airplane accommodating more than 19 passengers must be equipped with a crash axe.

(f) Each passenger-carrying airplane must have a portable battery-powered megaphone or megaphones readily accessible to the crewmembers assigned to direct emergency evacuation, installed as follows:

(1) One megaphone on each airplane with a seating capacity of more than 60 but less than 100 passengers, at the most rearward location in the passenger cabin where it would be readily accessible to a normal flight attendant seat. However, the Administrator may grant a deviation from the requirements of this subparagraph if the Administrator finds that a different location would be more useful for evacuation of persons during an emergency.

(2) On each airplane with a seating capacity of 100 or more passengers, one megaphone installed at the forward end and one installed at the most rearward location where it would be readily accessible to a normal flight attendant seat.

### §91.515 Flight altitude rules.

(a) Notwithstanding §91.119, and except as provided in paragraph (b) of this section, no person may operate an airplane under VFR at less than—

(1) One thousand feet above the surface, or 1,000 feet from any mountain, hill, or other obstruction to flight, for day operations; and

(2) The altitudes prescribed in §91.177, for night operations.

(b) This section does not apply—

(1) During takeoff or landing;

(2) When a different altitude is authorized by a waiver to this section under subpart J of this part; or

(3) When a flight is conducted under the special VFR weather minimums of §91.157 with an appropriate clearance from ATC.

### §91.517 Passenger information.

(a) Except as provided in paragraph (b) of this section, no person may operate an airplane carrying passengers unless it is equipped with signs that are visible to passengers and flight attendants to notify them when smoking is prohibited and when safety belts must be fastened. The signs must be so constructed that the crew can turn them on and off. They must be turned on during airplane movement on the surface, for each takeoff, for each landing, and when otherwise considered to be necessary by the pilot in command.

(b) The pilot in command of an airplane that is not required, in accordance with applicable aircraft and equipment requirements of this chapter, to be equipped as provided in paragraph (a) of this section shall ensure that the passengers are notified orally each time that it is necessary to fasten their safety belts and when smoking is prohibited.

(c) If passenger information signs are installed, no passenger or crewmember may smoke while any ''no smoking'' sign is lighted nor may any passenger or crewmember smoke in any lavatory.

(d) Each passenger required by §91.107(a)(3) to occupy a seat or berth shall fasten his or her safety belt about him or her and keep it fastened while any ''fasten seat belt'' sign is lighted.

(e) Each passenger shall comply with instructions given him or her by crewmembers regarding compliance with paragraphs (b), (c), and (d) of this section.

[Doc. No. 26142, 57 FR 42672, Sept. 15, 1992]

### §91.519 Passenger briefing.

(a) Before each takeoff the pilot in command of an airplane carrying passengers shall ensure that all passengers have been orally briefed on—

(1) *Smoking*. Each passenger shall be briefed on when, where, and under what conditions smoking is prohibited. This briefing shall include a statement, as appropriate, that the Federal Aviation Regulations require passenger compliance with lighted passenger information signs and no smoking placards, prohibit smoking in lavatories, and require compliance with crewmember instructions with regard to these items;

(2) *Use of safety belts and shoulder harnesses*. Each passenger shall be briefed on when, where, and under what conditions it is necessary to have his or her safety belt and, if installed, his or her shoulder harness fastened about him or her. This briefing shall include a statement, as appropriate, that Federal Aviation Regulations require passenger compliance with the lighted passenger sign and/or crewmember instructions with regard to these items;

(3) Location and means for opening the passenger entry door and emergency exits;

(4) Location of survival equipment;

(5) Ditching procedures and the use of flotation equipment required under §91.509 for a flight over water; and

(6) The normal and emergency use of oxygen equipment installed on the airplane.

(b) The oral briefing required by paragraph (a) of this section shall be given by the pilot in command or a member of the crew, but need not be given when the pilot in command determines that the passengers are familiar with the contents of the briefing. It may be supplemented by printed cards for the use of each passenger containing—

(1) A diagram of, and methods of operating, the emergency exits; and

(2) Other instructions necessary for use of emergency equipment.

(c) Each card used under paragraph (b) must be carried in convenient locations on the airplane for the use of each passenger and must contain information that is pertinent only to the type and model airplane on which it is used.

(d) For operations under subpart K of this part, the passenger briefing requirements of § 91.1035 apply, instead of the requirements of paragraphs (a) through (c) of this section.

[Doc. No. 18334, 54 FR 34314, Aug. 18, 1989, as amended by Amdt. 91–231, 57 FR 42672, Sept. 15, 1992; Amdt. 91–280, 68 FR 54561, Sept. 17, 2003]

### § 91.521 Shoulder harness.

(a) No person may operate a transport category airplane that was type certificated after January 1, 1958, unless it is equipped at each seat at a flight deck station with a combined safety belt and shoulder harness that meets the applicable requirements specified in § 25.785 of this chapter, except that—

(1) Shoulder harnesses and combined safety belt and shoulder harnesses that were approved and installed before March 6, 1980, may continue to be used; and

(2) Safety belt and shoulder harness restraint systems may be designed to the inertia load factors established under the certification basis of the airplane.

(b) No person may operate a transport category airplane unless it is equipped at each required flight attendant seat in the passenger compartment with a combined safety belt and shoulder harness that meets the applicable requirements specified in § 25.785 of this chapter, except that—

(1) Shoulder harnesses and combined safety belt and shoulder harnesses that were approved and installed before March 6, 1980, may continue to be used; and

(2) Safety belt and shoulder harness restraint systems may be designed to the inertia load factors established under the certification basis of the airplane.

### § 91.523 Carry-on baggage.

No pilot in command of an airplane having a seating capacity of more than 19 passengers may permit a passenger to stow baggage aboard that airplane except—

(a) In a suitable baggage or cargo storage compartment, or as provided in § 91.525; or

(b) Under a passenger seat in such a way that it will not slide forward under crash impacts severe enough to induce the ultimate inertia forces specified in § 25.561(b)(3) of this chapter, or the requirements of the regulations under which the airplane was type certificated. Restraining devices must also limit sideward motion of under-seat baggage and be designed to withstand crash impacts severe enough to induce sideward forces specified in § 25.561(b)(3) of this chapter.

### § 91.525 Carriage of cargo.

(a) No pilot in command may permit cargo to be carried in any airplane unless—

(1) It is carried in an approved cargo rack, bin, or compartment installed in the airplane;

(2) It is secured by means approved by the Administrator; or

(3) It is carried in accordance with each of the following:

(i) It is properly secured by a safety belt or other tiedown having enough strength to eliminate the possibility of shifting under all normally anticipated flight and ground conditions.

(ii) It is packaged or covered to avoid possible injury to passengers.

(iii) It does not impose any load on seats or on the floor structure that exceeds the load limitation for those components.

(iv) It is not located in a position that restricts the access to or use of any required emergency or regular exit, or the use of the aisle between the crew and the passenger compartment.

(v) It is not carried directly above seated passengers.

(b) When cargo is carried in cargo compartments that are designed to require the physical entry of a crewmember to extinguish any fire that may occur during flight, the cargo must be loaded so as to allow a crewmember to effectively reach all parts of the compartment with the contents of a hand fire extinguisher.

**§91.527 Operating in icing conditions.**

(a) No pilot may take off an airplane that has—

(1) Frost, snow, or ice adhering to any propeller, windshield, or powerplant installation or to an airspeed, altimeter, rate of climb, or flight attitude instrument system;

(2) Snow or ice adhering to the wings or stabilizing or control surfaces; or

(3) Any frost adhering to the wings or stabilizing or control surfaces, unless that frost has been polished to make it smooth.

(b) Except for an airplane that has ice protection provisions that meet the requirements in section 34 of Special Federal Aviation Regulation No. 23, or those for transport category airplane type certification, no pilot may fly—

(1) Under IFR into known or forecast moderate icing conditions; or

(2) Under VFR into known light or moderate icing conditions unless the aircraft has functioning de-icing or anti-icing equipment protecting each propeller, windshield, wing, stabilizing or control surface, and each airspeed, altimeter, rate of climb, or flight attitude instrument system.

(c) Except for an airplane that has ice protection provisions that meet the requirements in section 34 of Special Federal Aviation Regulation No. 23, or those for transport category airplane type certification, no pilot may fly an airplane into known or forecast severe icing conditions.

(d) If current weather reports and briefing information relied upon by the pilot in command indicate that the forecast icing conditions that would otherwise prohibit the flight will not be encountered during the flight because of changed weather conditions since the forecast, the restrictions in paragraphs (b) and (c) of this section based on forecast conditions do not apply.

**§91.529 Flight engineer requirements.**

(a) No person may operate the following airplanes without a flight crewmember holding a current flight engineer certificate:

(1) An airplane for which a type certificate was issued before January 2, 1964, having a maximum certificated takeoff weight of more than 80,000 pounds.

(2) An airplane type certificated after January 1, 1964, for which a flight engineer is required by the type certification requirements.

(b) No person may serve as a required flight engineer on an airplane unless, within the preceding 6 calendar months, that person has had at least 50 hours of flight time as a flight engineer on that type airplane or has been checked by the Administrator on that type airplane and is found to be familiar and competent with all essential current information and operating procedures.

**§91.531 Second in command requirements.**

(a) Except as provided in paragraph (b) and (d) of this section, no person may operate the following airplanes without a pilot who is designated as second in command of that airplane:

(1) A large airplane, except that a person may operate an airplane certificated under SFAR 41 without a pilot who is designated as second in command if that airplane is certificated for operation with one pilot.

(2) A turbojet-powered multiengine airplane for which two pilots are required under the type certification requirements for that airplane.

(3) A commuter category airplane, except that a person may operate a commuter category airplane notwithstanding paragraph (a)(1) of this section, that has a passenger seating configuration, excluding pilot seats, of nine or less without a pilot who is designated as second in command if that

airplane is type certificated for operations with one pilot.

(b) The Administrator may issue a letter of authorization for the operation of an airplane without compliance with the requirements of paragraph (a) of this section if that airplane is designed for and type certificated with only one pilot station. The authorization contains any conditions that the Administrator finds necessary for safe operation.

(c) No person may designate a pilot to serve as second in command, nor may any pilot serve as second in command, of an airplane required under this section to have two pilots unless that pilot meets the qualifications for second in command prescribed in § 61.55 of this chapter.

(d) No person may operate an aircraft under subpart K of this part without a pilot who is designated as second in command of that aircraft in accordance with § 91.1049(d). The second in command must meet the experience requirements of § 91.1053.

[Doc. No. 18334, 54 FR 34314, Aug. 18, 1989, as amended by Amdt. 91–280, 68 FR 54561, Sept. 17, 2003]

### § 91.533 Flight attendant requirements.

(a) No person may operate an airplane unless at least the following number of flight attendants are on board the airplane:

(1) For airplanes having more than 19 but less than 51 passengers on board, one flight attendant.

(2) For airplanes having more than 50 but less than 101 passengers on board, two flight attendants.

(3) For airplanes having more than 100 passengers on board, two flight attendants plus one additional flight attendant for each unit (or part of a unit) of 50 passengers above 100.

(b) No person may serve as a flight attendant on an airplane when required by paragraph (a) of this section unless that person has demonstrated to the pilot in command familiarity with the necessary functions to be performed in an emergency or a situation requiring emergency evacuation and is capable of using the emergency equipment installed on that airplane.

### § 91.535 Stowage of food, beverage, and passenger service equipment during aircraft movement on the surface, takeoff, and landing.

(a) No operator may move an aircraft on the surface, take off, or land when any food, beverage, or tableware furnished by the operator is located at any passenger seat.

(b) No operator may move an aircraft on the surface, take off, or land unless each food and beverage tray and seat back tray table is secured in its stowed position.

(c) No operator may permit an aircraft to move on the surface, take off, or land unless each passenger serving cart is secured in its stowed position.

(d) No operator may permit an aircraft to move on the surface, take off, or land unless each movie screen that extends into the aisle is stowed.

(e) Each passenger shall comply with instructions given by a crewmember with regard to compliance with this section.

[Doc. No. 26142, 57 FR 42672, Sept. 15, 1992]

### §§ 91.536–91.599 [Reserved]

## Subpart G—Additional Equipment and Operating Requirements for Large and Transport Category Aircraft

SOURCE: Docket No. 18334, 54 FR 34318, Aug. 18, 1989, unless otherwise noted.

### § 91.601 Applicability.

This subpart applies to operation of large and transport category U.S.-registered civil aircraft.

### § 91.603 Aural speed warning device.

No person may operate a transport category airplane in air commerce unless that airplane is equipped with an aural speed warning device that complies with § 25.1303(c)(1).

### § 91.605 Transport category civil airplane weight limitations.

(a) No person may take off any transport category airplane (other than a turbine-engine-powered airplane certificated after September 30, 1958) unless—

(1) The takeoff weight does not exceed the authorized maximum takeoff weight for the elevation of the airport of takeoff;

(2) The elevation of the airport of takeoff is within the altitude range for which maximum takeoff weights have been determined;

(3) Normal consumption of fuel and oil in flight to the airport of intended landing will leave a weight on arrival not in excess of the authorized maximum landing weight for the elevation of that airport; and

(4) The elevations of the airport of intended landing and of all specified alternate airports are within the altitude range for which the maximum landing weights have been determined.

(b) No person may operate a turbine-engine-powered transport category airplane certificated after September 30, 1958, contrary to the Airplane Flight Manual, or take off that airplane unless—

(1) The takeoff weight does not exceed the takeoff weight specified in the Airplane Flight Manual for the elevation of the airport and for the ambient temperature existing at the time of takeoff;

(2) Normal consumption of fuel and oil in flight to the airport of intended landing and to the alternate airports will leave a weight on arrival not in excess of the landing weight specified in the Airplane Flight Manual for the elevation of each of the airports involved and for the ambient temperatures expected at the time of landing;

(3) The takeoff weight does not exceed the weight shown in the Airplane Flight Manual to correspond with the minimum distances required for takeoff, considering the elevation of the airport, the runway to be used, the effective runway gradient, the ambient temperature and wind component at the time of takeoff, and, if operating limitations exist for the minimum distances required for takeoff from wet runways, the runway surface condition (dry or wet). Wet runway distances associated with grooved or porous friction course runways, if provided in the Airplane Flight Manual, may be used only for runways that are grooved or treated with a porous friction course (PFC) overlay, and that the operator determines are designed, constructed, and maintained in a manner acceptable to the Administrator.

(4) Where the takeoff distance includes a clearway, the clearway distance is not greater than one-half of—

(i) The takeoff run, in the case of airplanes certificated after September 30, 1958, and before August 30, 1959; or

(ii) The runway length, in the case of airplanes certificated after August 29, 1959.

(c) No person may take off a turbine-engine-powered transport category airplane certificated after August 29, 1959, unless, in addition to the requirements of paragraph (b) of this section—

(1) The accelerate-stop distance is no greater than the length of the runway plus the length of the stopway (if present); and

(2) The takeoff distance is no greater than the length of the runway plus the length of the clearway (if present); and

(3) The takeoff run is no greater than the length of the runway.

[Doc. No. 18334, 54 FR 34318, Aug. 18, 1989, as amended by Amdt. 91–256, 63 FR 8321, Feb. 18, 1998]

### § 91.607 Emergency exits for airplanes carrying passengers for hire.

(a) Notwithstanding any other provision of this chapter, no person may operate a large airplane (type certificated under the Civil Air Regulations effective before April 9, 1957) in passenger-carrying operations for hire, with more than the number of occupants—

(1) Allowed under Civil Air Regulations § 4b.362 (a), (b), and (c) as in effect on December 20, 1951; or

(2) Approved under Special Civil Air Regulations SR–387, SR–389, SR–389A, or SR–389B, or under this section as in effect.

However, an airplane type listed in the following table may be operated with up to the listed number of occupants (including crewmembers) and the corresponding number of exits (including emergency exits and doors) approved for the emergency exit of passengers or with an occupant-exit configuration approved under paragraph (b) or (c) of this section.

| Airplane type | Maximum number of occupants including all crewmembers | Corresponding number of exits authorized for passenger use |
|---|---|---|
| B–307 | 61 | 4 |
| B–377 | 96 | 9 |
| C–46 | 67 | 4 |
| CV–240 | 53 | 6 |
| CV–340 and CV–440 | 53 | 6 |
| DC–3 | 35 | 4 |
| DC–3 (Super) | 39 | 5 |
| DC–4 | 86 | 5 |
| DC–6 | 87 | 7 |
| DC–6B | 112 | 11 |
| L–18 | 17 | 3 |
| L–049, L–649, L–749 | 87 | 7 |
| L–1049 series | 96 | 9 |
| M–202 | 53 | 6 |
| M–404 | 53 | 7 |
| Viscount 700 series | 53 | 7 |

(b) Occupants in addition to those authorized under paragraph (a) of this section may be carried as follows:

(1) For each additional floor-level exit at least 24 inches wide by 48 inches high, with an unobstructed 20-inch-wide access aisleway between the exit and the main passenger aisle, 12 additional occupants.

(2) For each additional window exit located over a wing that meets the requirements of the airworthiness standards under which the airplane was type certificated or that is large enough to inscribe an ellipse 19×26 inches, eight additional occupants.

(3) For each additional window exit that is not located over a wing but that otherwise complies with paragraph (b)(2) of this section, five additional occupants.

(4) For each airplane having a ratio (as computed from the table in paragraph (a) of this section) of maximum number of occupants to number of exits greater than 14:1, and for each airplane that does not have at least one full-size, door-type exit in the side of the fuselage in the rear part of the cabin, the first additional exit must be a floor-level exit that complies with paragraph (b)(1) of this section and must be located in the rear part of the cabin on the opposite side of the fuselage from the main entrance door. However, no person may operate an airplane under this section carrying more than 115 occupants unless there is such an exit on each side of the fuselage in the rear part of the cabin.

(c) No person may eliminate any approved exit except in accordance with the following:

(1) The previously authorized maximum number of occupants must be reduced by the same number of additional occupants authorized for that exit under this section.

(2) Exits must be eliminated in accordance with the following priority schedule: First, non-over-wing window exits; second, over-wing window exits; third, floor-level exits located in the forward part of the cabin; and fourth, floor-level exits located in the rear of the cabin.

(3) At least one exit must be retained on each side of the fuselage regardless of the number of occupants.

(4) No person may remove any exit that would result in a ratio of maximum number of occupants to approved exits greater than 14:1.

(d) This section does not relieve any person operating under part 121 of this chapter from complying with § 121.291.

### § 91.609 Flight data recorders and cockpit voice recorders.

(a) No holder of an air carrier operating certificate or an operating certificate may conduct any operation under this part with an aircraft listed in the holder's operations specifications or current list of aircraft used in air transportation unless that aircraft complies with any applicable flight recorder and cockpit voice recorder requirements of the part under which its certificate is issued except that the operator may—

(1) Ferry an aircraft with an inoperative flight recorder or cockpit voice recorder from a place where repair or replacement cannot be made to a place where they can be made;

(2) Continue a flight as originally planned, if the flight recorder or cockpit voice recorder becomes inoperative after the aircraft has taken off;

(3) Conduct an airworthiness flight test during which the flight recorder or cockpit voice recorder is turned off to test it or to test any communications or electrical equipment installed in the aircraft; or

(4) Ferry a newly acquired aircraft from the place where possession of it is

taken to a place where the flight recorder or cockpit voice recorder is to be installed.

(b) Notwithstanding paragraphs (c) and (e) of this section, an operator other than the holder of an air carrier or a commercial operator certificate may—

(1) Ferry an aircraft with an inoperative flight recorder or cockpit voice recorder from a place where repair or replacement cannot be made to a place where they can be made;

(2) Continue a flight as originally planned if the flight recorder or cockpit voice recorder becomes inoperative after the aircraft has taken off;

(3) Conduct an airworthiness flight test during which the flight recorder or cockpit voice recorder is turned off to test it or to test any communications or electrical equipment installed in the aircraft;

(4) Ferry a newly acquired aircraft from a place where possession of it was taken to a place where the flight recorder or cockpit voice recorder is to be installed; or

(5) Operate an aircraft:

(i) For not more than 15 days while the flight recorder and/or cockpit voice recorder is inoperative and/or removed for repair provided that the aircraft maintenance records contain an entry that indicates the date of failure, and a placard is located in view of the pilot to show that the flight recorder or cockpit voice recorder is inoperative.

(ii) For not more than an additional 15 days, provided that the requirements in paragraph (b)(5)(i) are met and that a certificated pilot, or a certificated person authorized to return an aircraft to service under §43.7 of this chapter, certifies in the aircraft maintenance records that additional time is required to complete repairs or obtain a replacement unit.

(c)(1) No person may operate a U.S. civil registered, multiengine, turbine-powered airplane or rotorcraft having a passenger seating configuration, excluding any pilot seats of 10 or more that has been manufactured after October 11, 1991, unless it is equipped with one or more approved flight recorders that utilize a digital method of recording and storing data and a method of readily retrieving that data from the storage medium, that are capable of recording the data specified in appendix E to this part, for an airplane, or appendix F to this part, for a rotorcraft, of this part within the range, accuracy, and recording interval specified, and that are capable of retaining no less than 8 hours of aircraft operation.

(2) All airplanes subject to paragraph (c)(1) of this section that are manufactured before April 7, 2010, by April 7, 2012, must meet the requirements of §23.1459(a)(7) or §25.1459(a)(8) of this chapter, as applicable.

(3) All airplanes and rotorcraft subject to paragraph (c)(1) of this section that are manufactured on or after April 7, 2010, must meet the flight data recorder requirements of §23.1459, §25.1459, §27.1459, or §29.1459 of this chapter, as applicable, and retain at least the last 25 hours of recorded information using a recorder that meets the standards of TSO–C124a, or later revision.

(d) Whenever a flight recorder, required by this section, is installed, it must be operated continuously from the instant the airplane begins the takeoff roll or the rotorcraft begins lift-off until the airplane has completed the landing roll or the rotorcraft has landed at its destination.

(e) Unless otherwise authorized by the Administrator, after October 11, 1991, no person may operate a U.S. civil registered multiengine, turbine-powered airplane or rotorcraft having a passenger seating configuration of six passengers or more and for which two pilots are required by type certification or operating rule unless it is equipped with an approved cockpit voice recorder that:

(1) Is installed in compliance with §23.1457(a) (1) and (2), (b), (c), (d), (e), (f), and (g); §25.1457(a) (1) and (2), (b), (c), (d), (e), (f), and (g); §27.1457(a) (1) and (2), (b), (c), (d), (e), (f), and (g); or §29.1457(a) (1) and (2), (b), (c), (d), (e), (f), and (g) of this chapter, as applicable; and

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

(f) In complying with this section, an approved cockpit voice recorder having an erasure feature may be used, so that

at any time during the operation of the recorder, information recorded more than 15 minutes earlier may be erased or otherwise obliterated.

(g) In the event of an accident or occurrence requiring immediate notification to the National Transportation Safety Board under part 830 of its regulations that results in the termination of the flight, any operator who has installed approved flight recorders and approved cockpit voice recorders shall keep the recorded information for at least 60 days or, if requested by the Administrator or the Board, for a longer period. Information obtained from the record is used to assist in determining the cause of accidents or occurrences in connection with the investigation under part 830. The Administrator does not use the cockpit voice recorder record in any civil penalty or certificate action.

(h) All airplanes required by this section to have a cockpit voice recorder and a flight data recorder, that are manufactured before April 7, 2010, must by April 7, 2012, have a cockpit voice recorder that also—

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

(2) If transport category, meets the requirements of § 25.1457(a)(3), (a)(4), and (a)(5) of this chapter.

(i) All airplanes or rotorcraft required by this section to have a cockpit voice recorder and flight data recorder, that are manufactured on or after April 7, 2010, must have a cockpit voice recorder installed that also—

(1) Meets the requirements of § 23.1457, § 25.1457, § 27.1457, or § 29.1457 of this chapter, as applicable; and

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

(j) All airplanes or rotorcraft required by this section to have a cockpit voice recorder and a flight data recorder, that install datalink communication equipment on or after April 7, 2010, must record all datalink messages as required by the certification rule applicable to the aircraft.

[Doc. No. 18334, 54 FR 34318, Aug. 18, 1989, as amended by Amdt. 91–226, 56 FR 51621, Oct. 11, 1991; Amdt. 91–228, 57 FR 19353, May 5, 1992; Amdt. 91–300, 73 FR 12564, Mar. 7, 2008]

EFFECTIVE DATE NOTE: At 73 FR 73178, Dec. 2, 2008, § 91.609 was amended by adding a new paragraph (k), effective Feb. 2, 2009. For the convenience of the user, the added text is set forth as follows:

**§ 91.609 Flight data recorders and cockpit voice recorders.**

* * * * *

(k) An aircraft operated under this part under deviation authority from part 125 of this chapter must comply with all of the applicable flight data recorder requirements of part 125 applicable to the aircraft, notwithstanding such deviation authority.

**§ 91.611 Authorization for ferry flight with one engine inoperative.**

(a) *General.* The holder of an air carrier operating certificate or an operating certificate issued under part 125 may conduct a ferry flight of a four-engine airplane or a turbine-engine-powered airplane equipped with three engines, with one engine inoperative, to a base for the purpose of repairing that engine subject to the following:

(1) The airplane model has been test flown and found satisfactory for safe flight in accordance with paragraph (b) or (c) of this section, as appropriate. However, each operator who before November 19, 1966, has shown that a model of airplane with an engine inoperative is satisfactory for safe flight by a test flight conducted in accordance with performance data contained in the applicable Airplane Flight Manual under paragraph (a)(2) of this section need not repeat the test flight for that model.

(2) The approved Airplane Flight Manual contains the following performance data and the flight is conducted in accordance with that data:

(i) Maximum weight.

(ii) Center of gravity limits.

(iii) Configuration of the inoperative propeller (if applicable).

(iv) Runway length for takeoff (including temperature accountability).

(v) Altitude range.

(vi) Certificate limitations.

(vii) Ranges of operational limits.

(viii) Performance information.

(ix) Operating procedures.

(3) The operator has FAA approved procedures for the safe operation of the airplane, including specific requirements for—

(i) Limiting the operating weight on any ferry flight to the minimum necessary for the flight plus the necessary reserve fuel load;

(ii) A limitation that takeoffs must be made from dry runways unless, based on a showing of actual operating takeoff techniques on wet runways with one engine inoperative, takeoffs with full controllability from wet runways have been approved for the specific model aircraft and included in the Airplane Flight Manual:

(iii) Operations from airports where the runways may require a takeoff or approach over populated areas; and

(iv) Inspection procedures for determining the operating condition of the operative engines.

(4) No person may take off an airplane under this section if—

(i) The initial climb is over thickly populated areas; or

(ii) Weather conditions at the takeoff or destination airport are less than those required for VFR flight.

(5) Persons other than required flight crewmembers shall not be carried during the flight.

(6) No person may use a flight crewmember for flight under this section unless that crewmember is thoroughly familiar with the operating procedures for one-engine inoperative ferry flight contained in the certificate holder's manual and the limitations and performance information in the Airplane Flight Manual.

(b) *Flight tests: reciprocating-engine-powered airplanes.* The airplane performance of a reciprocating-engine-powered airplane with one engine inoperative must be determined by flight test as follows:

(1) A speed not less than 1.3 $V_{S1}$ must be chosen at which the airplane may be controlled satisfactorily in a climb with the critical engine inoperative (with its propeller removed or in a configuration desired by the operator and with all other engines operating at the maximum power determined in paragraph (b)(3) of this section.

(2) The distance required to accelerate to the speed listed in paragraph (b)(1) of this section and to climb to 50 feet must be determined with—

(i) The landing gear extended;

(ii) The critical engine inoperative and its propeller removed or in a configuration desired by the operator; and

(iii) The other engines operating at not more than maximum power established under paragraph (b)(3) of this section.

(3) The takeoff, flight and landing procedures, such as the approximate trim settings, method of power application, maximum power, and speed must be established.

(4) The performance must be determined at a maximum weight not greater than the weight that allows a rate of climb of at least 400 feet per minute in the en route configuration set forth in §25.67(d) of this chapter in effect on January 31, 1977, at an altitude of 5,000 feet.

(5) The performance must be determined using temperature accountability for the takeoff field length, computed in accordance with §25.61 of this chapter in effect on January 31, 1977.

(c) *Flight tests: Turbine-engine-powered airplanes.* The airplane performance of a turbine-engine-powered airplane with one engine inoperative must be determined by flight tests, including at least three takeoff tests, in accordance with the following:

(1) Takeoff speeds $V_R$ and $V_2$, not less than the corresponding speeds under which the airplane was type certificated under §25.107 of this chapter, must be chosen at which the airplane may be controlled satisfactorily with the critical engine inoperative (with its propeller removed or in a configuration desired by the operator, if applicable) and with all other engines operating at not more than the power selected for type certification as set forth in §25.101 of this chapter.

(2) The minimum takeoff field length must be the horizontal distance required to accelerate and climb to the 35-foot height at $V_2$ speed (including

any additional speed increment obtained in the tests) multiplied by 115 percent and determined with—

(i) The landing gear extended;

(ii) The critical engine inoperative and its propeller removed or in a configuration desired by the operator (if applicable); and

(iii) The other engine operating at not more than the power selected for type certification as set forth in § 25.101 of this chapter.

(3) The takeoff, flight, and landing procedures such as the approximate trim setting, method of power application, maximum power, and speed must be established. The airplane must be satisfactorily controllable during the entire takeoff run when operated according to these procedures.

(4) The performance must be determined at a maximum weight not greater than the weight determined under § 25.121(c) of this chapter but with—

(i) The actual steady gradient of the final takeoff climb requirement not less than 1.2 percent at the end of the takeoff path with two critical engines inoperative; and

(ii) The climb speed not less than the two-engine inoperative trim speed for the actual steady gradient of the final takeoff climb prescribed by paragraph (c)(4)(i) of this section.

(5) The airplane must be satisfactorily controllable in a climb with two critical engines inoperative. Climb performance may be shown by calculations based on, and equal in accuracy to, the results of testing.

(6) The performance must be determined using temperature accountability for takeoff distance and final takeoff climb computed in accordance with § 25.101 of this chapter.

For the purpose of paragraphs (c)(4) and (5) of this section, *two critical engines* means two adjacent engines on one side of an airplane with four engines, and the center engine and one outboard engine on an airplane with three engines.

### § 91.613 Materials for compartment interiors.

(a) No person may operate an airplane that conforms to an amended or supplemental type certificate issued in accordance with SFAR No. 41 for a maximum certificated takeoff weight in excess of 12,500 pounds unless within 1 year after issuance of the initial airworthiness certificate under that SFAR the airplane meets the compartment interior requirements set forth in § 25.853 (a), (b), (b–1), (b–2), and (b–3) of this chapter in effect on September 26, 1978.

(b) Thermal/acoustic insulation materials. For transport category airplanes type certificated after January 1, 1958:

(1) For airplanes manufactured before September 2, 2005, when thermal/acoustic insulation is installed in the fuselage as replacements after September 2, 2005, the insulation must meet the flame propagation requirements of § 25.856 of this chapter, effective September 2, 2003, if it is:

(i) Of a blanket construction or

(ii) Installed around air ducting.

(2) For airplanes manufactured after September 2, 2005, thermal/acoustic insulation materials installed in the fuselage must meet the flame propagation requirements of § 25.856 of this chapter, effective September 2, 2003.

[Doc. No. 18334, 54 FR 34318, Aug. 18, 1989, as amended by Amdt. 91–279, 68 FR 45083, July 31, 2003; Amdt. 91–290, 70 FR 77752, Dec. 30, 2005]

### §§ 91.615–91.699 [Reserved]

## Subpart H—Foreign Aircraft Operations and Operations of U.S.-Registered Civil Aircraft Outside of the United States; and Rules Governing Persons on Board Such Aircraft

SOURCE: Docket No. 18334, 54 FR 34320, Aug. 18, 1989, unless otherwise noted.

### § 91.701 Applicability.

(a) This subpart applies to the operations of civil aircraft of U.S. registry outside of the United States and the operations of foreign civil aircraft within the United States.

(b) Section 91.702 of this subpart also applies to each person on board an aircraft operated as follows:

(1) A U.S. registered civil aircraft operated outside the United States;

(2) Any aircraft operated outside the United States—

(i) That has its next scheduled destination or last place of departure in the United States if the aircraft next lands in the United States; or

(ii) If the aircraft lands in the United States with the individual still on the aircraft regardless of whether it was a scheduled or otherwise planned landing site.

[Doc. No. FAA–1998–4954, 64 FR 1079, Jan. 7, 1999]

### § 91.702 Persons on board.

Section 91.11 of this part (Prohibitions on interference with crewmembers) applies to each person on board an aircraft.

[Doc. No. FAA–1998–4954, 64 FR 1079, Jan. 7, 1999]

### § 91.703 Operations of civil aircraft of U.S. registry outside of the United States.

(a) Each person operating a civil aircraft of U.S. registry outside of the United States shall—

(1) When over the high seas, comply with annex 2 (Rules of the Air) to the Convention on International Civil Aviation and with §§ 91.117(c), 91.127, 91.129, and 91.131;

(2) When within a foreign country, comply with the regulations relating to the flight and maneuver of aircraft there in force;

(3) Except for §§ 91.117(a), 91.307(b), 91.309, 91.323, and 91.711, comply with this part so far as it is not inconsistent with applicable regulations of the foreign country where the aircraft is operated or annex 2 of the Convention on International Civil Aviation; and

(4) When operating within airspace designated as Minimum Navigation Performance Specifications (MNPS) airspace, comply with § 91.705. When operating within airspace designated as Reduced Vertical Separation Minimum (RVSM) airspace, comply with § 91.706.

(b) Annex 2 to the Convention on International Civil Aviation, Ninth Edition—July 1990, with Amendments through Amendment 32 effective February 19, 1996, to which reference is made in this part, is incorporated into this part and made a part hereof as provided in 5 U.S.C. § 552 and pursuant to 1 CFR part 51. Annex 2 (including a complete historic file of changes thereto) is available for public inspection at the Rules Docket, AGC–200, Federal Aviation Administration, 800 Independence Avenue SW., Washington, DC 20591; or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html*. In addition, Annex 2 may be purchased from the International Civil Aviation Organization (Attention: Distribution Officer), P.O. Box 400, Succursale, Place de L'Aviation Internationale, 1000 Sherbrooke Street West, Montreal, Quebec, Canada H3A 2R2.

[Doc. No. 18834, 54 FR 34320, Aug. 18, 1989, as amended by Amdt. 91–227, 56 FR 65661, Dec. 17, 1991; Amdt. 91–254, 62 FR 17487, Apr. 9, 1997; 69 FR 18803, Apr. 9, 2004; Amdt. 91–299, 73 FR 10143, Feb. 26, 2008]

### § 91.705 Operations within airspace designated as Minimum Navigation Performance Specification Airspace.

(a) Except as provided in paragraph (b) of this section, no person may operate a civil aircraft of U.S. registry in airspace designated as Minimum Navigation Performance Specifications airspace unless—

(1) The aircraft has approved navigation performance capability that complies with the requirements of appendix C of this part; and

(2) The operator is authorized by the Administrator to perform such operations.

(b) The Administrator may authorize a deviation from the requirements of this section in accordance with Section 3 of appendix C to this part.

[Doc. No. 28870, 62 FR 17487, Apr. 9, 1997]

### § 91.706 Operations within airspace designed as Reduced Vertical Separation Minimum Airspace.

(a) Except as provided in paragraph (b) of this section, no person may operate a civil aircraft of U.S. registry in airspace designated as Reduced Vertical Separation Minimum (RVSM) airspace unless:

(1) The operator and the operator's aircraft comply with the requirements of appendix G of this part; and

(2) The operator is authorized by the Administrator to conduct such operations.

(b) The Administrator may authorize a deviation from the requirements of this section in accordance with Section 5 of appendix G to this part.

[Doc. No. 28870, 62 FR 17487, Apr. 9, 1997]

### § 91.707 Flights between Mexico or Canada and the United States.

Unless otherwise authorized by ATC, no person may operate a civil aircraft between Mexico or Canada and the United States without filing an IFR or VFR flight plan, as appropriate.

### § 91.709 Operations to Cuba.

No person may operate a civil aircraft from the United States to Cuba unless—

(a) Departure is from an international airport of entry designated in § 6.13 of the Air Commerce Regulations of the Bureau of Customs (19 CFR 6.13); and

(b) In the case of departure from any of the 48 contiguous States or the District of Columbia, the pilot in command of the aircraft has filed—

(1) A DVFR or IFR flight plan as prescribed in § 99.11 or § 99.13 of this chapter; and

(2) A written statement, within 1 hour before departure, with the Office of Immigration and Naturalization Service at the airport of departure, containing—

(i) All information in the flight plan;

(ii) The name of each occupant of the aircraft;

(iii) The number of occupants of the aircraft; and

(iv) A description of the cargo, if any.

This section does not apply to the operation of aircraft by a scheduled air carrier over routes authorized in operations specifications issued by the Administrator.

(Approved by the Office of Management and Budget under control number 2120–0005)

### § 91.711 Special rules for foreign civil aircraft.

(a) *General*. In addition to the other applicable regulations of this part, each person operating a foreign civil aircraft within the United States shall comply with this section.

(b) *VFR*. No person may conduct VFR operations which require two-way radio communications under this part unless at least one crewmember of that aircraft is able to conduct two-way radio communications in the English language and is on duty during that operation.

(c) *IFR*. No person may operate a foreign civil aircraft under IFR unless—

(1) That aircraft is equipped with—

(i) Radio equipment allowing two-way radio communication with ATC when it is operated in controlled airspace; and

(ii) Navigation equipment suitable for the route to be flown.

(2) Each person piloting the aircraft—

(i) Holds a current United States instrument rating or is authorized by his foreign airman certificate to pilot under IFR; and

(ii) Is thoroughly familiar with the United States en route, holding, and letdown procedures; and

(3) At least one crewmember of that aircraft is able to conduct two-way radiotelephone communications in the English language and that crewmember is on duty while the aircraft is approaching, operating within, or leaving the United States.

(d) *Over water*. Each person operating a foreign civil aircraft over water off the shores of the United States shall give flight notification or file a flight plan in accordance with the Supplementary Procedures for the ICAO region concerned.

(e) *Flight at and above FL 240*. If VOR navigation equipment is required under paragraph (c)(1)(ii) of this section, no person may operate a foreign civil aircraft within the 50 States and the District of Columbia at or above FL 240, unless the aircraft is equipped with approved DME or a suitable RNAV system. When the DME or RNAV system required by this paragraph fails at and above FL 240, the pilot in command of

the aircraft must notify ATC immediately and may then continue operations at and above FL 240 to the next airport of intended landing where repairs or replacement of the equipment can be made. A foreign civil aircraft may be operated within the 50 States and the District of Columbia at or above FL 240 without DME or an RNAV system when operated for the following purposes, and ATC is notified before each takeoff:

(1) Ferry flights to and from a place in the United States where repairs or alterations are to be made.

(2) Ferry flights to a new country of registry.

(3) Flight of a new aircraft of U.S. manufacture for the purpose of—

(i) Flight testing the aircraft;

(ii) Training foreign flight crews in the operation of the aircraft; or

(iii) Ferrying the aircraft for export delivery outside the United States.

(4) Ferry, demonstration, and test flight of an aircraft brought to the United States for the purpose of demonstration or testing the whole or any part thereof.

[Doc. No. 18834, 54 FR 34320, Aug. 18, 1989, as amended by Amdt. 91–227, 56 FR 65661, Dec. 17, 1991; Amdt. 91–296, 72 FR 31679, June 7, 2007]

### §91.713 Operation of civil aircraft of Cuban registry.

No person may operate a civil aircraft of Cuban registry except in controlled airspace and in accordance with air traffic clearance or air traffic control instructions that may require use of specific airways or routes and landings at specific airports.

### §91.715 Special flight authorizations for foreign civil aircraft.

(a) Foreign civil aircraft may be operated without airworthiness certificates required under §91.203 if a special flight authorization for that operation is issued under this section. Application for a special flight authorization must be made to the Flight Standards Division Manager or Aircraft Certification Directorate Manager of the FAA region in which the applicant is located or to the region within which the U.S. point of entry is located. However, in the case of an aircraft to be operated in the U.S. for the purpose of demonstration at an airshow, the application may be made to the Flight Standards Division Manager or Aircraft Certification Directorate Manager of the FAA region in which the airshow is located.

(b) The Administrator may issue a special flight authorization for a foreign civil aircraft subject to any conditions and limitations that the Administrator considers necessary for safe operation in the U.S. airspace.

(c) No person may operate a foreign civil aircraft under a special flight authorization unless that operation also complies with part 375 of the Special Regulations of the Department of Transportation (14 CFR part 375).

(Approved by the Office of Management and Budget under control number 2120–0005)

[Doc. No. 18334, 54 FR 34320, Aug. 18, 1989, as amended by Amdt. 91–212, 54 FR 39293, Sept. 25, 1989]

### §§91.717–91.799 [Reserved]

## Subpart I—Operating Noise Limits

SOURCE: Docket No. 18334, 54 FR 34321, Aug. 18, 1989, unless otherwise noted.

### §91.801 Applicability: Relation to part 36.

(a) This subpart prescribes operating noise limits and related requirements that apply, as follows, to the operation of civil aircraft in the United States.

(1) Sections 91.803, 91.805, 91.807, 91.809, and 91.811 apply to civil subsonic jet (turbojet) airplanes with maximum weights of more than 75,000 pounds and—

(i) If U.S. registered, that have standard airworthiness certificates; or

(ii) If foreign registered, that would be required by this chapter to have a U.S. standard airworthiness certificate in order to conduct the operations intended for the airplane were it registered in the United States. Those sections apply to operations to or from airports in the United States under this part and parts 121, 125, 129, and 135 of this chapter.

(2) Section 91.813 applies to U.S. operators of civil subsonic jet (turbojet) airplanes covered by this subpart. This section applies to operators operating to or from airports in the United

States under this part and parts 121, 125, and 135, but not to those operating under part 129 of this chapter.

(3) Sections 91.803, 91.819, and 91.821 apply to U.S.-registered civil supersonic airplanes having standard airworthiness certificates and to foreign-registered civil supersonic airplanes that, if registered in the United States, would be required by this chapter to have U.S. standard airworthiness certificates in order to conduct the operations intended for the airplane. Those sections apply to operations under this part and under parts 121, 125, 129, and 135 of this chapter.

(b) Unless otherwise specified, as used in this subpart ''part 36'' refers to 14 CFR part 36, including the noise levels under appendix C of that part, notwithstanding the provisions of that part excepting certain airplanes from the specified noise requirements. For purposes of this subpart, the various stages of noise levels, the terms used to describe airplanes with respect to those levels, and the terms ''subsonic airplane'' and ''supersonic airplane'' have the meanings specified under part 36 of this chapter. For purposes of this subpart, for subsonic airplanes operated in foreign air commerce in the United States, the Administrator may accept compliance with the noise requirements under annex 16 of the International Civil Aviation Organization when those requirements have been shown to be substantially compatible with, and achieve results equivalent to those achievable under, part 36 for that airplane. Determinations made under these provisions are subject to the limitations of § 36.5 of this chapter as if those noise levels were part 36 noise levels.

(c) Sections 91.851 through 91.877 of this subpart prescribe operating noise limits and related requirements that apply to any civil subsonic jet (turbojet) airplane (for which an airworthiness certificate other than an experimental certificate has been issued by the Administrator) with a maximum certificated takeoff weight of more than 75,000 pounds operating to or from an airport in the 48 contiguous United States and the District of Columbia under this part, parts 121, 125, 129, or 135 of this chapter on and after September 25, 1991.

(d) Section 91.877 prescribes reporting requirements that apply to any civil subsonic jet (turbojet) airplane with a maximum weight of more than 75,000 pounds operated by an air carrier or foreign air carrier between the contiguous United States and the State of Hawaii, between the State of Hawaii and any point outside of the 48 contiguous United States, or between the islands of Hawaii in turnaround service, under part 121 or 129 of this chapter on or after November 5, 1990.

[Doc. No. 18334, 54 FR 34321, Aug. 18, 1989; Amdt. 91–211, 54 FR 41211, Oct. 5, 1989, as amended by Amdt. 91–225, 56 FR 48658, Sept. 25, 1991; Amdt. 91–252, 61 FR 66185, Dec. 16, 1996; Amdt. 91–275, 67 FR 45237, July 8, 2002; Amdt. 91–276, 67 FR 46571, July 15, 2002]

### § 91.803 Part 125 operators: Designation of applicable regulations.

For airplanes covered by this subpart and operated under part 125 of this chapter, the following regulations apply as specified:

(a) For each airplane operation to which requirements prescribed under this subpart applied before November 29, 1980, those requirements of this subpart continue to apply.

(b) For each subsonic airplane operation to which requirements prescribed under this subpart did not apply before November 29, 1980, because the airplane was not operated in the United States under this part or part 121, 129, or 135 of this chapter, the requirements prescribed under § 91.805 of this subpart apply.

(c) For each supersonic airplane operation to which requirements prescribed under this subpart did not apply before November 29, 1980, because the airplane was not operated in the United States under this part or part 121, 129, or 135 of this chapter, the requirements of §§ 91.819 and 91.821 of this subpart apply.

(d) For each airplane required to operate under part 125 for which a deviation under that part is approved to operate, in whole or in part, under this part or part 121, 129, or 135 of this chapter, notwithstanding the approval, the

requirements prescribed under paragraphs (a), (b), and (c) of this section continue to apply.

[Docket No. 18334, 54 FR 34321, Aug. 18, 1989, as amended by Amdt. 91–276, 67 FR 46571, July 15, 2002]

### §91.805 Final compliance: Subsonic airplanes.

Except as provided in §§91.809 and 91.811, on and after January 1, 1985, no person may operate to or from an airport in the United States any subsonic airplane covered by this subpart unless that airplane has been shown to comply with Stage 2 or Stage 3 noise levels under part 36 of this chapter.

### §§91.807–91.813 [Reserved]

### §91.815 Agricultural and fire fighting airplanes: Noise operating limitations.

(a) This section applies to propeller-driven, small airplanes having standard airworthiness certificates that are designed for ''agricultural aircraft operations'' (as defined in §137.3 of this chapter, as effective on January 1, 1966) or for dispensing fire fighting materials.

(b) If the Airplane Flight Manual, or other approved manual material information, markings, or placards for the airplane indicate that the airplane has not been shown to comply with the noise limits under part 36 of this chapter, no person may operate that airplane, except—

(1) To the extent necessary to accomplish the work activity directly associated with the purpose for which it is designed;

(2) To provide flight crewmember training in the special purpose operation for which the airplane is designed; and

(3) To conduct ''nondispensing aerial work operations'' in accordance with the requirements under §137.29(c) of this chapter.

### §91.817 Civil aircraft sonic boom.

(a) No person may operate a civil aircraft in the United States at a true flight Mach number greater than 1 except in compliance with conditions and limitations in an authorization to exceed Mach 1 issued to the operator under appendix B of this part.

(b) In addition, no person may operate a civil aircraft for which the maximum operating limit speed $M_{MO}$ exceeds a Mach number of 1, to or from an airport in the United States, unless—

(1) Information available to the flight crew includes flight limitations that ensure that flights entering or leaving the United States will not cause a sonic boom to reach the surface within the United States; and

(2) The operator complies with the flight limitations prescribed in paragraph (b)(1) of this section or complies with conditions and limitations in an authorization to exceed Mach 1 issued under appendix B of this part.

(Approved by the Office of Management and Budget under control number 2120–0005)

### §91.819 Civil supersonic airplanes that do not comply with part 36.

(a) *Applicability*. This section applies to civil supersonic airplanes that have not been shown to comply with the Stage 2 noise limits of part 36 in effect on October 13, 1977, using applicable trade-off provisions, and that are operated in the United States, after July 31, 1978.

(b) *Airport use*. Except in an emergency, the following apply to each person who operates a civil supersonic airplane to or from an airport in the United States:

(1) Regardless of whether a type design change approval is applied for under part 21 of this chapter, no person may land or take off an airplane covered by this section for which the type design is changed, after July 31, 1978, in a manner constituting an ''acoustical change'' under §21.93 unless the acoustical change requirements of part 36 are complied with.

(2) No flight may be scheduled, or otherwise planned, for takeoff or landing after 10 p.m. and before 7 a.m. local time.

### §91.821 Civil supersonic airplanes: Noise limits.

Except for Concorde airplanes having flight time before January 1, 1980, no person may operate in the United States, a civil supersonic airplane that

does not comply with Stage 2 noise limits of part 36 in effect on October 13, 1977, using applicable trade-off provisions.

### §§ 91.823–91.849 [Reserved]

### § 91.851 Definitions.

For the purposes of §§ 91.851 through 91.877 of this subpart:

*Chapter 4 noise level* means a noise level at or below the maximum noise level prescribed in Chapter 4, Paragraph 4.4, Maximum Noise Levels, of the International Civil Aviation Organization (ICAO) Annex 16, Volume I, Amendment 7, effective March 21, 2002. The Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51 approved the incorporation by reference of this document, which can be obtained from the International Civil Aviation Organization (ICAO), Document Sales Unit, 999 University Street, Montreal, Quebec H3C 5H7, Canada. Also, you may obtain documents on the Internet at *http://www.ICAO.int/eshop/index.cfm*. Copies may be reviewed at the U.S. Department of Transportation, Docket Operations, West Building Ground Floor, Room W12–140, 1200 New Jersey Avenue, SE., Washington, DC 20590 or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html*.

*Contiguous United States* means the area encompassed by the 48 contiguous United States and the District of Columbia.

*Fleet* means those civil subsonic jet (turbojet) airplanes with a maximum certificated weight of more than 75,000 pounds that are listed on an operator's operations specifications as eligible for operation in the contiguous United States.

*Import* means a change in ownership of an airplane from a non-U.S. person to a U.S. person when the airplane is brought into the United States for operation.

*Operations specifications* means an enumeration of airplanes by type, model, series, and serial number operated by the operator or foreign air carrier on a given day, regardless of how or whether such airplanes are formally listed or designated by the operator.

*Owner* means any person that has indicia of ownership sufficient to register the airplane in the United States pursuant to part 47 of this chapter.

*New entrant* means an air carrier or foreign air carrier that, on or before November 5, 1990, did not conduct operations under part 121 or 129 of this chapter using an airplane covered by this subpart to or from any airport in the contiguous United States, but that initiates such operation after that date.

*Stage 2 noise levels* mean the requirements for Stage 2 noise levels as defined in part 36 of this chapter in effect on November 5, 1990.

*Stage 3 noise levels* mean the requirements for Stage 3 noise levels as defined in part 36 of this chapter in effect on November 5, 1990.

*Stage 4 noise level* means a noise level at or below the Stage 4 noise limit prescribed in part 36 of this chapter.

*Stage 2 airplane* means a civil subsonic jet (turbojet) airplane with a maximum certificated weight of 75,000 pounds or more that complies with Stage 2 noise levels as defined in part 36 of this chapter.

*Stage 3 airplane* means a civil subsonic jet (turbojet) airplane with a maximum certificated weight of 75,000 pounds or more that complies with Stage 3 noise levels as defined in part 36 of this chapter.

*Stage 4 airplane* means an airplane that has been shown not to exceed the Stage 4 noise limit prescribed in part 36 of this chapter. A Stage 4 airplane complies with all of the noise operating rules of this part.

[Doc. No. 26433, 56 FR 48658, Sept. 25, 1991, as amended by Amdt. 91–252, 61 FR 66185, Dec. 16, 1996; Amdt. 91–275, 67 FR 45237, July 8, 2002; Amdt. 91–288, 70 FR 38749, July 5, 2005; 72 FR 68475, Dec. 5, 2007]

### § 91.853 Final compliance: Civil subsonic airplanes.

Except as provided in § 91.873, after December 31, 1999, no person shall operate to or from any airport in the contiguous United States any airplane

subject to §91.801(c) of this subpart, unless that airplane has been shown to comply with Stage 3 or Stage 4 noise levels.

[Doc. No. FAA–2003–16526, 70 FR 38749, July 5, 2005]

### §91.855 Entry and nonaddition rule.

No person may operate any airplane subject to §91.801(c) of this subpart to or from an airport in the contiguous United States unless one or more of the following apply:

(a) The airplane complies with Stage 3 or Stage 4 noise levels.

(b) The airplane complies with Stage 2 noise levels and was owned by a U.S. person on and since November 5, 1990. Stage 2 airplanes that meet these criteria and are leased to foreign airlines are also subject to the return provisions of paragraph (e) of this section.

(c) The airplane complies with Stage 2 noise levels, is owned by a non-U.S. person, and is the subject of a binding lease to a U.S. person effective before and on September 25, 1991. Any such airplane may be operated for the term of the lease in effect on that date, and any extensions thereof provided for in that lease.

(d) The airplane complies with Stage 2 noise levels and is operated by a foreign air carrier.

(e) The airplane complies with Stage 2 noise levels and is operated by a foreign operator other than for the purpose of foreign air commerce.

(f) The airplane complies with Stage 2 noise levels and—

(1) On November 5, 1990, was owned by:

(i) A corporation, trust, or partnership organized under the laws of the United States or any State (including individual States, territories, possessions, and the District of Columbia);

(ii) An individual who is a citizen of the United States; or

(iii) An entity owned or controlled by a corporation, trust, partnership, or individual described in paragraph (f)(1) (i) or (ii) of this section; and

(2) Enters into the United States not later than 6 months after the expiration of a lease agreement (including any extensions thereof) between an owner described in paragraph (f)(1) of this section and a foreign airline.

(g) The airplane complies with Stage 2 noise levels and was purchased by the importer under a written contract executed before November 5, 1990.

(h) Any Stage 2 airplane described in this section is eligible for operation in the contiguous United States only as provided under §91.865 or 91.867.

[Doc. No. 26433, 56 FR 48658, Sept. 25, 1991; 56 FR 51167, Oct. 10, 1991, as amended by Amdt. 91–288, 70 FR 38750, July 5, 2005]

### §91.857 Stage 2 operations outside of the 48 contiguous United States.

An operator of a Stage 2 airplane that is operating only between points outside the contiguous United States on or after November 5, 1990, must include in its operations specifications a statement that such airplane may not be used to provide air transportation to or from any airport in the contiguous United States.

[Doc. No. FAA–2002–12771, 67 FR 46571, July 15, 2002]

### §91.858 Special flight authorizations for non-revenue Stage 2 operations.

(a) After December 31, 1999, any operator of a Stage 2 airplane over 75,000 pounds may operate that airplane in nonrevenue service in the contiguous United States only for the following purposes:

(1) Sell, lease, or scrap the airplane;

(2) Obtain modifications to meet Stage 3 noise levels;

(3) Obtain scheduled heavy maintenance or significant modifications;

(4) Deliver the airplane to a lessee or return it to a lessor;

(5) Park or store the airplane; and

(6) Prepare the airplane for any of the purposes listed in paragraph (a)(1) thru (a)(5) of this section.

(b) An operator of a Stage 2 airplane that needs to operate in the contiguous United States for any of the purposes listed above may apply to FAA's Office of Environment and Energy for a special flight authorization. The applicant must file in advance. Applications are due 30 days in advance of the planned

flight and must provide the information necessary for the FAA to determine that the planned flight is within the limits prescribed in the law.

[Doc. No. FAA–2002–12771, 67 FR 46571, July 15, 2002]

### § 91.859 Modification to meet Stage 3 or Stage 4 noise levels.

For an airplane subject to § 91.801(c) of this subpart and otherwise prohibited from operation to or from an airport in the contiguous United States by § 91.855, any person may apply for a special flight authorization for that airplane to operate in the contiguous United States for the purpose of obtaining modifications to meet Stage 3 or Stage 4 noise levels.

[Doc. No. FAA–2003–16526, 70 FR 38750, July 5, 2005]

### § 91.861 Base level.

(a) *U.S. Operators*. The base level of a U.S. operator is equal to the number of owned or leased Stage 2 airplanes subject to § 91.801(c) of this subpart that were listed on that operator's operations specifications for operations to or from airports in the contiguous United States on any one day selected by the operator during the period January 1, 1990, through July 1, 1991, plus or minus adjustments made pursuant to paragraphs (a) (1) and (2).

(1) The base level of a U.S. operator shall be increased by a number equal to the total of the following—

(i) The number of Stage 2 airplanes returned to service in the United States pursuant to § 91.855(f);

(ii) The number of Stage 2 airplanes purchased pursuant to § 91.855(g); and

(iii) Any U.S. operator base level acquired with a Stage 2 airplane transferred from another person under § 91.863.

(2) The base level of a U.S. operator shall be decreased by the amount of U.S. operator base level transferred with the corresponding number of Stage 2 airplanes to another person under § 91.863.

(b) Foreign air carriers. The base level of a foreign air carrier is equal to the number of owned or leased Stage 2 airplanes that were listed on that carrier's U.S. operations specifications on any one day during the period January 1, 1990, through July 1, 1991, plus or minus any adjustments to the base levels made pursuant to paragraphs (b) (1) and (2).

(1) The base level of a foreign air carrier shall be increased by the amount of foreign air carrier base level acquired with a Stage 2 airplane from another person under § 91.863.

(2) The base level of a foreign air carrier shall be decreased by the amount of foreign air carrier base level transferred with a Stage 2 airplane to another person under § 91.863.

(c) New entrants do not have a base level.

[Doc. No. 26433, 56 FR 48659, Sept. 25, 1991; 56 FR 51167, Oct. 10, 1991]

### § 91.863 Transfers of Stage 2 airplanes with base level.

(a) Stage 2 airplanes may be transferred with or without the corresponding amount of base level. Base level may not be transferred without the corresponding number of Stage 2 airplanes.

(b) No portion of a U.S. operator's base level established under § 91.861(a) may be used for operations by a foreign air carrier. No portion of a foreign air carrier's base level established under § 91.861(b) may be used for operations by a U.S. operator.

(c) Whenever a transfer of Stage 2 airplanes with base level occurs, the transferring and acquiring parties shall, within 10 days, jointly submit written notification of the transfer to the FAA, Office of Environment and Energy. Such notification shall state:

(1) The names of the transferring and acquiring parties;

(2) The name, address, and telephone number of the individual responsible for submitting the notification on behalf of the transferring and acquiring parties;

(3) The total number of Stage 2 airplanes transferred, listed by airplane type, model, series, and serial number;

(4) The corresponding amount of base level transferred and whether it is U.S. operator or foreign air carrier base level; and

(5) The effective date of the transaction.

(d) If, taken as a whole, a transaction or series of transactions made pursuant to this section does not produce an increase or decrease in the number of Stage 2 airplanes for either the acquiring or transferring operator, such transaction or series of transactions may not be used to establish compliance with the requirements of §91.865.

[Doc. No. 26433, 56 FR 48659, Sept. 25, 1991]

### §91.865 Phased compliance for operators with base level.

Except as provided in paragraph (a) of this section, each operator that operates an airplane under part 91, 121, 125, 129, or 135 of this chapter, regardless of the national registry of the airplane, shall comply with paragraph (b) or (d) of this section at each interim compliance date with regard to its subsonic airplane fleet covered by §91.801(c) of this subpart.

(a) This section does not apply to new entrants covered by §91.867 or to foreign operators not engaged in foreign air commerce.

(b) Each operator that chooses to comply with this paragraph pursuant to any interim compliance requirement shall reduce the number of Stage 2 airplanes it operates that are eligible for operation in the contiguous United States to a maximum of:

(1) After December 31, 1994, 75 percent of the base level held by the operator;

(2) After December 31, 1996, 50 percent of the base level held by the operator;

(3) After December 31, 1998, 25 percent of the base level held by the operator.

(c) Except as provided under §91.871, the number of Stage 2 airplanes that must be reduced at each compliance date contained in paragraph (b) of this section shall be determined by reference to the amount of base level held by the operator on that compliance date, as calculated under §91.861.

(d) Each operator that chooses to comply with this paragraph pursuant to any interim compliance requirement shall operate a fleet that consists of:

(1) After December 31, 1994, not less than 55 percent Stage 3 airplanes;

(2) After December 31, 1996, not less than 65 percent Stage 3 airplanes;

(3) After December 31, 1998, not less than 75 percent Stage 3 airplanes.

(e) Calculations resulting in fractions may be rounded to permit the continued operation of the next whole number of Stage 2 airplanes.

[Doc. No. 26433, 56 FR 48659, Sept. 25, 1991]

### §91.867 Phased compliance for new entrants.

(a) New entrant U.S. air carriers.

(1) A new entrant initiating operations under part 121 of this chapter on or before December 31, 1994, may initiate service without regard to the percentage of its fleet composed of Stage 3 airplanes.

(2) After December 31, 1994, at least 25 percent of the fleet of a new entrant must comply with Stage 3 noise levels.

(3) After December 31, 1996, at least 50 percent of the fleet of a new entrant must comply with Stage 3 noise levels.

(4) After December 31, 1998, at least 75 percent of the fleet of a new entrant must comply with Stage 3 noise levels.

(b) New entrant foreign air carriers.

(1) A new entrant foreign air carrier initiating part 129 operations on or before December 31, 1994, may initiate service without regard to the percentage of its fleet composed of Stage 3 airplanes.

(2) After December 31, 1994, at least 25 percent of the fleet on U.S. operations specifications of a new entrant foreign air carrier must comply with Stage 3 noise levels.

(3) After December 31, 1996, at least 50 percent of the fleet on U.S. operations specifications of a new entrant foreign air carrier must comply with Stage 3 noise levels.

(4) After December 31, 1998, at least 75 percent of the fleet on U.S. operations specifications of a new entrant foreign air carrier must comply with Stage 3 noise levels.

(c) Calculations resulting in fractions may be rounded to permit the continued operation of the next whole number of Stage 2 airplanes.

[Doc. No. 26433, 56 FR 48659, Sept. 25, 1991, as amended by Amdt. 91–252, 61 FR 66185, Dec. 16, 1996]

### §91.869 Carry-forward compliance.

(a) Any operator that exceeds the requirements of paragraph (b) of §91.865 of this part on or before December 31, 1994, or on or before December 31, 1996,

may claim a credit that may be applied at a subsequent interim compliance date.

(b) Any operator that eliminates or modifies more Stage 2 airplanes pursuant to § 91.865(b) than required as of December 31, 1994, or December 31, 1996, may count the number of additional Stage 2 airplanes reduced as a credit toward—

(1) The number of Stage 2 airplanes it would otherwise be required to reduce following a subsequent interim compliance date specified in § 91.865(b); or

(2) The number of Stage 3 airplanes it would otherwise be required to operate in its fleet following a subsequent interim compliance date to meet the percentage requirements specified in § 91.865(d).

[Doc. No. 26433, 56 FR 48659, Sept. 25, 1991; 56 FR 65783, Dec. 18, 1991]

### § 91.871 Waivers from interim compliance requirements.

(a) Any U.S. operator or foreign air carrier subject to the requirements of § 91.865 or 91.867 of this subpart may request a waiver from any individual compliance requirement.

(b) Applications must be filed with the Secretary of Transportation at least 120 days prior to the compliance date from which the waiver is requested.

(c) Applicants must show that a grant of waiver would be in the public interest, and must include in its application its plans and activities for modifying its fleet, including evidence of good faith efforts to comply with the requirements of § 91.865 or § 91.867. The application should contain all information the applicant considers relevant, including, as appropriate, the following:

(1) The applicant's balance sheet and cash flow positions;

(2) The composition of the applicant's current fleet; and

(3) The applicant's delivery position with respect to new airplanes or noise-abatement equipment.

(d) Waivers will be granted only upon a showing by the applicant that compliance with the requirements of § 91.865 or 91.867 at a particular interim compliance date is financially onerous, physically impossible, or technologically infeasible, or that it would have an adverse effect on competition or on service to small communities.

(e) The conditions of any waiver granted under this section shall be determined by the circumstances presented in the application, but in no case may the term extend beyond the next interim compliance date.

(f) A summary of any request for a waiver under this section will be published in the FEDERAL REGISTER, and public comment will be invited. Unless the Secretary finds that circumstances require otherwise, the public comment period will be at least 14 days.

[Doc. No. 26433, 56 FR 48660, Sept. 25, 1991]

### § 91.873 Waivers from final compliance.

(a) A U.S. air carrier or a foreign air carrier may apply for a waiver from the prohibition contained in § 91.853 of this part for its remaining Stage 2 airplanes, provided that, by July 1, 1999, at least 85 percent of the airplanes used by the carrier to provide service to or from an airport in the contiguous United States will comply with the Stage 3 noise levels.

(b) An application for the waiver described in paragraph (a) of this section must be filed with the Secretary of Transportation no later than January 1, 1999, or, in the case of a foreign air carrier, no later than April 20, 2000. Such application must include a plan with firm orders for replacing or modifying all airplanes to comply with Stage 3 noise levels at the earliest practicable time.

(c) To be eligible to apply for the waiver under this section, a new entrant U.S. air carrier must initiate service no later than January 1, 1999, and must comply fully with all provisions of this section.

(d) The Secretary may grant a waiver under this section if the Secretary finds that granting such waiver is in the public interest. In making such a finding, the Secretary shall include consideration of the effect of granting such waiver on competition in the air carrier industry and the effect on small community air service, and any other information submitted by the applicant that the Secretary considers relevant.

(e) The term of any waiver granted under this section shall be determined by the circumstances presented in the application, but in no case will the waiver permit the operation of any Stage 2 airplane covered by this subchapter in the contiguous United States after December 31, 2003.

(f) A summary of any request for a waiver under this section will be published in the FEDERAL REGISTER, and public comment will be invited. Unless the secretary finds that circumstances require otherwise, the public comment period will be at least 14 days.

[Doc. No. 26433, 56 FR 48660, Sept. 25, 1991; 56 FR 51167 Oct. 10, 1991; Amdt. 91–276, 67 FR 46571, July 15, 2002]

### §91.875 Annual progress reports.

(a) Each operator subject to §91.865 or §91.867 of this chapter shall submit an annual report to the FAA, Office of Environment and Energy, on the progress it has made toward complying with the requirements of that section. Such reports shall be submitted no later than 45 days after the end of a calendar year. All progress reports must provide the information through the end of the calendar year, be certified by the operator as true and complete (under penalty of 18 U.S.C. 1001), and include the following information:

(1) The name and address of the operator;

(2) The name, title, and telephone number of the person designated by the operator to be responsible for ensuring the accuracy of the information in the report;

(3) The operator's progress during the reporting period toward compliance with the requirements of §91.853, §91.865 or §91.867. For airplanes on U.S. operations specifications, each operator shall identify the airplanes by type, model, series, and serial number.

(i) Each Stage 2 airplane added or removed from operation or U.S. operations specifications (grouped separately by those airplanes acquired with and without base level);

(ii) Each Stage 2 airplane modified to Stage 3 noise levels (identifying the manufacturer and model of noise abatement retrofit equipment;

(iii) Each Stage 3 airplane on U.S. operations specifications as of the last day of the reporting period; and

(iv) For each Stage 2 airplane transferred or acquired, the name and address of the recipient or transferor; and, if base level was transferred, the person to or from whom base level was transferred or acquired pursuant to Section 91.863 along with the effective date of each base level transaction, and the type of base level transferred or acquired.

(b) Each operator subject to §91.865 or §91.867 of this chapter shall submit an initial progress report covering the period from January 1, 1990, through December 31, 1991, and provide:

(1) For each operator subject to §91.865:

(i) The date used to establish its base level pursuant to §91.861(a); and

(ii) A list of those Stage 2 airplanes (by type, model, series and serial number) in its base level, including adjustments made pursuant to §91.861 after the date its base level was established.

(2) For each U.S. operator:

(i) A plan to meet the compliance schedules in §91.865 or §91.867 and the final compliance date of §91.853, including the schedule for delivery of replacement Stage 3 airplanes or the installation of noise abatement retrofit equipment; and

(ii) A separate list (by type, model, series, and serial number) of those airplanes included in the operator's base level, pursuant to §91.861(a)(1) (i) and (ii), under the categories ''returned'' or ''purchased,'' along with the date each was added to its operations specifications.

(c) Each operator subject to §91.865 or §91.867 of this chapter shall submit subsequent annual progress reports covering the calendar year preceding the report and including any changes in the information provided in paragraphs (a) and (b) of this section; including the use of any carry-forward credits pursuant to §91.869.

(d) An operator may request, in any report, that specific planning data be considered proprietary.

(e) If an operator's actions during any reporting period cause it to achieve compliance with §91.853, the report should include a statement to that

effect. Further progress reports are not required unless there is any change in the information reported pursuant to paragraph (a) of this section.

(f) For each U.S. operator subject to § 91.865, progress reports submitted for calendar years 1994, 1996, and 1998, shall also state how the operator achieved compliance with the requirements of that section, i.e.—

(1) By reducing the number of Stage 2 airplanes in its fleet to no more than the maximum permitted percentage of its base level under § 91.865(b), or

(2) By operating a fleet that consists of at least the minimum required percentage of Stage 3 airplanes under § 91.865(d).

(Approved by the Office of Management and Budget under control number 2120–0553)

[Doc. No. 26433, 56 FR 48660, Sept. 25, 1991; 56 FR 51168, Oct. 10, 1991, as amended by 57 FR 5977, Feb. 19, 1992]

### § 91.877 Annual reporting of Hawaiian operations.

(a) Each air carrier or foreign air carrier subject to § 91.865 or § 91.867 of this part that conducts operations between the contiguous United States and the State of Hawaii, between the State of Hawaii and any point outside of the contiguous United States, or between the islands of Hawaii in turnaround service, on or since November 5, 1990, shall include in its annual report the information described in paragraph (c) of this section.

(b) Each air carrier or foreign air carrier not subject to § 91.865 or § 91.867 of this part that conducts operations between the contiguous U.S. and the State of Hawaii, between the State of Hawaii and any point outside of the contiguous United States, or between the islands of Hawaii in turnaround service, on or since November 5, 1990, shall submit an annual report to the FAA, Office of Environment and Energy, on its compliance with the Hawaiian operations provisions of 49 U.S.C. 47528. Such reports shall be submitted no later than 45 days after the end of a calendar year. All progress reports must provide the information through the end of the calendar year, be certified by the operator as true and complete (under penalty of 18 U.S.C. 1001), and include the following information—

(1) The name and address of the air carrier or foreign air carrier;

(2) The name, title, and telephone number of the person designated by the air carrier or foreign air carrier to be responsible for ensuring the accuracy of the information in the report; and

(3) The information specified in paragraph (c) of this section.

(c) The following information must be included in reports filed pursuant to this section—

(1) For operations conducted between the contiguous United States and the State of Hawaii—

(i) The number of Stage 2 airplanes used to conduct such operations as of November 5, 1990;

(ii) Any change to that number during the calendar year being reported, including the date of such change;

(2) For air carriers that conduct inter-island turnaround service in the State of Hawaii—

(i) The number of Stage 2 airplanes used to conduct such operations as of November 5, 1990;

(ii) Any change to that number during the calendar year being reported, including the date of such change;

(iii) For an air carrier that provided inter-island trunaround service within the state of Hawaii on November 5, 1990, the number reported under paragraph (c)(2)(i) of this section may include all Stage 2 airplanes with a maximum certificated takeoff weight of more than 75,000 pounds that were owned or leased by the air carrier on November 5, 1990, regardless of whether such airplanes were operated by that air carrier or foreign air carrier on that date.

(3) For operations conducted between the State of Hawaii and a point outside the contiguous United States—

(i) The number of Stage 2 airplanes used to conduct such operations as of November 5, 1990; and

(ii) Any change to that number during the calendar year being reported, including the date of such change.

(d) Reports or amended reports for years predating this regulation are required to be filed concurrently with the next annual report.

[Doc. No. 28213, 61 FR 66185, Dec. 16, 1996]

**§§91.879–91.899 [Reserved]**

## Subpart J—Waivers

**§91.901 [Reserved]**

**§91.903 Policy and procedures.**

(a) The Administrator may issue a certificate of waiver authorizing the operation of aircraft in deviation from any rule listed in this subpart if the Administrator finds that the proposed operation can be safely conducted under the terms of that certificate of waiver.

(b) An application for a certificate of waiver under this part is made on a form and in a manner prescribed by the Administrator and may be submitted to any FAA office.

(c) A certificate of waiver is effective as specified in that certificate of waiver.

[Doc. No. 18334, 54 FR 34325, Aug. 18, 1989]

**§91.905 List of rules subject to waivers.**

Sec.
91.107 Use of safety belts.
91.111 Operating near other aircraft.
91.113 Right-of-way rules: Except water operations.
91.115 Right-of-way rules: Water operations.
91.117 Aircraft speed.
91.119 Minimum safe altitudes: General.
91.121 Altimeter settings.
91.123 Compliance with ATC clearances and instructions.
91.125 ATC light signals.
91.126 Operating on or in the vicinity of an airport in Class G airspace.
91.127 Operating on or in the vicinity of an airport in Class E airspace.
91.129 Operations in Class D airspace.
91.130 Operations in Class C airspace.
91.131 Operations in Class B airspace.
91.133 Restricted and prohibited areas.
91.135 Operations in Class A airspace.
91.137 Temporary flight restrictions.
91.141 Flight restrictions in the proximity of the Presidential and other parties.
91.143 Flight limitation in the proximity of space flight operations.
91.153 VFR flight plan: Information required.
91.155 Basic VFR weather minimums
91.157 Special VFR weather minimums.
91.159 VFR cruising altitude or flight level.
91.169 IFR flight plan: Information required.
91.173 ATC clearance and flight plan required.
91.175 Takeoff and landing under IFR.
91.177 Minimum altitudes for IFR operations.
91.179 IFR cruising altitude or flight level.
91.181 Course to be flown.
91.183 IFR radio communications.
91.185 IFR operations: Two-way radio communications failure.
91.187 Operation under IFR in controlled airspace: Malfunction reports.
91.209 Aircraft lights.
91.303 Aerobatic flights.
91.305 Flight test areas.
91.311 Towing: Other than under §91.309.
91.313(e) Restricted category civil aircraft: Operating limitations.
91.515 Flight altitude rules.
91.705 Operations within the North Atlantic Minimum Navigation Performance Specifications Airspace.
91.707 Flights between Mexico or Canada and the United States.
91.713 Operation of civil aircraft of Cuban registry.

[Doc. No. 18334, 54 FR 34325, Aug. 18, 1989, as amended by Amdt. 91–227, 56 FR 65661, Dec. 17, 1991]

**§§91.907–91.999 [Reserved]**

## Subpart K—Fractional Ownership Operations

SOURCE: Docket No. FAA–2001–10047, 68 FR 54561, Sept. 17, 2003, unless otherwise noted.

**§91.1001 Applicability.**

(a) This subpart prescribes rules, in addition to those prescribed in other subparts of this part, that apply to fractional owners and fractional ownership program managers governing—

(1) The provision of program management services in a fractional ownership program;

(2) The operation of a fractional ownership program aircraft in a fractional ownership program; and

(3) The operation of a program aircraft included in a fractional ownership program managed by an affiliate of the manager of the program to which the owner belongs.

(b) As used in this part—

(1) *Affiliate of a program manager* means a manager that, directly, or indirectly, through one or more intermediaries, controls, is controlled by, or is under common control with, another program manager. The holding of at least forty percent (40 percent) of the equity and forty percent (40 percent) of the voting power of an entity will be

presumed to constitute control for purposes of determining an affiliation under this subpart.

(2) A *dry-lease aircraft exchange* means an arrangement, documented by the written program agreements, under which the program aircraft are available, on an as needed basis without crew, to each fractional owner.

(3) A *fractional owner or owner* means an individual or entity that possesses a minimum fractional ownership interest in a program aircraft and that has entered into the applicable program agreements; provided, however, that in the case of the flight operations described in paragraph (b)(6)(ii) of this section, and solely for purposes of requirements pertaining to those flight operations, the fractional owner operating the aircraft will be deemed to be a fractional owner in the program managed by the affiliate.

(4) A *fractional ownership interest* means the ownership of an interest or holding of a multi-year leasehold interest and/or a multi-year leasehold interest that is convertible into an ownership interest in a program aircraft.

(5) A *fractional ownership program or program* means any system of aircraft ownership and exchange that consists of all of the following elements:

(i) The provision for fractional ownership program management services by a single fractional ownership program manager on behalf of the fractional owners.

(ii) Two or more airworthy aircraft.

(iii) One or more fractional owners per program aircraft, with at least one program aircraft having more than one owner.

(iv) Possession of at least a minimum fractional ownership interest in one or more program aircraft by each fractional owner.

(v) A dry-lease aircraft exchange arrangement among all of the fractional owners.

(vi) Multi-year program agreements covering the fractional ownership, fractional ownership program management services, and dry-lease aircraft exchange aspects of the program.

(6) A *fractional ownership program aircraft or program aircraft* means:

(i) An aircraft in which a fractional owner has a minimal fractional ownership interest and that has been included in the dry-lease aircraft exchange pursuant to the program agreements, or

(ii) In the case of a fractional owner from one program operating an aircraft in a different fractional ownership program managed by an affiliate of the operating owner's program manager, the aircraft being operated by the fractional owner, so long as the aircraft is:

(A) Included in the fractional ownership program managed by the affiliate of the operating owner's program manager, and

(B) Included in the operating owner's program's dry-lease aircraft exchange pursuant to the program agreements of the operating owner's program.

(iii) An aircraft owned in whole or in part by the program manager that has been included in the dry-lease aircraft exchange and is used to supplement program operations.

(7) A *Fractional Ownership Program Flight or Program Flight* means a flight under this subpart when one or more passengers or property designated by a fractional owner are on board the aircraft.

(8) *Fractional ownership program management services or program management services* mean administrative and aviation support services furnished in accordance with the applicable requirements of this subpart or provided by the program manager on behalf of the fractional owners, including, but not limited to, the—

(i) Establishment and implementation of program safety guidelines;

(ii) Employment, furnishing, or contracting of pilots and other crewmembers;

(iii) Training and qualification of pilots and other crewmembers and personnel;

(iv) Scheduling and coordination of the program aircraft and crews;

(v) Maintenance of program aircraft;

(vi) Satisfaction of recordkeeping requirements;

(vii) Development and use of a program operations manual and procedures; and

(viii) Application for and maintenance of management specifications and other authorizations and approvals.

(9) A *fractional ownership program manager or program manager* means the entity that offers fractional ownership program management services to fractional owners, and is designated in the multi-year program agreements referenced in paragraph (b)(1)(v) of this section to fulfill the requirements of this chapter applicable to the manager of the program containing the aircraft being flown. When a fractional owner is operating an aircraft in a fractional ownership program managed by an affiliate of the owner's program manager, the references in this subpart to the flight-related responsibilities of the program manager apply, with respect to that particular flight, to the affiliate of the owner's program manager rather than to the owner's program manager.

(10) A *minimum fractional ownership interest* means—

(i) A fractional ownership interest equal to, or greater than, one-sixteenth (1/16) of at least one subsonic, fixed-wing or powered-lift program aircraft; or

(ii) A fractional ownership interest equal to, or greater than, one-thirty-second (1/32) of at least one rotorcraft program aircraft.

(c) The rules in this subpart that refer to a fractional owner or a fractional ownership program manager also apply to any person who engages in an operation governed by this subpart without the management specifications required by this subpart.

### §91.1002 Compliance date.

No person that conducted flights before November 17, 2003 under a program that meets the definition of fractional ownership program in §91.1001 may conduct such flights after February 17, 2005 unless it has obtained management specifications under this subpart.

[Doc. No. FAA–2001–10047, 68 FR 54561, Sept. 17, 2003; 69 FR 74413, Dec. 14, 2004]

### §91.1003 Management contract between owner and program manager.

Each owner must have a contract with the program manager that—

(a) Requires the program manager to ensure that the program conforms to all applicable requirements of this chapter.

(b) Provides the owner the right to inspect and to audit, or have a designee of the owner inspect and audit, the records of the program manager pertaining to the operational safety of the program and those records required to show compliance with the management specifications and all applicable regulations. These records include, but are not limited to, the management specifications, authorizations, approvals, manuals, log books, and maintenance records maintained by the program manager.

(c) Designates the program manager as the owner's agent to receive service of notices pertaining to the program that the FAA seeks to provide to owners and authorizes the FAA to send such notices to the program manager in its capacity as the agent of the owner for such service.

(d) Acknowledges the FAA's right to contact the owner directly if the Administrator determines that direct contact is necessary.

### §91.1005 Prohibitions and limitations.

(a) Except as provided in §91.321 or §91.501, no owner may carry persons or property for compensation or hire on a program flight.

(b) During the term of the multi-year program agreements under which a fractional owner has obtained a minimum fractional ownership interest in a program aircraft, the flight hours used during that term by the owner on program aircraft must not exceed the total hours associated with the fractional owner's share of ownership.

(c) No person may sell or lease an aircraft interest in a fractional ownership program that is smaller than that prescribed in the definition of ''minimum fractional ownership interest'' in §91.1001(b)(10) unless flights associated with that interest are operated under part 121 or 135 of this chapter and are conducted by an air carrier or commercial operator certificated under part 119 of this chapter.

### §91.1007 Flights conducted under part 121 or part 135 of this chapter.

(a) Except as provided in §91.501(b), when a nonprogram aircraft is used to substitute for a program flight, the flight must be operated in compliance

with part 121 or part 135 of this chapter, as applicable.

(b) A program manager who holds a certificate under part 119 of this chapter may conduct a flight for the use of a fractional owner under part 121 or part 135 of this chapter if the aircraft is listed on that certificate holder's operations specifications for part 121 or part 135, as applicable.

(c) The fractional owner must be informed when a flight is being conducted as a program flight or is being conducted under part 121 or part 135 of this chapter.

OPERATIONAL CONTROL

### § 91.1009 Clarification of operational control.

(a) An owner is in operational control of a program flight when the owner—

(1) Has the rights and is subject to the limitations set forth in §§ 91.1003 through 91.1013;

(2) Has directed that a program aircraft carry passengers or property designated by that owner; and

(3) The aircraft is carrying those passengers or property.

(b) An owner is not in operational control of a flight in the following circumstances:

(1) A program aircraft is used for a flight for administrative purposes such as demonstration, positioning, ferrying, maintenance, or crew training, and no passengers or property designated by such owner are being carried; or

(2) The aircraft being used for the flight is being operated under part 121 or 135 of this chapter.

### § 91.1011 Operational control responsibilities and delegation.

(a) Each owner in operational control of a program flight is ultimately responsible for safe operations and for complying with all applicable requirements of this chapter, including those related to airworthiness and operations in connection with the flight. Each owner may delegate some or all of the performance of the tasks associated with carrying out this responsibility to the program manager, and may rely on the program manager for aviation expertise and program management services. When the owner delegates performance of tasks to the program manager or relies on the program manager's expertise, the owner and the program manager are jointly and individually responsible for compliance.

(b) The management specifications, authorizations, and approvals required by this subpart are issued to, and in the sole name of, the program manager on behalf of the fractional owners collectively. The management specifications, authorizations, and approvals will not be affected by any change in ownership of a program aircraft, as long as the aircraft remains a program aircraft in the identified program.

### § 91.1013 Operational control briefing and acknowledgment.

(a) Upon the signing of an initial program management services contract, or a renewal or extension of a program management services contract, the program manager must brief the fractional owner on the owner's operational control responsibilities, and the owner must review and sign an acknowledgment of these operational control responsibilities. The acknowledgment must be included with the program management services contract. The acknowledgment must define when a fractional owner is in operational control and the owner's responsibilities and liabilities under the program. These include:

(1) Responsibility for compliance with the management specifications and all applicable regulations.

(2) Enforcement actions for any noncompliance.

(3) Liability risk in the event of a flight-related occurrence that causes personal injury or property damage.

(b) The fractional owner's signature on the acknowledgment will serve as the owner's affirmation that the owner has read, understands, and accepts the operational control responsibilities described in the acknowledgment.

(c) Each program manager must ensure that the fractional owner or owner's representatives have access to the acknowledgments for such owner's program aircraft. Each program manager must ensure that the FAA has access to the acknowledgments for all program aircraft.

PROGRAM MANAGEMENT

**§91.1014 Issuing or denying management specifications.**

(a) A person applying to the Administrator for management specifications under this subpart must submit an application—

(1) In a form and manner prescribed by the Administrator; and

(2) Containing any information the Administrator requires the applicant to submit.

(b) Management specifications will be issued to the program manager on behalf of the fractional owners if, after investigation, the Administrator finds that the applicant:

(1) Meets the applicable requirements of this subpart; and

(2) Is properly and adequately equipped in accordance with the requirements of this chapter and is able to conduct safe operations under appropriate provisions of part 91 of this chapter and management specifications issued under this subpart.

(c) An application for management specifications will be denied if the Administrator finds that the applicant is not properly or adequately equipped or is not able to conduct safe operations under this part.

**§91.1015 Management specifications.**

(a) Each person conducting operations under this subpart or furnishing fractional ownership program management services to fractional owners must do so in accordance with management specifications issued by the Administrator to the fractional ownership program manager under this subpart. Management specifications must include:

(1) The current list of all fractional owners and types of aircraft, registration markings and serial numbers;

(2) The authorizations, limitations, and certain procedures under which these operations are to be conducted,

(3) Certain other procedures under which each class and size of aircraft is to be operated;

(4) Authorization for an inspection program approved under §91.1109, including the type of aircraft, the registration markings and serial numbers of each aircraft to be operated under the program. No person may conduct any program flight using any aircraft not listed.

(5) Time limitations, or standards for determining time limitations, for overhauls, inspections, and checks for airframes, engines, propellers, rotors, appliances, and emergency equipment of aircraft.

(6) The specific location of the program manager's principal base of operations and, if different, the address that will serve as the primary point of contact for correspondence between the FAA and the program manager and the name and mailing address of the program manager's agent for service;

(7) Other business names the program manager may use;

(8) Authorization for the method of controlling weight and balance of aircraft;

(9) Any authorized deviation and exemption granted from any requirement of this chapter; and

(10) Any other information the Administrator determines is necessary.

(b) The program manager may keep the current list of all fractional owners required by paragraph (a)(1) of this section at its principal base of operation or other location approved by the Administrator and referenced in its management specifications. Each program manager shall make this list of owners available for inspection by the Administrator.

(c) Management specifications issued under this subpart are effective unless—

(1) The management specifications are amended as provided in §91.1017; or

(2) The Administrator suspends or revokes the management specifications.

(d) At least 30 days before it proposes to establish or change the location of its principal base of operations, its main operations base, or its main maintenance base, a program manager must provide written notification to the Flight Standards District Office that issued the program manager's management specifications.

(e) Each program manager must maintain a complete and separate set of its management specifications at its principal base of operations, or at a place approved by the Administrator,

and must make its management specifications available for inspection by the Administrator and the fractional owner(s) to whom the program manager furnishes its services for review and audit.

(f) Each program manager must insert pertinent excerpts of its management specifications, or references thereto, in its program manual and must—

(1) Clearly identify each such excerpt as a part of its management specifications; and

(2) State that compliance with each management specifications requirement is mandatory.

(g) Each program manager must keep each of its employees and other persons who perform duties material to its operations informed of the provisions of its management specifications that apply to that employee's or person's duties and responsibilities.

### § 91.1017 Amending program manager's management specifications.

(a) The Administrator may amend any management specifications issued under this subpart if—

(1) The Administrator determines that safety and the public interest require the amendment of any management specifications; or

(2) The program manager applies for the amendment of any management specifications, and the Administrator determines that safety and the public interest allows the amendment.

(b) Except as provided in paragraph (e) of this section, when the Administrator initiates an amendment of a program manager's management specifications, the following procedure applies:

(1) The Flight Standards District Office that issued the program manager's management specifications will notify the program manager in writing of the proposed amendment.

(2) The Flight Standards District Office that issued the program manager's management specifications will set a reasonable period (but not less than 7 days) within which the program manager may submit written information, views, and arguments on the amendment.

(3) After considering all material presented, the Flight Standards District Office that issued the program manager's management specifications will notify the program manager of—

(i) The adoption of the proposed amendment,

(ii) The partial adoption of the proposed amendment, or

(iii) The withdrawal of the proposed amendment.

(4) If the Flight Standards District Office that issued the program manager's management specifications issues an amendment of the management specifications, it becomes effective not less than 30 days after the program manager receives notice of it unless—

(i) The Flight Standards District Office that issued the program manager's management specifications finds under paragraph (e) of this section that there is an emergency requiring immediate action with respect to safety; or

(ii) The program manager petitions for reconsideration of the amendment under paragraph (d) of this section.

(c) When the program manager applies for an amendment to its management specifications, the following procedure applies:

(1) The program manager must file an application to amend its management specifications—

(i) At least 90 days before the date proposed by the applicant for the amendment to become effective, unless a shorter time is approved, in cases such as mergers, acquisitions of operational assets that require an additional showing of safety (for example, proving tests or validation tests), and resumption of operations following a suspension of operations as a result of bankruptcy actions.

(ii) At least 15 days before the date proposed by the applicant for the amendment to become effective in all other cases.

(2) The application must be submitted to the Flight Standards District Office that issued the program manager's management specifications in a form and manner prescribed by the Administrator.

(3) After considering all material presented, the Flight Standards District Office that issued the program manager's management specifications will notify the program manager of—

(i) The adoption of the applied for amendment;

(ii) The partial adoption of the applied for amendment; or

(iii) The denial of the applied for amendment. The program manager may petition for reconsideration of a denial under paragraph (d) of this section.

(4) If the Flight Standards District Office that issued the program manager's management specifications approves the amendment, following coordination with the program manager regarding its implementation, the amendment is effective on the date the Administrator approves it.

(d) When a program manager seeks reconsideration of a decision of the Flight Standards District Office that issued the program manager's management specifications concerning the amendment of management specifications, the following procedure applies:

(1) The program manager must petition for reconsideration of that decision within 30 days of the date that the program manager receives a notice of denial of the amendment of its management specifications, or of the date it receives notice of an FAA-initiated amendment of its management specifications, whichever circumstance applies.

(2) The program manager must address its petition to the Director, Flight Standards Service.

(3) A petition for reconsideration, if filed within the 30-day period, suspends the effectiveness of any amendment issued by the Flight Standards District Office that issued the program manager's management specifications unless that District Office has found, under paragraph (e) of this section, that an emergency exists requiring immediate action with respect to safety.

(4) If a petition for reconsideration is not filed within 30 days, the procedures of paragraph (c) of this section apply.

(e) If the Flight Standards District Office that issued the program manager's management specifications finds that an emergency exists requiring immediate action with respect to safety that makes the procedures set out in this section impracticable or contrary to the public interest—

(1) The Flight Standards District Office amends the management specifications and makes the amendment effective on the day the program manager receives notice of it; and

(2) In the notice to the program manager, the Flight Standards District Office will articulate the reasons for its finding that an emergency exists requiring immediate action with respect to safety or that makes it impracticable or contrary to the public interest to stay the effectiveness of the amendment.

### §91.1019 Conducting tests and inspections.

(a) At any time or place, the Administrator may conduct an inspection or test, other than an en route inspection, to determine whether a program manager under this subpart is complying with title 49 of the United States Code, applicable regulations, and the program manager's management specifications.

(b) The program manager must—

(1) Make available to the Administrator at the program manager's principal base of operations, or at a place approved by the Administrator, the program manager's management specifications; and

(2) Allow the Administrator to make any test or inspection, other than an en route inspection, to determine compliance respecting any matter stated in paragraph (a) of this section.

(c) Each employee of, or person used by, the program manager who is responsible for maintaining the program manager's records required by or necessary to demonstrate compliance with this subpart must make those records available to the Administrator.

(d) The Administrator may determine a program manager's continued eligibility to hold its management specifications on any grounds listed in paragraph (a) of this section, or any other appropriate grounds.

(e) Failure by any program manager to make available to the Administrator upon request, the management specifications, or any required record, document, or report is grounds for suspension of all or any part of the program manager's management specifications.

**§ 91.1021 Internal safety reporting and incident/accident response.**

(a) Each program manager must establish an internal anonymous safety reporting procedure that fosters an environment of safety without any potential for retribution for filing the report.

(b) Each program manager must establish procedures to respond to an aviation incident/accident.

**§ 91.1023 Program operating manual requirements.**

(a) Each program manager must prepare and keep current a program operating manual setting forth procedures and policies acceptable to the Administrator. The program manager's management, flight, ground, and maintenance personnel must use this manual to conduct operations under this subpart. However, the Administrator may authorize a deviation from this paragraph if the Administrator finds that, because of the limited size of the operation, part of the manual is not necessary for guidance of management, flight, ground, or maintenance personnel.

(b) Each program manager must maintain at least one copy of the manual at its principal base of operations.

(c) No manual may be contrary to any applicable U.S. regulations, foreign regulations applicable to the program flights in foreign countries, or the program manager's management specifications.

(d) The program manager must make a copy of the manual, or appropriate portions of the manual (and changes and additions), available to its maintenance and ground operations personnel and must furnish the manual to—

(1) Its crewmembers; and

(2) Representatives of the Administrator assigned to the program manager.

(e) Each employee of the program manager to whom a manual or appropriate portions of it are furnished under paragraph (d)(1) of this section must keep it up-to-date with the changes and additions furnished to them.

(f) Except as provided in paragraph (h) of this section, the appropriate parts of the manual must be carried on each aircraft when away from the principal operations base. The appropriate parts must be available for use by ground or flight personnel.

(g) For the purpose of complying with paragraph (d) of this section, a program manager may furnish the persons listed therein with all or part of its manual in printed form or other form, acceptable to the Administrator, that is retrievable in the English language. If the program manager furnishes all or part of the manual in other than printed form, it must ensure there is a compatible reading device available to those persons that provides a legible image of the maintenance information and instructions, or a system that is able to retrieve the maintenance information and instructions in the English language.

(h) If a program manager conducts aircraft inspections or maintenance at specified facilities where the approved aircraft inspection program is available, the program manager is not required to ensure that the approved aircraft inspection program is carried aboard the aircraft en route to those facilities.

(i) Program managers that are also certificated to operate under part 121 or 135 of this chapter may be authorized to use the operating manual required by those parts to meet the manual requirements of subpart K, provided:

(1) The policies and procedures are consistent for both operations, or

(2) When policies and procedures are different, the applicable policies and procedures are identified and used.

**§ 91.1025 Program operating manual contents.**

Each program operating manual must have the date of the last revision on each revised page. Unless otherwise authorized by the Administrator, the manual must include the following:

(a) Procedures for ensuring compliance with aircraft weight and balance limitations;

(b) Copies of the program manager's management specifications or appropriate extracted information, including area of operations authorized, category and class of aircraft authorized, crew

complements, and types of operations authorized;

(c) Procedures for complying with accident notification requirements;

(d) Procedures for ensuring that the pilot in command knows that required airworthiness inspections have been made and that the aircraft has been approved for return to service in compliance with applicable maintenance requirements;

(e) Procedures for reporting and recording mechanical irregularities that come to the attention of the pilot in command before, during, and after completion of a flight;

(f) Procedures to be followed by the pilot in command for determining that mechanical irregularities or defects reported for previous flights have been corrected or that correction of certain mechanical irregularities or defects have been deferred;

(g) Procedures to be followed by the pilot in command to obtain maintenance, preventive maintenance, and servicing of the aircraft at a place where previous arrangements have not been made by the program manager or owner, when the pilot is authorized to so act for the operator;

(h) Procedures under §91.213 for the release of, and continuation of flight if any item of equipment required for the particular type of operation becomes inoperative or unserviceable en route;

(i) Procedures for refueling aircraft, eliminating fuel contamination, protecting from fire (including electrostatic protection), and supervising and protecting passengers during refueling;

(j) Procedures to be followed by the pilot in command in the briefing under §91.1035.

(k) Procedures for ensuring compliance with emergency procedures, including a list of the functions assigned each category of required crewmembers in connection with an emergency and emergency evacuation duties;

(l) The approved aircraft inspection program, when applicable;

(m) Procedures for the evacuation of persons who may need the assistance of another person to move expeditiously to an exit if an emergency occurs;

(n) Procedures for performance planning that take into account take off, landing and en route conditions;

(o) An approved Destination Airport Analysis, when required by §91.1037(c), that includes the following elements, supported by aircraft performance data supplied by the aircraft manufacturer for the appropriate runway conditions—

(1) Pilot qualifications and experience;

(2) Aircraft performance data to include normal, abnormal and emergency procedures as supplied by the aircraft manufacturer;

(3) Airport facilities and topography;

(4) Runway conditions (including contamination);

(5) Airport or area weather reporting;

(6) Appropriate additional runway safety margins, if required;

(7) Airplane inoperative equipment;

(8) Environmental conditions; and

(9) Other criteria that affect aircraft performance.

(p) A suitable system (which may include a coded or electronic system) that provides for preservation and retrieval of maintenance recordkeeping information required by §91.1113 in a manner acceptable to the Administrator that provides—

(1) A description (or reference to date acceptable to the Administrator) of the work performed:

(2) The name of the person performing the work if the work is performed by a person outside the organization of the program manager; and

(3) The name or other positive identification of the individual approving the work.

(q) Flight locating and scheduling procedures; and

(r) Other procedures and policy instructions regarding program operations that are issued by the program manager or required by the Administrator.

**§91.1027 Recordkeeping.**

(a) Each program manager must keep at its principal base of operations or at other places approved by the Administrator, and must make available for inspection by the Administrator all of the following:

(1) The program manager's management specifications.

(2) A current list of the aircraft used or available for use in operations under this subpart, the operations for which each is equipped (for example, MNPS, RNP5/10, RVSM.).

(3) An individual record of each pilot used in operations under this subpart, including the following information:

(i) The full name of the pilot.

(ii) The pilot certificate (by type and number) and ratings that the pilot holds.

(iii) The pilot's aeronautical experience in sufficient detail to determine the pilot's qualifications to pilot aircraft in operations under this subpart.

(iv) The pilot's current duties and the date of the pilot's assignment to those duties.

(v) The effective date and class of the medical certificate that the pilot holds.

(vi) The date and result of each of the initial and recurrent competency tests and proficiency checks required by this subpart and the type of aircraft flown during that test or check.

(vii) The pilot's flight time in sufficient detail to determine compliance with the flight time limitations of this subpart.

(viii) The pilot's check pilot authorization, if any.

(ix) Any action taken concerning the pilot's release from employment for physical or professional disqualification; and

(x) The date of the satisfactory completion of initial, transition, upgrade, and differences training and each recurrent training phase required by this subpart.

(4) An individual record for each flight attendant used in operations under this subpart, including the following information:

(i) The full name of the flight attendant, and

(ii) The date and result of training required by § 91.1063, as applicable.

(5) A current list of all fractional owners and associated aircraft. This list or a reference to its location must be included in the management specifications and should be of sufficient detail to determine the minimum fractional ownership interest of each aircraft.

(b) Each program manager must keep each record required by paragraph (a)(2) of this section for at least 6 months, and must keep each record required by paragraphs (a)(3) and (a)(4) of this section for at least 12 months. When an employee is no longer employed or affiliated with the program manager or fractional owner, each record required by paragraphs (a)(3) and (a)(4) of this section must be retained for at least 12 months.

(c) Each program manager is responsible for the preparation and accuracy of a load manifest in duplicate containing information concerning the loading of the aircraft. The manifest must be prepared before each takeoff and must include—

(1) The number of passengers;

(2) The total weight of the loaded aircraft;

(3) The maximum allowable takeoff weight for that flight;

(4) The center of gravity limits;

(5) The center of gravity of the loaded aircraft, except that the actual center of gravity need not be computed if the aircraft is loaded according to a loading schedule or other approved method that ensures that the center of gravity of the loaded aircraft is within approved limits. In those cases, an entry must be made on the manifest indicating that the center of gravity is within limits according to a loading schedule or other approved method;

(6) The registration number of the aircraft or flight number;

(7) The origin and destination; and

(8) Identification of crewmembers and their crew position assignments.

(d) The pilot in command of the aircraft for which a load manifest must be prepared must carry a copy of the completed load manifest in the aircraft to its destination. The program manager must keep copies of completed load manifest for at least 30 days at its principal operations base, or at another location used by it and approved by the Administrator.

(e) Each program manager is responsible for providing a written document that states the name of the entity having operational control on that flight and the part of this chapter under

which the flight is operated. The pilot in command of the aircraft must carry a copy of the document in the aircraft to its destination. The program manager must keep a copy of the document for at least 30 days at its principal operations base, or at another location used by it and approved by the Administrator.

(f) Records may be kept either in paper or other form acceptable to the Administrator.

(g) Program managers that are also certificated to operate under part 121 or 135 of this chapter may satisfy the recordkeeping requirements of this section and of §91.1113 with records maintained to fulfill equivalent obligations under part 121 or 135 of this chapter.

**§91.1029 Flight scheduling and locating requirements.**

(a) Each program manager must establish and use an adequate system to schedule and release program aircraft.

(b) Except as provided in paragraph (d) of this section, each program manager must have adequate procedures established for locating each flight, for which a flight plan is not filed, that—

(1) Provide the program manager with at least the information required to be included in a VFR flight plan;

(2) Provide for timely notification of an FAA facility or search and rescue facility, if an aircraft is overdue or missing; and

(3) Provide the program manager with the location, date, and estimated time for reestablishing radio or telephone communications, if the flight will operate in an area where communications cannot be maintained.

(c) Flight locating information must be retained at the program manager's principal base of operations, or at other places designated by the program manager in the flight locating procedures, until the completion of the flight.

(d) The flight locating requirements of paragraph (b) of this section do not apply to a flight for which an FAA flight plan has been filed and the flight plan is canceled within 25 nautical miles of the destination airport.

**§91.1031 Pilot in command or second in command: Designation required.**

(a) Each program manager must designate a—

(1) Pilot in command for each program flight; and

(2) Second in command for each program flight requiring two pilots.

(b) The pilot in command, as designated by the program manager, must remain the pilot in command at all times during that flight.

**§91.1033 Operating information required.**

(a) Each program manager must, for all program operations, provide the following materials, in current and appropriate form, accessible to the pilot at the pilot station, and the pilot must use them—

(1) A cockpit checklist;

(2) For multiengine aircraft or for aircraft with retractable landing gear, an emergency cockpit checklist containing the procedures required by paragraph (c) of this section, as appropriate;

(3) At least one set of pertinent aeronautical charts; and

(4) For IFR operations, at least one set of pertinent navigational en route, terminal area, and instrument approach procedure charts.

(b) Each cockpit checklist required by paragraph (a)(1) of this section must contain the following procedures:

(1) Before starting engines;

(2) Before takeoff;

(3) Cruise;

(4) Before landing;

(5) After landing; and

(6) Stopping engines.

(c) Each emergency cockpit checklist required by paragraph (a)(2) of this section must contain the following procedures, as appropriate:

(1) Emergency operation of fuel, hydraulic, electrical, and mechanical systems.

(2) Emergency operation of instruments and controls.

(3) Engine inoperative procedures.

(4) Any other emergency procedures necessary for safety.

**§ 91.1035 Passenger awareness.**

(a) Prior to each takeoff, the pilot in command of an aircraft carrying passengers on a program flight must ensure that all passengers have been orally briefed on—

(1) *Smoking:* Each passenger must be briefed on when, where, and under what conditions smoking is prohibited. This briefing must include a statement, as appropriate, that the regulations require passenger compliance with lighted passenger information signs and no smoking placards, prohibit smoking in lavatories, and require compliance with crewmember instructions with regard to these items;

(2) *Use of safety belts, shoulder harnesses, and child restraint systems:* Each passenger must be briefed on when, where and under what conditions it is necessary to have his or her safety belt and, if installed, his or her shoulder harness fastened about him or her, and if a child is being transported, the appropriate use of child restraint systems, if available. This briefing must include a statement, as appropriate, that the regulations require passenger compliance with the lighted passenger information sign and/or crewmember instructions with regard to these items;

(3) The placement of seat backs in an upright position before takeoff and landing;

(4) Location and means for opening the passenger entry door and emergency exits;

(5) Location of survival equipment;

(6) Ditching procedures and the use of flotation equipment required under § 91.509 for a flight over water;

(7) The normal and emergency use of oxygen installed in the aircraft; and

(8) Location and operation of fire extinguishers.

(b) Prior to each takeoff, the pilot in command of an aircraft carrying passengers on a program flight must ensure that each person who may need the assistance of another person to move expeditiously to an exit if an emergency occurs and that person's attendant, if any, has received a briefing as to the procedures to be followed if an evacuation occurs. This paragraph does not apply to a person who has been given a briefing before a previous leg of that flight in the same aircraft.

(c) Prior to each takeoff, the pilot in command must advise the passengers of the name of the entity in operational control of the flight.

(d) The oral briefings required by paragraphs (a), (b), and (c) of this section must be given by the pilot in command or another crewmember.

(e) The oral briefing required by paragraph (a) of this section may be delivered by means of an approved recording playback device that is audible to each passenger under normal noise levels.

(f) The oral briefing required by paragraph (a) of this section must be supplemented by printed cards that must be carried in the aircraft in locations convenient for the use of each passenger. The cards must—

(1) Be appropriate for the aircraft on which they are to be used;

(2) Contain a diagram of, and method of operating, the emergency exits; and

(3) Contain other instructions necessary for the use of emergency equipment on board the aircraft.

**§ 91.1037 Large transport category airplanes: Turbine engine powered; Limitations; Destination and alternate airports.**

(a) No program manager or any other person may permit a turbine engine powered large transport category airplane on a program flight to take off that airplane at a weight that (allowing for normal consumption of fuel and oil in flight to the destination or alternate airport) the weight of the airplane on arrival would exceed the landing weight in the Airplane Flight Manual for the elevation of the destination or alternate airport and the ambient temperature expected at the time of landing.

(b) Except as provided in paragraph (c) of this section, no program manager or any other person may permit a turbine engine powered large transport category airplane on a program flight to take off that airplane unless its weight on arrival, allowing for normal consumption of fuel and oil in flight (in accordance with the landing distance in the Airplane Flight Manual for the elevation of the destination airport and

the wind conditions expected there at the time of landing), would allow a full stop landing at the intended destination airport within 60 percent of the effective length of each runway described below from a point 50 feet above the intersection of the obstruction clearance plane and the runway. For the purpose of determining the allowable landing weight at the destination airport, the following is assumed:

(1) The airplane is landed on the most favorable runway and in the most favorable direction, in still air.

(2) The airplane is landed on the most suitable runway considering the probable wind velocity and direction and the ground handling characteristics of that airplane, and considering other conditions such as landing aids and terrain.

(c) A program manager or other person flying a turbine engine powered large transport category airplane on a program flight may permit that airplane to take off at a weight in excess of that allowed by paragraph (b) of this section if all of the following conditions exist:

(1) The operation is conducted in accordance with an approved Destination Airport Analysis in that person's program operating manual that contains the elements listed in §91.1025(o).

(2) The airplane's weight on arrival, allowing for normal consumption of fuel and oil in flight (in accordance with the landing distance in the Airplane Flight Manual for the elevation of the destination airport and the wind conditions expected there at the time of landing), would allow a full stop landing at the intended destination airport within 80 percent of the effective length of each runway described below from a point 50 feet above the intersection of the obstruction clearance plane and the runway. For the purpose of determining the allowable landing weight at the destination airport, the following is assumed:

(i) The airplane is landed on the most favorable runway and in the most favorable direction, in still air.

(ii) The airplane is landed on the most suitable runway considering the probable wind velocity and direction and the ground handling characteristics of that airplane, and considering other conditions such as landing aids and terrain.

(3) The operation is authorized by management specifications.

(d) No program manager or other person may select an airport as an alternate airport for a turbine engine powered large transport category airplane unless (based on the assumptions in paragraph (b) of this section) that airplane, at the weight expected at the time of arrival, can be brought to a full stop landing within 80 percent of the effective length of the runway from a point 50 feet above the intersection of the obstruction clearance plane and the runway.

(e) Unless, based on a showing of actual operating landing techniques on wet runways, a shorter landing distance (but never less than that required by paragraph (b) or (c) of this section) has been approved for a specific type and model airplane and included in the Airplane Flight Manual, no person may take off a turbojet airplane when the appropriate weather reports or forecasts, or any combination of them, indicate that the runways at the destination or alternate airport may be wet or slippery at the estimated time of arrival unless the effective runway length at the destination airport is at least 115 percent of the runway length required under paragraph (b) or (c) of this section.

### §91.1039 IFR takeoff, approach and landing minimums.

(a) No pilot on a program aircraft operating a program flight may begin an instrument approach procedure to an airport unless—

(1) Either that airport or the alternate airport has a weather reporting facility operated by the U.S. National Weather Service, a source approved by the U.S. National Weather Service, or a source approved by the Administrator; and

(2) The latest weather report issued by the weather reporting facility includes a current local altimeter setting for the destination airport. If no local altimeter setting is available at the destination airport, the pilot must obtain the current local altimeter setting from a source provided by the facility

designated on the approach chart for the destination airport.

(b) For flight planning purposes, if the destination airport does not have a weather reporting facility described in paragraph (a)(1) of this section, the pilot must designate as an alternate an airport that has a weather reporting facility meeting that criteria.

(c) The MDA or Decision Altitude and visibility landing minimums prescribed in part 97 of this chapter or in the program manager's management specifications are increased by 100 feet and 1/2 mile respectively, but not to exceed the ceiling and visibility minimums for that airport when used as an alternate airport, for each pilot in command of a turbine-powered aircraft who has not served at least 100 hours as pilot in command in that type of aircraft.

(d) No person may take off an aircraft under IFR from an airport where weather conditions are at or above takeoff minimums but are below authorized IFR landing minimums unless there is an alternate airport within one hour's flying time (at normal cruising speed, in still air) of the airport of departure.

(e) Each pilot making an IFR takeoff or approach and landing at an airport must comply with applicable instrument approach procedures and take off and landing weather minimums prescribed by the authority having jurisdiction over the airport. In addition, no pilot may, at that airport take off when the visibility is less than 600 feet.

### § 91.1041 Aircraft proving and validation tests.

(a) No program manager may permit the operation of an aircraft, other than a turbojet aircraft, for which two pilots are required by the type certification requirements of this chapter for operations under VFR, if it has not previously proved such an aircraft in operations under this part in at least 25 hours of proving tests acceptable to the Administrator including—

(1) Five hours of night time, if night flights are to be authorized;

(2) Five instrument approach procedures under simulated or actual conditions, if IFR flights are to be authorized; and

(3) Entry into a representative number of en route airports as determined by the Administrator.

(b) No program manager may permit the operation of a turbojet airplane if it has not previously proved a turbojet airplane in operations under this part in at least 25 hours of proving tests acceptable to the Administrator including—

(1) Five hours of night time, if night flights are to be authorized;

(2) Five instrument approach procedures under simulated or actual conditions, if IFR flights are to be authorized; and

(3) Entry into a representative number of en route airports as determined by the Administrator.

(c) No program manager may carry passengers in an aircraft during proving tests, except those needed to make the tests and those designated by the Administrator to observe the tests. However, pilot flight training may be conducted during the proving tests.

(d) Validation testing is required to determine that a program manager is capable of conducting operations safely and in compliance with applicable regulatory standards. Validation tests are required for the following authorizations:

(1) The addition of an aircraft for which two pilots are required for operations under VFR or a turbojet airplane, if that aircraft or an aircraft of the same make or similar design has not been previously proved or validated in operations under this part.

(2) Operations outside U.S. airspace.

(3) Class II navigation authorizations.

(4) Special performance or operational authorizations.

(e) Validation tests must be accomplished by test methods acceptable to the Administrator. Actual flights may not be required when an applicant can demonstrate competence and compliance with appropriate regulations without conducting a flight.

(f) Proving tests and validation tests may be conducted simultaneously when appropriate.

(g) The Administrator may authorize deviations from this section if the Administrator finds that special circumstances make full compliance with this section unnecessary.

**§91.1043 [Reserved]**

**§91.1045 Additional equipment requirements.**

No person may operate a program aircraft on a program flight unless the aircraft is equipped with the following—

(a) Airplanes having a passenger-seat configuration of more than 30 seats or a payload capacity of more than 7,500 pounds:

(1) A cockpit voice recorder as required by §121.359 of this chapter as applicable to the aircraft specified in that section.

(2) A flight recorder as required by §121.343 or §121.344 of this chapter as applicable to the aircraft specified in that section.

(3) A terrain awareness and warning system as required by §121.354 of this chapter as applicable to the aircraft specified in that section.

(4) A traffic alert and collision avoidance system as required by §121.356 of this chapter as applicable to the aircraft specified in that section.

(5) Airborne weather radar as required by §121.357 of this chapter, as applicable to the aircraft specified in that section.

(b) Airplanes having a passenger-seat configuration of 30 seats or fewer, excluding each crewmember, and a payload capacity of 7,500 pounds or less, and any rotorcraft (as applicable):

(1) A cockpit voice recorder as required by §135.151 of this chapter as applicable to the aircraft specified in that section.

(2) A flight recorder as required by §135.152 of this chapter as applicable to the aircraft specified in that section.

(3) A terrain awareness and warning system as required by §135.154 of this chapter as applicable to the aircraft specified in that section.

(4) A traffic alert and collision avoidance system as required by §135.180 of this chapter as applicable to the aircraft specified in that section.

(5) As applicable to the aircraft specified in that section, either:

(i) Airborne thunderstorm detection equipment as required by §135.173 of this chapter; or

(ii) Airborne weather radar as required by §135.175 of this chapter.

**§91.1047 Drug and alcohol misuse education program.**

(a) Each program manager must provide each direct employee performing flight crewmember, flight attendant, flight instructor, or aircraft maintenance duties with drug and alcohol misuse education.

(b) No program manager may use any contract employee to perform flight crewmember, flight attendant, flight instructor, or aircraft maintenance duties for the program manager unless that contract employee has been provided with drug and alcohol misuse education.

(c) Program managers must disclose to their owners and prospective owners the existence of a company drug and alcohol misuse testing program. If the program manager has implemented a company testing program, the program manager's disclosure must include the following:

(1) Information on the substances that they test for, for example, alcohol and a list of the drugs;

(2) The categories of employees tested, the types of tests, for example, pre-employment, random, reasonable cause/suspicion, post accident, return to duty and follow-up; and

(3) The degree to which the program manager's company testing program is comparable to the federally mandated drug and alcohol misuse prevention program required under part 121, appendices I and J, of this chapter, regarding the information in paragraphs (c)(1) and (c)(2) of this section.

(d) If a program aircraft is operated on a program flight into an airport at which no maintenance personnel are available that are subject to the requirements of paragraphs (a) or (b) of this section and emergency maintenance is required, the program manager may use persons not meeting the requirements of paragraphs (a) or (b) of this section to provide such emergency maintenance under both of the following conditions:

(1) The program manager must notify the Drug Abatement Program Division, AAM–800, 800 Independence Avenue, SW., Washington, DC 20591 in writing within 10 days after being provided emergency maintenance in accordance with this paragraph. The program manager must retain copies of all such written notifications for two years.

(2) The aircraft must be reinspected by maintenance personnel who meet the requirements of paragraph (a) or (b) of this section when the aircraft is next at an airport where such maintenance personnel are available.

(e) For purposes of this section, emergency maintenance means maintenance that—

(1) Is not scheduled, and

(2) Is made necessary by an aircraft condition not discovered prior to the departure for that location.

(f) Notwithstanding paragraphs (a) and (b) of this section, drug and alcohol misuse education conducted under an FAA-approved drug and alcohol misuse prevention program may be used to satisfy these requirements.

### § 91.1049 Personnel.

(a) Each program manager and each fractional owner must use in program operations on program aircraft flight crews meeting § 91.1053 criteria and qualified under the appropriate regulations. The program manager must provide oversight of those crews.

(b) Each program manager must employ (either directly or by contract) an adequate number of pilots per program aircraft. Flight crew staffing must be determined based on the following factors, at a minimum:

(1) Number of program aircraft.

(2) Program manager flight, duty, and rest time considerations, and in all cases within the limits set forth in §§ 91.1057 through 91.1061.

(3) Vacations.

(4) Operational efficiencies.

(5) Training.

(6) Single pilot operations, if authorized by deviation under paragraph (d) of this section.

(c) Each program manager must publish pilot and flight attendant duty schedules sufficiently in advance to follow the flight, duty, and rest time limits in §§ 91.1057 through 91.1061 in program operations.

(d) Unless otherwise authorized by the Administrator, when any program aircraft is flown in program operations with passengers onboard, the crew must consist of at least two qualified pilots employed or contracted by the program manager or the fractional owner.

(e) The program manager must ensure that trained and qualified scheduling or flight release personnel are on duty to schedule and release program aircraft during all hours that such aircraft are available for program operations.

### § 91.1051 Pilot safety background check.

Within 90 days of an individual beginning service as a pilot, the program manager must request the following information:

(a) FAA records pertaining to—

(1) Current pilot certificates and associated type ratings.

(2) Current medical certificates.

(3) Summaries of legal enforcement actions resulting in a finding by the Administrator of a violation.

(b) Records from all previous employers during the five years preceding the date of the employment application where the applicant worked as a pilot. If any of these firms are in bankruptcy, the records must be requested from the trustees in bankruptcy for those employees. If the previous employer is no longer in business, a documented good faith effort must be made to obtain the records. Records from previous employers must include, as applicable—

(1) Crew member records.

(2) Drug testing—collection, testing, and rehabilitation records pertaining to the individual.

(3) Alcohol misuse prevention program records pertaining to the individual.

(4) The applicant's individual record that includes certifications, ratings, aeronautical experience, effective date and class of the medical certificate.

### § 91.1053 Crewmember experience.

(a) No program manager or owner may use any person, nor may any person serve, as a pilot in command or

second in command of a program aircraft, or as a flight attendant on a program aircraft, in program operations under this subpart unless that person has met the applicable requirements of part 61 of this chapter and has the following experience and ratings:

(1) Total flight time for all pilots:

(i) Pilot in command—A minimum of 1,500 hours.

(ii) Second in command—A minimum of 500 hours.

(2) For multi-engine turbine-powered fixed-wing and powered-lift aircraft, the following FAA certification and ratings requirements:

(i) Pilot in command—Airline transport pilot and applicable type ratings.

(ii) Second in command—Commercial pilot and instrument ratings.

(iii) Flight attendant (if required or used)—Appropriately trained personnel.

(3) For all other aircraft, the following FAA certification and rating requirements:

(i) Pilot in command—Commercial pilot and instrument ratings.

(ii) Second in command—Commercial pilot and instrument ratings.

(iii) Flight attendant (if required or used)—Appropriately trained personnel.

(b) The Administrator may authorize deviations from paragraph (a)(1) of this section if the Flight Standards District Office that issued the program manager's management specifications finds that the crewmember has comparable experience, and can effectively perform the functions associated with the position in accordance with the requirements of this chapter. Grants of deviation under this paragraph may be granted after consideration of the size and scope of the operation, the qualifications of the intended personnel and the circumstances set forth in §91.1055(b)(1) through (3). The Administrator may, at any time, terminate any grant of deviation authority issued under this paragraph.

### §91.1055 Pilot operating limitations and pairing requirement.

(a) If the second in command of a fixed-wing program aircraft has fewer than 100 hours of flight time as second in command flying in the aircraft make and model and, if a type rating is required, in the type aircraft being flown, and the pilot in command is not an appropriately qualified check pilot, the pilot in command shall make all takeoffs and landings in any of the following situations:

(1) Landings at the destination airport when a Destination Airport Analysis is required by §91.1037(c); and

(2) In any of the following conditions:

(i) The prevailing visibility for the airport is at or below 3/4 mile.

(ii) The runway visual range for the runway to be used is at or below 4,000 feet.

(iii) The runway to be used has water, snow, slush, ice or similar contamination that may adversely affect aircraft performance.

(iv) The braking action on the runway to be used is reported to be less than ''good.''

(v) The crosswind component for the runway to be used is in excess of 15 knots.

(vi) Windshear is reported in the vicinity of the airport.

(vii) Any other condition in which the pilot in command determines it to be prudent to exercise the pilot in command's authority.

(b) No program manager may release a program flight under this subpart unless, for that aircraft make or model and, if a type rating is required, for that type aircraft, either the pilot in command or the second in command has at least 75 hours of flight time, either as pilot in command or second in command. The Administrator may, upon application by the program manager, authorize deviations from the requirements of this paragraph by an appropriate amendment to the management specifications in any of the following circumstances:

(1) A newly authorized program manager does not employ any pilots who meet the minimum requirements of this paragraph.

(2) An existing program manager adds to its fleet a new category and class aircraft not used before in its operation.

(3) An existing program manager establishes a new base to which it assigns pilots who will be required to become

qualified on the aircraft operated from that base.

(c) No person may be assigned in the capacity of pilot in command in a program operation to more than two aircraft types that require a separate type rating.

### § 91.1057 Flight, duty and rest time requirements: All crewmembers.

(a) For purposes of this subpart—

*Augmented flight crew* means at least three pilots.

*Calendar day* means the period of elapsed time, using Coordinated Universal Time or local time that begins at midnight and ends 24 hours later at the next midnight.

*Duty period* means the period of elapsed time between reporting for an assignment involving flight time and release from that assignment by the program manager. All time between these two points is part of the duty period, even if flight time is interrupted by nonflight-related duties. The time is calculated using either Coordinated Universal Time or local time to reflect the total elapsed time.

*Extension of flight time* means an increase in the flight time because of circumstances beyond the control of the program manager or flight crewmember (such as adverse weather) that are not known at the time of departure and that prevent the flightcrew from reaching the destination within the planned flight time.

*Flight attendant* means an individual, other than a flight crewmember, who is assigned by the program manager, in accordance with the required minimum crew complement under the program manager's management specifications or in addition to that minimum complement, to duty in an aircraft during flight time and whose duties include but are not necessarily limited to cabin-safety-related responsibilities.

*Multi-time zone* flight means an easterly or westerly flight or multiple flights in one direction in the same duty period that results in a time zone difference of 5 or more hours and is conducted in a geographic area that is south of 60 degrees north latitude and north of 60 degrees south latitude.

*Reserve status* means that status in which a flight crewmember, by arrangement with the program manager: Holds himself or herself fit to fly to the extent that this is within the control of the flight crewmember; remains within a reasonable response time of the aircraft as agreed between the flight crewmember and the program manager; and maintains a ready means whereby the flight crewmember may be contacted by the program manager. Reserve status is not part of any duty period or rest period.

*Rest period* means a period of time required pursuant to this subpart that is free of all responsibility for work or duty prior to the commencement of, or following completion of, a duty period, and during which the flight crewmember or flight attendant cannot be required to receive contact from the program manager. A rest period does not include any time during which the program manager imposes on a flight crewmember or flight attendant any duty or restraint, including any actual work or present responsibility for work should the occasion arise.

*Standby* means that portion of a duty period during which a flight crewmember is subject to the control of the program manager and holds himself or herself in a condition of readiness to undertake a flight. Standby is not part of any rest period.

(b) A program manager may assign a crewmember and a crewmember may accept an assignment for flight time only when the applicable requirements of this section and §§ 91.1059–91.1062 are met.

(c) No program manager may assign any crewmember to any duty during any required rest period.

(d) Time spent in transportation, not local in character, that a program manager requires of a crewmember and provides to transport the crewmember to an airport at which he or she is to serve on a flight as a crewmember, or from an airport at which he or she was relieved from duty to return to his or her home station, is not considered part of a rest period.

(e) A flight crewmember may continue a flight assignment if the flight to which he or she is assigned would normally terminate within the flight time limitations, but because of circumstances beyond the control of the

program manager or flight crewmember (such as adverse weather conditions), is not at the time of departure expected to reach its destination within the planned flight time. The extension of flight time under this paragraph may not exceed the maximum time limits set forth in §91.1059.

(f) Each flight assignment must provide for at least 10 consecutive hours of rest during the 24-hour period that precedes the completion time of the assignment.

(g) The program manager must provide each crewmember at least 13 rest periods of at least 24 consecutive hours each in each calendar quarter.

(h) A flight crewmember may decline a flight assignment if, in the flight crewmember's determination, to do so would not be consistent with the standard of safe operation required under this subpart, this part, and applicable provisions of this title.

(i) Any rest period required by this subpart may occur concurrently with any other rest period.

(j) If authorized by the Administrator, a program manager may use the applicable unscheduled flight time limitations, duty period limitations, and rest requirements of part 121 or part 135 of this chapter instead of the flight time limitations, duty period limitations, and rest requirements of this subpart.

**§91.1059 Flight time limitations and rest requirements: One or two pilot crews.**

(a) No program manager may assign any flight crewmember, and no flight crewmember may accept an assignment, for flight time as a member of a one- or two-pilot crew if that crewmember's total flight time in all commercial flying will exceed—

(1) 500 hours in any calendar quarter;

(2) 800 hours in any two consecutive calendar quarters;

(3) 1,400 hours in any calendar year.

(b) Except as provided in paragraph (c) of this section, during any 24 consecutive hours the total flight time of the assigned flight, when added to any commercial flying by that flight crewmember, may not exceed—

(1) 8 hours for a flight crew consisting of one pilot; or

(2) 10 hours for a flight crew consisting of two pilots qualified under this subpart for the operation being conducted.

(c) No program manager may assign any flight crewmember, and no flight crewmember may accept an assignment, if that crewmember's flight time or duty period will exceed, or rest time will be less than—

| | Normal duty | Extension of flight time |
|---|---|---|
| (1) Minimum Rest Immediately Before Duty | 10 Hours | 10 Hours. |
| (2) Duty Period | Up to 14 Hours | Up to 14 Hours. |
| (3) Flight Time For 1 Pilot | Up to 8 Hours | Exceeding 8 Hours up to 9 Hours. |
| (4) Flight Time For 2 Pilots | Up to 10 Hours | Exceeding 10 Hours up to 12 Hours. |
| (5) Minimum After Duty Rest | 10 Hours | 12 Hours. |
| (6) Minimum After Duty Rest Period for Multi-Time Zone Flights | 14 Hours | 18 Hours. |

**§91.1061 Augmented flight crews.**

(a) No program manager may assign any flight crewmember, and no flight crewmember may accept an assignment, for flight time as a member of an augmented crew if that crewmember's total flight time in all commercial flying will exceed—

(1) 500 hours in any calendar quarter;

(2) 800 hours in any two consecutive calendar quarters;

(3) 1,400 hours in any calendar year.

(b) No program manager may assign any pilot to an augmented crew, unless the program manager ensures:

(1) Adequate sleeping facilities are installed on the aircraft for the pilots.

(2) No more than 8 hours of flight deck duty is accrued in any 24 consecutive hours.

(3) For a three-pilot crew, the crew must consist of at least the following:

(i) A pilot in command (PIC) who meets the applicable flight crewmember requirements of this subpart and §61.57 of this chapter.

(ii) A PIC qualified pilot who meets the applicable flight crewmember requirements of this subpart and § 61.57(c) and (d) of this chapter.

(iii) A second in command (SIC) who meets the SIC qualifications of this subpart. For flight under IFR, that person must also meet the recent instrument experience requirements of part 61 of this chapter.

(4) For a four-pilot crew, at least three pilots who meet the conditions of paragraph (b)(3) of this section, plus a fourth pilot who meets the SIC qualifications of this subpart. For flight under IFR, that person must also meet the recent instrument experience requirements of part 61 of this chapter.

(c) No program manager may assign any flight crewmember, and no flight crewmember may accept an assignment, if that crewmember's flight time or duty period will exceed, or rest time will be less than—

| | 3-Pilot crew | 4-Pilot crew |
|---|---|---|
| (1) Minimum Rest Immediately Before Duty | 10 Hours | 10 Hours |
| (2) Duty Period | Up to 16 Hours | Up to 18 Hours |
| (3) Flight Time | Up to 12 Hours | Up to 16 Hours |
| (4) Minimum After Duty Rest | 12 Hours | 18 Hours |
| (5) Minimum After Duty Rest Period for Multi-Time Zone Flights | 18 hours | 24 hours |

**§ 91.1062 Duty periods and rest requirements: Flight attendants.**

(a) Except as provided in paragraph (b) of this section, a program manager may assign a duty period to a flight attendant only when the assignment meets the applicable duty period limitations and rest requirements of this paragraph.

(1) Except as provided in paragraphs (a)(4), (a)(5), and (a)(6) of this section, no program manager may assign a flight attendant to a scheduled duty period of more than 14 hours.

(2) Except as provided in paragraph (a)(3) of this section, a flight attendant scheduled to a duty period of 14 hours or less as provided under paragraph (a)(1) of this section must be given a scheduled rest period of at least 9 consecutive hours. This rest period must occur between the completion of the scheduled duty period and the commencement of the subsequent duty period.

(3) The rest period required under paragraph (a)(2) of this section may be scheduled or reduced to 8 consecutive hours if the flight attendant is provided a subsequent rest period of at least 10 consecutive hours; this subsequent rest period must be scheduled to begin no later than 24 hours after the beginning of the reduced rest period and must occur between the completion of the scheduled duty period and the commencement of the subsequent duty period.

(4) A program manager may assign a flight attendant to a scheduled duty period of more than 14 hours, but no more than 16 hours, if the program manager has assigned to the flight or flights in that duty period at least one flight attendant in addition to the minimum flight attendant complement required for the flight or flights in that duty period under the program manager's management specifications.

(5) A program manager may assign a flight attendant to a scheduled duty period of more than 16 hours, but no more than 18 hours, if the program manager has assigned to the flight or flights in that duty period at least two flight attendants in addition to the minimum flight attendant complement required for the flight or flights in that duty period under the program manager's management specifications.

(6) A program manager may assign a flight attendant to a scheduled duty period of more than 18 hours, but no more than 20 hours, if the scheduled duty period includes one or more flights that land or take off outside the 48 contiguous states and the District of Columbia, and if the program manager has assigned to the flight or flights in that duty period at least three flight attendants in addition to the minimum flight attendant complement required for the flight or flights in that duty period under the program manager's management specifications.

(7) Except as provided in paragraph (a)(8) of this section, a flight attendant scheduled to a duty period of more than 14 hours but no more than 20 hours, as provided in paragraphs (a)(4), (a)(5), and (a)(6) of this section, must be given a scheduled rest period of at least 12 consecutive hours. This rest period must occur between the completion of the scheduled duty period and the commencement of the subsequent duty period.

(8) The rest period required under paragraph (a)(7) of this section may be scheduled or reduced to 10 consecutive hours if the flight attendant is provided a subsequent rest period of at least 14 consecutive hours; this subsequent rest period must be scheduled to begin no later than 24 hours after the beginning of the reduced rest period and must occur between the completion of the scheduled duty period and the commencement of the subsequent duty period.

(9) Notwithstanding paragraphs (a)(4), (a)(5), and (a)(6) of this section, if a program manager elects to reduce the rest period to 10 hours as authorized by paragraph (a)(8) of this section, the program manager may not schedule a flight attendant for a duty period of more than 14 hours during the 24-hour period commencing after the beginning of the reduced rest period.

(b) Notwithstanding paragraph (a) of this section, a program manager may apply the flight crewmember flight time and duty limitations and rest requirements of this part to flight attendants for all operations conducted under this part provided that the program manager establishes written procedures that—

(1) Apply to all flight attendants used in the program manager's operation;

(2) Include the flight crewmember rest and duty requirements of §§91.1057, 91.1059, and 91.1061, as appropriate to the operation being conducted, except that rest facilities on board the aircraft are not required;

(3) Include provisions to add one flight attendant to the minimum flight attendant complement for each flight crewmember who is in excess of the minimum number required in the aircraft type certificate data sheet and who is assigned to the aircraft under the provisions of §91.1061; and

(4) Are approved by the Administrator and described or referenced in the program manager's management specifications.

**§91.1063 Testing and training: Applicability and terms used.**

(a) Sections 91.1065 through 91.1107:

(1) Prescribe the tests and checks required for pilots and flight attendant crewmembers and for the approval of check pilots in operations under this subpart;

(2) Prescribe the requirements for establishing and maintaining an approved training program for crewmembers, check pilots and instructors, and other operations personnel employed or used by the program manager in program operations;

(3) Prescribe the requirements for the qualification, approval and use of aircraft simulators and flight training devices in the conduct of an approved training program; and

(4) Permits training center personnel authorized under part 142 of this chapter who meet the requirements of §91.1075 to conduct training, testing and checking under contract or other arrangements to those persons subject to the requirements of this subpart.

(b) If authorized by the Administrator, a program manager may comply with the applicable training and testing sections of subparts N and O of part 121 of this chapter instead of §§91.1065 through 91.1107, except for the operating experience requirements of §121.434 of this chapter.

(c) If authorized by the Administrator, a program manager may comply with the applicable training and testing sections of subparts G and H of part 135 of this chapter instead of §§91.1065 through 91.1107, except for the operating experience requirements of §135.244 of this chapter.

(d) For the purposes of this subpart, the following terms and definitions apply:

(1) *Initial training*. The training required for crewmembers who have not qualified and served in the same capacity on an aircraft.

(2) *Transition training*. The training required for crewmembers who have

qualified and served in the same capacity on another aircraft.

(3) *Upgrade training*. The training required for crewmembers who have qualified and served as second in command on a particular aircraft type, before they serve as pilot in command on that aircraft.

(4) *Differences training*. The training required for crewmembers who have qualified and served on a particular type aircraft, when the Administrator finds differences training is necessary before a crewmember serves in the same capacity on a particular variation of that aircraft.

(5) *Recurrent training*. The training required for crewmembers to remain adequately trained and currently proficient for each aircraft crewmember position, and type of operation in which the crewmember serves.

(6) *In flight*. The maneuvers, procedures, or functions that will be conducted in the aircraft.

(7) *Training center*. An organization governed by the applicable requirements of part 142 of this chapter that conducts training, testing, and checking under contract or other arrangement to program managers subject to the requirements of this subpart.

(8) *Requalification training*. The training required for crewmembers previously trained and qualified, but who have become unqualified because of not having met within the required period any of the following:

(i) Recurrent crewmember training requirements of § 91.1107.

(ii) Instrument proficiency check requirements of § 91.1069.

(iii) Testing requirements of § 91.1065.

(iv) Recurrent flight attendant testing requirements of § 91.1067.

### § 91.1065 Initial and recurrent pilot testing requirements.

(a) No program manager or owner may use a pilot, nor may any person serve as a pilot, unless, since the beginning of the 12th month before that service, that pilot has passed either a written or oral test (or a combination), given by the Administrator or an authorized check pilot, on that pilot's knowledge in the following areas—

(1) The appropriate provisions of parts 61 and 91 of this chapter and the management specifications and the operating manual of the program manager;

(2) For each type of aircraft to be flown by the pilot, the aircraft powerplant, major components and systems, major appliances, performance and operating limitations, standard and emergency operating procedures, and the contents of the accepted operating manual or equivalent, as applicable;

(3) For each type of aircraft to be flown by the pilot, the method of determining compliance with weight and balance limitations for takeoff, landing and en route operations;

(4) Navigation and use of air navigation aids appropriate to the operation or pilot authorization, including, when applicable, instrument approach facilities and procedures;

(5) Air traffic control procedures, including IFR procedures when applicable;

(6) Meteorology in general, including the principles of frontal systems, icing, fog, thunderstorms, and windshear, and, if appropriate for the operation of the program manager, high altitude weather;

(7) Procedures for—

(i) Recognizing and avoiding severe weather situations;

(ii) Escaping from severe weather situations, in case of inadvertent encounters, including low-altitude windshear (except that rotorcraft aircraft pilots are not required to be tested on escaping from low-altitude windshear); and

(iii) Operating in or near thunderstorms (including best penetration altitudes), turbulent air (including clear air turbulence), icing, hail, and other potentially hazardous meteorological conditions; and

(8) New equipment, procedures, or techniques, as appropriate.

(b) No program manager or owner may use a pilot, nor may any person serve as a pilot, in any aircraft unless, since the beginning of the 12th month before that service, that pilot has passed a competency check given by the Administrator or an authorized check pilot in that class of aircraft, if single-engine aircraft other than turbojet, or that type of aircraft, if rotorcraft, multiengine aircraft, or turbojet

airplane, to determine the pilot's competence in practical skills and techniques in that aircraft or class of aircraft. The extent of the competency check will be determined by the Administrator or authorized check pilot conducting the competency check. The competency check may include any of the maneuvers and procedures currently required for the original issuance of the particular pilot certificate required for the operations authorized and appropriate to the category, class and type of aircraft involved. For the purposes of this paragraph, type, as to an airplane, means any one of a group of airplanes determined by the Administrator to have a similar means of propulsion, the same manufacturer, and no significantly different handling or flight characteristics. For the purposes of this paragraph, type, as to a rotorcraft, means a basic make and model.

(c) The instrument proficiency check required by §91.1069 may be substituted for the competency check required by this section for the type of aircraft used in the check.

(d) For the purpose of this subpart, competent performance of a procedure or maneuver by a person to be used as a pilot requires that the pilot be the obvious master of the aircraft, with the successful outcome of the maneuver never in doubt.

(e) The Administrator or authorized check pilot certifies the competency of each pilot who passes the knowledge or flight check in the program manager's pilot records.

(f) All or portions of a required competency check may be given in an aircraft simulator or other appropriate training device, if approved by the Administrator.

### §91.1067 Initial and recurrent flight attendant crewmember testing requirements.

No program manager or owner may use a flight attendant crewmember, nor may any person serve as a flight attendant crewmember unless, since the beginning of the 12th month before that service, the program manager has determined by appropriate initial and recurrent testing that the person is knowledgeable and competent in the following areas as appropriate to assigned duties and responsibilities—

(a) Authority of the pilot in command;

(b) Passenger handling, including procedures to be followed in handling deranged persons or other persons whose conduct might jeopardize safety;

(c) Crewmember assignments, functions, and responsibilities during ditching and evacuation of persons who may need the assistance of another person to move expeditiously to an exit in an emergency;

(d) Briefing of passengers;

(e) Location and operation of portable fire extinguishers and other items of emergency equipment;

(f) Proper use of cabin equipment and controls;

(g) Location and operation of passenger oxygen equipment;

(h) Location and operation of all normal and emergency exits, including evacuation slides and escape ropes; and

(i) Seating of persons who may need assistance of another person to move rapidly to an exit in an emergency as prescribed by the program manager's operations manual.

### §91.1069 Flight crew: Instrument proficiency check requirements.

(a) No program manager or owner may use a pilot, nor may any person serve, as a pilot in command of an aircraft under IFR unless, since the beginning of the 6th month before that service, that pilot has passed an instrument proficiency check under this section administered by the Administrator or an authorized check pilot.

(b) No program manager or owner may use a pilot, nor may any person serve, as a second command pilot of an aircraft under IFR unless, since the beginning of the 12th month before that service, that pilot has passed an instrument proficiency check under this section administered by the Administrator or an authorized check pilot.

(c) No pilot may use any type of precision instrument approach procedure under IFR unless, since the beginning of the 6th month before that use, the pilot satisfactorily demonstrated that type of approach procedure. No pilot may use any type of nonprecision approach procedure under IFR unless,

since the beginning of the 6th month before that use, the pilot has satisfactorily demonstrated either that type of approach procedure or any other two different types of nonprecision approach procedures. The instrument approach procedure or procedures must include at least one straight-in approach, one circling approach, and one missed approach. Each type of approach procedure demonstrated must be conducted to published minimums for that procedure.

(d) The instrument proficiency checks required by paragraphs (a) and (b) of this section consists of either an oral or written equipment test (or a combination) and a flight check under simulated or actual IFR conditions. The equipment test includes questions on emergency procedures, engine operation, fuel and lubrication systems, power settings, stall speeds, best engine-out speed, propeller and supercharger operations, and hydraulic, mechanical, and electrical systems, as appropriate. The flight check includes navigation by instruments, recovery from simulated emergencies, and standard instrument approaches involving navigational facilities which that pilot is to be authorized to use.

(e) Each pilot taking the instrument proficiency check must show that standard of competence required by § 91.1065(d).

(1) The instrument proficiency check must—

(i) For a pilot in command of an aircraft requiring that the PIC hold an airline transport pilot certificate, include the procedures and maneuvers for an airline transport pilot certificate in the particular type of aircraft, if appropriate; and

(ii) For a pilot in command of a rotorcraft or a second in command of any aircraft requiring that the SIC hold a commercial pilot certificate include the procedures and maneuvers for a commercial pilot certificate with an instrument rating and, if required, for the appropriate type rating.

(2) The instrument proficiency check must be given by an authorized check pilot or by the Administrator.

(f) If the pilot is assigned to pilot only one type of aircraft, that pilot must take the instrument proficiency check required by paragraph (a) of this section in that type of aircraft.

(g) If the pilot in command is assigned to pilot more than one type of aircraft, that pilot must take the instrument proficiency check required by paragraph (a) of this section in each type of aircraft to which that pilot is assigned, in rotation, but not more than one flight check during each period described in paragraph (a) of this section.

(h) If the pilot in command is assigned to pilot both single-engine and multiengine aircraft, that pilot must initially take the instrument proficiency check required by paragraph (a) of this section in a multiengine aircraft, and each succeeding check alternately in single-engine and multiengine aircraft, but not more than one flight check during each period described in paragraph (a) of this section.

(i) All or portions of a required flight check may be given in an aircraft simulator or other appropriate training device, if approved by the Administrator.

### § 91.1071 Crewmember: Tests and checks, grace provisions, training to accepted standards.

(a) If a crewmember who is required to take a test or a flight check under this subpart, completes the test or flight check in the month before or after the month in which it is required, that crewmember is considered to have completed the test or check in the month in which it is required.

(b) If a pilot being checked under this subpart fails any of the required maneuvers, the person giving the check may give additional training to the pilot during the course of the check. In addition to repeating the maneuvers failed, the person giving the check may require the pilot being checked to repeat any other maneuvers that are necessary to determine the pilot's proficiency. If the pilot being checked is unable to demonstrate satisfactory performance to the person conducting the check, the program manager may not use the pilot, nor may the pilot serve, as a flight crewmember in operations under this subpart until the pilot has satisfactorily completed the check. If a pilot who demonstrates unsatisfactory performance is employed

as a pilot for a certificate holder operating under part 121, 125, or 135 of this chapter, he or she must notify that certificate holder of the unsatisfactory performance.

**§91.1073 Training program: General.**

(a) Each program manager must have a training program and must:

(1) Establish, obtain the appropriate initial and final approval of, and provide a training program that meets this subpart and that ensures that each crewmember, including each flight attendant if the program manager uses a flight attendant crewmember, flight instructor, check pilot, and each person assigned duties for the carriage and handling of hazardous materials (as defined in 49 CFR 171.8) is adequately trained to perform these assigned duties.

(2) Provide adequate ground and flight training facilities and properly qualified ground instructors for the training required by this subpart.

(3) Provide and keep current for each aircraft type used and, if applicable, the particular variations within the aircraft type, appropriate training material, examinations, forms, instructions, and procedures for use in conducting the training and checks required by this subpart.

(4) Provide enough flight instructors, check pilots, and simulator instructors to conduct required flight training and flight checks, and simulator training courses allowed under this subpart.

(b) Whenever a crewmember who is required to take recurrent training under this subpart completes the training in the month before, or the month after, the month in which that training is required, the crewmember is considered to have completed it in the month in which it was required.

(c) Each instructor, supervisor, or check pilot who is responsible for a particular ground training subject, segment of flight training, course of training, flight check, or competence check under this subpart must certify as to the proficiency and knowledge of the crewmember, flight instructor, or check pilot concerned upon completion of that training or check. That certification must be made a part of the crewmember's record. When the certification required by this paragraph is made by an entry in a computerized recordkeeping system, the certifying instructor, supervisor, or check pilot, must be identified with that entry. However, the signature of the certifying instructor, supervisor, or check pilot is not required for computerized entries.

(d) Training subjects that apply to more than one aircraft or crewmember position and that have been satisfactorily completed during previous training while employed by the program manager for another aircraft or another crewmember position, need not be repeated during subsequent training other than recurrent training.

(e) Aircraft simulators and other training devices may be used in the program manager's training program if approved by the Administrator.

(f) Each program manager is responsible for establishing safe and efficient crew management practices for all phases of flight in program operations including crew resource management training for all crewmembers used in program operations.

(g) If an aircraft simulator has been approved by the Administrator for use in the program manager's training program, the program manager must ensure that each pilot annually completes at least one flight training session in an approved simulator for at least one program aircraft. The training session may be the flight training portion of any of the pilot training or check requirements of this subpart, including the initial, transition, upgrade, requalification, differences, or recurrent training, or the accomplishment of a competency check or instrument proficiency check. If there is no approved simulator for that aircraft type in operation, then all flight training and checking must be accomplished in the aircraft.

**§91.1075 Training program: Special rules.**

Other than the program manager, only the following are eligible under this subpart to conduct training, testing, and checking under contract or other arrangement to those persons subject to the requirements of this subpart.

(a) Another program manager operating under this subpart:

(b) A training center certificated under part 142 of this chapter to conduct training, testing, and checking required by this subpart if the training center—

(1) Holds applicable training specifications issued under part 142 of this chapter;

(2) Has facilities, training equipment, and courseware meeting the applicable requirements of part 142 of this chapter;

(3) Has approved curriculums, curriculum segments, and portions of curriculum segments applicable for use in training courses required by this subpart; and

(4) Has sufficient instructors and check pilots qualified under the applicable requirements of §§ 91.1089 through 91.1095 to conduct training, testing, and checking to persons subject to the requirements of this subpart.

(c) A part 119 certificate holder operating under part 121 or part 135 of this chapter.

(d) As authorized by the Administrator, a training center that is not certificated under part 142 of this chapter.

### § 91.1077 Training program and revision: Initial and final approval.

(a) To obtain initial and final approval of a training program, or a revision to an approved training program, each program manager must submit to the Administrator—

(1) An outline of the proposed or revised curriculum, that provides enough information for a preliminary evaluation of the proposed training program or revision; and

(2) Additional relevant information that may be requested by the Administrator.

(b) If the proposed training program or revision complies with this subpart, the Administrator grants initial approval in writing after which the program manager may conduct the training under that program. The Administrator then evaluates the effectiveness of the training program and advises the program manager of deficiencies, if any, that must be corrected.

(c) The Administrator grants final approval of the proposed training program or revision if the program manager shows that the training conducted under the initial approval in paragraph (b) of this section ensures that each person who successfully completes the training is adequately trained to perform that person's assigned duties.

(d) Whenever the Administrator finds that revisions are necessary for the continued adequacy of a training program that has been granted final approval, the program manager must, after notification by the Administrator, make any changes in the program that are found necessary by the Administrator. Within 30 days after the program manager receives the notice, it may file a petition to reconsider the notice with the Administrator. The filing of a petition to reconsider stays the notice pending a decision by the Administrator. However, if the Administrator finds that there is an emergency that requires immediate action in the interest of safety, the Administrator may, upon a statement of the reasons, require a change effective without stay.

### § 91.1079 Training program: Curriculum.

(a) Each program manager must prepare and keep current a written training program curriculum for each type of aircraft for each crewmember required for that type aircraft. The curriculum must include ground and flight training required by this subpart.

(b) Each training program curriculum must include the following:

(1) A list of principal ground training subjects, including emergency training subjects, that are provided.

(2) A list of all the training devices, mock-ups, systems trainers, procedures trainers, or other training aids that the program manager will use.

(3) Detailed descriptions or pictorial displays of the approved normal, abnormal, and emergency maneuvers, procedures and functions that will be performed during each flight training phase or flight check, indicating those maneuvers, procedures and functions that are to be performed during the inflight portions of flight training and flight checks.

**§91.1081 Crewmember training requirements.**

(a) Each program manager must include in its training program the following initial and transition ground training as appropriate to the particular assignment of the crewmember:

(1) Basic indoctrination ground training for newly hired crewmembers including instruction in at least the—

(i) Duties and responsibilities of crewmembers as applicable;

(ii) Appropriate provisions of this chapter;

(iii) Contents of the program manager's management specifications (not required for flight attendants); and

(iv) Appropriate portions of the program manager's operating manual.

(2) The initial and transition ground training in §§91.1101 and 91.1105, as applicable.

(3) Emergency training in §91.1083.

(b) Each training program must provide the initial and transition flight training in §91.1103, as applicable.

(c) Each training program must provide recurrent ground and flight training as provided in §91.1107.

(d) Upgrade training in §§91.1101 and 91.1103 for a particular type aircraft may be included in the training program for crewmembers who have qualified and served as second in command on that aircraft.

(e) In addition to initial, transition, upgrade and recurrent training, each training program must provide ground and flight training, instruction, and practice necessary to ensure that each crewmember—

(1) Remains adequately trained and currently proficient for each aircraft, crewmember position, and type of operation in which the crewmember serves; and

(2) Qualifies in new equipment, facilities, procedures, and techniques, including modifications to aircraft.

**§91.1083 Crewmember emergency training.**

(a) Each training program must provide emergency training under this section for each aircraft type, model, and configuration, each crewmember, and each kind of operation conducted, as appropriate for each crewmember and the program manager.

(b) Emergency training must provide the following:

(1) Instruction in emergency assignments and procedures, including coordination among crewmembers.

(2) Individual instruction in the location, function, and operation of emergency equipment including—

(i) Equipment used in ditching and evacuation;

(ii) First aid equipment and its proper use; and

(iii) Portable fire extinguishers, with emphasis on the type of extinguisher to be used on different classes of fires.

(3) Instruction in the handling of emergency situations including—

(i) Rapid decompression;

(ii) Fire in flight or on the surface and smoke control procedures with emphasis on electrical equipment and related circuit breakers found in cabin areas;

(iii) Ditching and evacuation;

(iv) Illness, injury, or other abnormal situations involving passengers or crewmembers; and

(v) Hijacking and other unusual situations.

(4) Review and discussion of previous aircraft accidents and incidents involving actual emergency situations.

(c) Each crewmember must perform at least the following emergency drills, using the proper emergency equipment and procedures, unless the Administrator finds that, for a particular drill, the crewmember can be adequately trained by demonstration:

(1) Ditching, if applicable.

(2) Emergency evacuation.

(3) Fire extinguishing and smoke control.

(4) Operation and use of emergency exits, including deployment and use of evacuation slides, if applicable.

(5) Use of crew and passenger oxygen.

(6) Removal of life rafts from the aircraft, inflation of the life rafts, use of lifelines, and boarding of passengers and crew, if applicable.

(7) Donning and inflation of life vests and the use of other individual flotation devices, if applicable.

(d) Crewmembers who serve in operations above 25,000 feet must receive instruction in the following:

(1) Respiration.

(2) Hypoxia.

(3) Duration of consciousness without supplemental oxygen at altitude.

(4) Gas expansion.

(5) Gas bubble formation.

(6) Physical phenomena and incidents of decompression.

**§ 91.1085 Hazardous materials recognition training.**

No program manager may use any person to perform, and no person may perform, any assigned duties and responsibilities for the handling or carriage of hazardous materials (as defined in 49 CFR 171.8), unless that person has received training in the recognition of hazardous materials.

**§ 91.1087 Approval of aircraft simulators and other training devices.**

(a) Training courses using aircraft simulators and other training devices may be included in the program manager's training program if approved by the Administrator.

(b) Each aircraft simulator and other training device that is used in a training course or in checks required under this subpart must meet the following requirements:

(1) It must be specifically approved for—

(i) The program manager; and

(ii) The particular maneuver, procedure, or crewmember function involved.

(2) It must maintain the performance, functional, and other characteristics that are required for approval.

(3) Additionally, for aircraft simulators, it must be—

(i) Approved for the type aircraft and, if applicable, the particular variation within type for which the training or check is being conducted; and

(ii) Modified to conform with any modification to the aircraft being simulated that changes the performance, functional, or other characteristics required for approval.

(c) A particular aircraft simulator or other training device may be used by more than one program manager.

(d) In granting initial and final approval of training programs or revisions to them, the Administrator considers the training devices, methods, and procedures listed in the program manager's curriculum under § 91.1079.

**§ 91.1089 Qualifications: Check pilots (aircraft) and check pilots (simulator).**

(a) For the purposes of this section and § 91.1093:

(1) A check pilot (aircraft) is a person who is qualified to conduct flight checks in an aircraft, in a flight simulator, or in a flight training device for a particular type aircraft.

(2) A check pilot (simulator) is a person who is qualified to conduct flight checks, but only in a flight simulator, in a flight training device, or both, for a particular type aircraft.

(3) Check pilots (aircraft) and check pilots (simulator) are those check pilots who perform the functions described in § 91.1073(a)(4) and (c).

(b) No program manager may use a person, nor may any person serve as a check pilot (aircraft) in a training program established under this subpart unless, with respect to the aircraft type involved, that person—

(1) Holds the pilot certificates and ratings required to serve as a pilot in command in operations under this subpart;

(2) Has satisfactorily completed the training phases for the aircraft, including recurrent training, that are required to serve as a pilot in command in operations under this subpart;

(3) Has satisfactorily completed the proficiency or competency checks that are required to serve as a pilot in command in operations under this subpart;

(4) Has satisfactorily completed the applicable training requirements of § 91.1093;

(5) Holds at least a Class III medical certificate unless serving as a required crewmember, in which case holds a Class I or Class II medical certificate as appropriate; and

(6) Has been approved by the Administrator for the check pilot duties involved.

(c) No program manager may use a person, nor may any person serve as a check pilot (simulator) in a training program established under this subpart unless, with respect to the aircraft type involved, that person meets the provisions of paragraph (b) of this section, or—

(1) Holds the applicable pilot certificates and ratings, except medical certificate, required to serve as a pilot in command in operations under this subpart;

(2) Has satisfactorily completed the appropriate training phases for the aircraft, including recurrent training, that are required to serve as a pilot in command in operations under this subpart;

(3) Has satisfactorily completed the appropriate proficiency or competency checks that are required to serve as a pilot in command in operations under this subpart;

(4) Has satisfactorily completed the applicable training requirements of §91.1093; and

(5) Has been approved by the Administrator for the check pilot (simulator) duties involved.

(d) Completion of the requirements in paragraphs (b)(2), (3), and (4) or (c)(2), (3), and (4) of this section, as applicable, must be entered in the individual's training record maintained by the program manager.

(e) A check pilot who does not hold an appropriate medical certificate may function as a check pilot (simulator), but may not serve as a flightcrew member in operations under this subpart.

(f) A check pilot (simulator) must accomplish the following—

(1) Fly at least two flight segments as a required crewmember for the type, class, or category aircraft involved within the 12-month period preceding the performance of any check pilot duty in a flight simulator; or

(2) Before performing any check pilot duty in a flight simulator, satisfactorily complete an approved line-observation program within the period prescribed by that program.

(g) The flight segments or line-observation program required in paragraph (f) of this section are considered to be completed in the month required if completed in the month before or the month after the month in which they are due.

**§91.1091 Qualifications: Flight instructors (aircraft) and flight instructors (simulator).**

(a) For the purposes of this section and §91.1095:

(1) A flight instructor (aircraft) is a person who is qualified to instruct in an aircraft, in a flight simulator, or in a flight training device for a particular type, class, or category aircraft.

(2) A flight instructor (simulator) is a person who is qualified to instruct in a flight simulator, in a flight training device, or in both, for a particular type, class, or category aircraft.

(3) Flight instructors (aircraft) and flight instructors (simulator) are those instructors who perform the functions described in §91.1073(a)(4) and (c).

(b) No program manager may use a person, nor may any person serve as a flight instructor (aircraft) in a training program established under this subpart unless, with respect to the type, class, or category aircraft involved, that person—

(1) Holds the pilot certificates and ratings required to serve as a pilot in command in operations under this subpart or part 121 or 135 of this chapter;

(2) Has satisfactorily completed the training phases for the aircraft, including recurrent training, that are required to serve as a pilot in command in operations under this subpart;

(3) Has satisfactorily completed the proficiency or competency checks that are required to serve as a pilot in command in operations under this subpart;

(4) Has satisfactorily completed the applicable training requirements of §91.1095; and

(5) Holds at least a Class III medical certificate.

(c) No program manager may use a person, nor may any person serve as a flight instructor (simulator) in a training program established under this subpart, unless, with respect to the type, class, or category aircraft involved, that person meets the provisions of paragraph (b) of this section, or—

(1) Holds the pilot certificates and ratings, except medical certificate, required to serve as a pilot in command in operations under this subpart or part 121 or 135 of this chapter;

(2) Has satisfactorily completed the appropriate training phases for the aircraft, including recurrent training, that are required to serve as a pilot in command in operations under this subpart;

(3) Has satisfactorily completed the appropriate proficiency or competency checks that are required to serve as a pilot in command in operations under this subpart; and

(4) Has satisfactorily completed the applicable training requirements of § 91.1095.

(d) Completion of the requirements in paragraphs (b)(2), (3), and (4) or (c)(2), (3), and (4) of this section, as applicable, must be entered in the individual's training record maintained by the program manager.

(e) A pilot who does not hold a medical certificate may function as a flight instructor in an aircraft if functioning as a non-required crewmember, but may not serve as a flightcrew member in operations under this subpart.

(f) A flight instructor (simulator) must accomplish the following—

(1) Fly at least two flight segments as a required crewmember for the type, class, or category aircraft involved within the 12-month period preceding the performance of any flight instructor duty in a flight simulator; or

(2) Satisfactorily complete an approved line-observation program within the period prescribed by that program and that must precede the performance of any check pilot duty in a flight simulator.

(g) The flight segments or line-observation program required in paragraph (f) of this section are considered completed in the month required if completed in the month before, or in the month after, the month in which they are due.

### § 91.1093 Initial and transition training and checking: Check pilots (aircraft), check pilots (simulator).

(a) No program manager may use a person nor may any person serve as a check pilot unless—

(1) That person has satisfactorily completed initial or transition check pilot training; and

(2) Within the preceding 24 months, that person satisfactorily conducts a proficiency or competency check under the observation of an FAA inspector or an aircrew designated examiner employed by the program manager. The observation check may be accomplished in part or in full in an aircraft, in a flight simulator, or in a flight training device.

(b) The observation check required by paragraph (a)(2) of this section is considered to have been completed in the month required if completed in the month before or the month after the month in which it is due.

(c) The initial ground training for check pilots must include the following:

(1) Check pilot duties, functions, and responsibilities.

(2) The applicable provisions of the Code of Federal Regulations and the program manager's policies and procedures.

(3) The applicable methods, procedures, and techniques for conducting the required checks.

(4) Proper evaluation of student performance including the detection of—

(i) Improper and insufficient training; and

(ii) Personal characteristics of an applicant that could adversely affect safety.

(5) The corrective action in the case of unsatisfactory checks.

(6) The approved methods, procedures, and limitations for performing the required normal, abnormal, and emergency procedures in the aircraft.

(d) The transition ground training for a check pilot must include the approved methods, procedures, and limitations for performing the required normal, abnormal, and emergency procedures applicable to the aircraft to which the check pilot is in transition.

(e) The initial and transition flight training for a check pilot (aircraft) must include the following—

(1) The safety measures for emergency situations that are likely to develop during a check;

(2) The potential results of improper, untimely, or nonexecution of safety measures during a check;

(3) Training and practice in conducting flight checks from the left and

right pilot seats in the required normal, abnormal, and emergency procedures to ensure competence to conduct the pilot flight checks required by this subpart; and

(4) The safety measures to be taken from either pilot seat for emergency situations that are likely to develop during checking.

(f) The requirements of paragraph (e) of this section may be accomplished in full or in part in flight, in a flight simulator, or in a flight training device, as appropriate.

(g) The initial and transition flight training for a check pilot (simulator) must include the following:

(1) Training and practice in conducting flight checks in the required normal, abnormal, and emergency procedures to ensure competence to conduct the flight checks required by this subpart. This training and practice must be accomplished in a flight simulator or in a flight training device.

(2) Training in the operation of flight simulators, flight training devices, or both, to ensure competence to conduct the flight checks required by this subpart.

**§91.1095 Initial and transition training and checking: Flight instructors (aircraft), flight instructors (simulator).**

(a) No program manager may use a person nor may any person serve as a flight instructor unless—

(1) That person has satisfactorily completed initial or transition flight instructor training; and

(2) Within the preceding 24 months, that person satisfactorily conducts instruction under the observation of an FAA inspector, a program manager check pilot, or an aircrew designated examiner employed by the program manager. The observation check may be accomplished in part or in full in an aircraft, in a flight simulator, or in a flight training device.

(b) The observation check required by paragraph (a)(2) of this section is considered to have been completed in the month required if completed in the month before, or the month after, the month in which it is due.

(c) The initial ground training for flight instructors must include the following:

(1) Flight instructor duties, functions, and responsibilities.

(2) The applicable Code of Federal Regulations and the program manager's policies and procedures.

(3) The applicable methods, procedures, and techniques for conducting flight instruction.

(4) Proper evaluation of student performance including the detection of—

(i) Improper and insufficient training; and

(ii) Personal characteristics of an applicant that could adversely affect safety.

(5) The corrective action in the case of unsatisfactory training progress.

(6) The approved methods, procedures, and limitations for performing the required normal, abnormal, and emergency procedures in the aircraft.

(7) Except for holders of a flight instructor certificate—

(i) The fundamental principles of the teaching-learning process;

(ii) Teaching methods and procedures; and

(iii) The instructor-student relationship.

(d) The transition ground training for flight instructors must include the approved methods, procedures, and limitations for performing the required normal, abnormal, and emergency procedures applicable to the type, class, or category aircraft to which the flight instructor is in transition.

(e) The initial and transition flight training for flight instructors (aircraft) must include the following—

(1) The safety measures for emergency situations that are likely to develop during instruction;

(2) The potential results of improper or untimely safety measures during instruction;

(3) Training and practice from the left and right pilot seats in the required normal, abnormal, and emergency maneuvers to ensure competence to conduct the flight instruction required by this subpart; and

(4) The safety measures to be taken from either the left or right pilot seat for emergency situations that are likely to develop during instruction.

(f) The requirements of paragraph (e) of this section may be accomplished in full or in part in flight, in a flight simulator, or in a flight training device, as appropriate.

(g) The initial and transition flight training for a flight instructor (simulator) must include the following:

(1) Training and practice in the required normal, abnormal, and emergency procedures to ensure competence to conduct the flight instruction required by this subpart. These maneuvers and procedures must be accomplished in full or in part in a flight simulator or in a flight training device.

(2) Training in the operation of flight simulators, flight training devices, or both, to ensure competence to conduct the flight instruction required by this subpart.

### § 91.1097 Pilot and flight attendant crewmember training programs.

(a) Each program manager must establish and maintain an approved pilot training program, and each program manager who uses a flight attendant crewmember must establish and maintain an approved flight attendant training program, that is appropriate to the operations to which each pilot and flight attendant is to be assigned, and will ensure that they are adequately trained to meet the applicable knowledge and practical testing requirements of §§ 91.1065 through 91.1071.

(b) Each program manager required to have a training program by paragraph (a) of this section must include in that program ground and flight training curriculums for—

(1) Initial training;

(2) Transition training;

(3) Upgrade training;

(4) Differences training;

(5) Recurrent training; and

(6) Requalification training.

(c) Each program manager must provide current and appropriate study materials for use by each required pilot and flight attendant.

(d) The program manager must furnish copies of the pilot and flight attendant crewmember training program, and all changes and additions, to the assigned representative of the Administrator. If the program manager uses training facilities of other persons, a copy of those training programs or appropriate portions used for those facilities must also be furnished. Curricula that follow FAA published curricula may be cited by reference in the copy of the training program furnished to the representative of the Administrator and need not be furnished with the program.

### § 91.1099 Crewmember initial and recurrent training requirements.

No program manager may use a person, nor may any person serve, as a crewmember in operations under this subpart unless that crewmember has completed the appropriate initial or recurrent training phase of the training program appropriate to the type of operation in which the crewmember is to serve since the beginning of the 12th month before that service.

### § 91.1101 Pilots: Initial, transition, and upgrade ground training.

Initial, transition, and upgrade ground training for pilots must include instruction in at least the following, as applicable to their duties:

(a) General subjects—

(1) The program manager's flight locating procedures;

(2) Principles and methods for determining weight and balance, and runway limitations for takeoff and landing;

(3) Enough meteorology to ensure a practical knowledge of weather phenomena, including the principles of frontal systems, icing, fog, thunderstorms, windshear and, if appropriate, high altitude weather situations;

(4) Air traffic control systems, procedures, and phraseology;

(5) Navigation and the use of navigational aids, including instrument approach procedures;

(6) Normal and emergency communication procedures;

(7) Visual cues before and during descent below Decision Altitude or MDA; and

(8) Other instructions necessary to ensure the pilot's competence.

(b) For each aircraft type—

(1) A general description;

(2) Performance characteristics;

(3) Engines and propellers;

(4) Major components;

(5) Major aircraft systems (that is, flight controls, electrical, and hydraulic), other systems, as appropriate, principles of normal, abnormal, and emergency operations, appropriate procedures and limitations;

(6) Knowledge and procedures for—

(i) Recognizing and avoiding severe weather situations;

(ii) Escaping from severe weather situations, in case of inadvertent encounters, including low-altitude windshear (except that rotorcraft pilots are not required to be trained in escaping from low-altitude windshear);

(iii) Operating in or near thunderstorms (including best penetration altitudes), turbulent air (including clear air turbulence), inflight icing, hail, and other potentially hazardous meteorological conditions; and

(iv) Operating airplanes during ground icing conditions, (that is, any time conditions are such that frost, ice, or snow may reasonably be expected to adhere to the aircraft), if the program manager expects to authorize takeoffs in ground icing conditions, including:

(A) The use of holdover times when using deicing/anti-icing fluids;

(B) Airplane deicing/anti-icing procedures, including inspection and check procedures and responsibilities;

(C) Communications;

(D) Airplane surface contamination (that is, adherence of frost, ice, or snow) and critical area identification, and knowledge of how contamination adversely affects airplane performance and flight characteristics;

(E) Types and characteristics of deicing/anti-icing fluids, if used by the program manager;

(F) Cold weather preflight inspection procedures;

(G) Techniques for recognizing contamination on the airplane;

(7) Operating limitations;

(8) Fuel consumption and cruise control;

(9) Flight planning;

(10) Each normal and emergency procedure; and

(11) The approved Aircraft Flight Manual or equivalent.

**§91.1103 Pilots: Initial, transition, upgrade, requalification, and differences flight training.**

(a) Initial, transition, upgrade, requalification, and differences training for pilots must include flight and practice in each of the maneuvers and procedures contained in each of the curriculums that are a part of the approved training program.

(b) The maneuvers and procedures required by paragraph (a) of this section must be performed in flight, except to the extent that certain maneuvers and procedures may be performed in an aircraft simulator, or an appropriate training device, as allowed by this subpart.

(c) If the program manager's approved training program includes a course of training using an aircraft simulator or other training device, each pilot must successfully complete—

(1) Training and practice in the simulator or training device in at least the maneuvers and procedures in this subpart that are capable of being performed in the aircraft simulator or training device; and

(2) A flight check in the aircraft or a check in the simulator or training device to the level of proficiency of a pilot in command or second in command, as applicable, in at least the maneuvers and procedures that are capable of being performed in an aircraft simulator or training device.

**§91.1105 Flight attendants: Initial and transition ground training.**

Initial and transition ground training for flight attendants must include instruction in at least the following—

(a) General subjects—

(1) The authority of the pilot in command; and

(2) Passenger handling, including procedures to be followed in handling deranged persons or other persons whose conduct might jeopardize safety.

(b) For each aircraft type—

(1) A general description of the aircraft emphasizing physical characteristics that may have a bearing on ditching, evacuation, and inflight emergency procedures and on other related duties;

(2) The use of both the public address system and the means of communicating with other flight crewmembers, including emergency means in the case of attempted hijacking or other unusual situations; and

(3) Proper use of electrical galley equipment and the controls for cabin heat and ventilation.

### § 91.1107 Recurrent training.

(a) Each program manager must ensure that each crewmember receives recurrent training and is adequately trained and currently proficient for the type aircraft and crewmember position involved.

(b) Recurrent ground training for crewmembers must include at least the following:

(1) A quiz or other review to determine the crewmember's knowledge of the aircraft and crewmember position involved.

(2) Instruction as necessary in the subjects required for initial ground training by this subpart, as appropriate, including low-altitude windshear training and training on operating during ground icing conditions, as prescribed in § 91.1097 and described in § 91.1101, and emergency training.

(c) Recurrent flight training for pilots must include, at least, flight training in the maneuvers or procedures in this subpart, except that satisfactory completion of the check required by § 91.1065 within the preceding 12 months may be substituted for recurrent flight training.

### § 91.1109 Aircraft maintenance: Inspection program.

Each program manager must establish an aircraft inspection program for each make and model program aircraft and ensure each aircraft is inspected in accordance with that inspection program.

(a) The inspection program must be in writing and include at least the following information:

(1) Instructions and procedures for the conduct of inspections for the particular make and model aircraft, including necessary tests and checks. The instructions and procedures must set forth in detail the parts and areas of the airframe, engines, propellers, rotors, and appliances, including survival and emergency equipment required to be inspected.

(2) A schedule for performing the inspections that must be accomplished under the inspection program expressed in terms of the time in service, calendar time, number of system operations, or any combination thereof.

(3) The name and address of the person responsible for scheduling the inspections required by the inspection program. A copy of the inspection program must be made available to the person performing inspections on the aircraft and, upon request, to the Administrator.

(b) Each person desiring to establish or change an approved inspection program under this section must submit the inspection program for approval to the Flight Standards District Office that issued the program manager's management specifications. The inspection program must be derived from one of the following programs:

(1) An inspection program currently recommended by the manufacturer of the aircraft, aircraft engines, propellers, appliances, and survival and emergency equipment;

(2) An inspection program that is part of a continuous airworthiness maintenance program currently in use by a person holding an air carrier or operating certificate issued under part 119 of this chapter and operating that make and model aircraft under part 121 or 135 of this chapter;

(3) An aircraft inspection program approved under § 135.419 of this chapter and currently in use under part 135 of this chapter by a person holding a certificate issued under part 119 of this chapter; or

(4) An airplane inspection program approved under § 125.247 of this chapter and currently in use under part 125 of this chapter.

(5) An inspection program that is part of the program manager's continuous airworthiness maintenance program under §§ 91.1411 through 91.1443.

(c) The Administrator may require revision of the inspection program approved under this section in accordance with the provisions of § 91.415.

**§91.1111 Maintenance training.**

The program manager must ensure that all employees who are responsible for maintenance related to program aircraft undergo appropriate initial and annual recurrent training and are competent to perform those duties.

**§91.1113 Maintenance recordkeeping.**

Each fractional ownership program manager must keep (using the system specified in the manual required in §91.1025) the records specified in §91.417(a) for the periods specified in §91.417(b).

**§91.1115 Inoperable instruments and equipment.**

(a) No person may take off an aircraft with inoperable instruments or equipment installed unless the following conditions are met:

(1) An approved Minimum Equipment List exists for that aircraft.

(2) The program manager has been issued management specifications authorizing operations in accordance with an approved Minimum Equipment List. The flight crew must have direct access at all times prior to flight to all of the information contained in the approved Minimum Equipment List through printed or other means approved by the Administrator in the program manager's management specifications. An approved Minimum Equipment List, as authorized by the management specifications, constitutes an approved change to the type design without requiring recertification.

(3) The approved Minimum Equipment List must:

(i) Be prepared in accordance with the limitations specified in paragraph (b) of this section.

(ii) Provide for the operation of the aircraft with certain instruments and equipment in an inoperable condition.

(4) Records identifying the inoperable instruments and equipment and the information required by (a)(3)(ii) of this section must be available to the pilot.

(5) The aircraft is operated under all applicable conditions and limitations contained in the Minimum Equipment List and the management specifications authorizing use of the Minimum Equipment List.

(b) The following instruments and equipment may not be included in the Minimum Equipment List:

(1) Instruments and equipment that are either specifically or otherwise required by the airworthiness requirements under which the airplane is type certificated and that are essential for safe operations under all operating conditions.

(2) Instruments and equipment required by an airworthiness directive to be in operable condition unless the airworthiness directive provides otherwise.

(3) Instruments and equipment required for specific operations by this part.

(c) Notwithstanding paragraphs (b)(1) and (b)(3) of this section, an aircraft with inoperable instruments or equipment may be operated under a special flight permit under §§21.197 and 21.199 of this chapter.

(d) A person authorized to use an approved Minimum Equipment List issued for a specific aircraft under part 121, 125, or 135 of this chapter must use that Minimum Equipment List to comply with this section.

**§91.1411 Continuous airworthiness maintenance program use by fractional ownership program manager.**

Fractional ownership program aircraft may be maintained under a continuous airworthiness maintenance program (CAMP) under §§91.1413 through 91.1443. Any program manager who elects to maintain the program aircraft using a continuous airworthiness maintenance program must comply with §§91.1413 through 91.1443.

**§91.1413 CAMP: Responsibility for airworthiness.**

(a) For aircraft maintained in accordance with a Continuous Airworthiness Maintenance Program, each program manager is primarily responsible for the following:

(1) Maintaining the airworthiness of the program aircraft, including airframes, aircraft engines, propellers, rotors, appliances, and parts.

(2) Maintaining its aircraft in accordance with the requirements of this chapter.

(3) Repairing defects that occur between regularly scheduled maintenance required under part 43 of this chapter.

(b) Each program manager who maintains program aircraft under a CAMP must—

(1) Employ a Director of Maintenance or equivalent position. The Director of Maintenance must be a certificated mechanic with airframe and powerplant ratings who has responsibility for the maintenance program on all program aircraft maintained under a continuous airworthiness maintenance program. This person cannot also act as Chief Inspector.

(2) Employ a Chief Inspector or equivalent position. The Chief Inspector must be a certificated mechanic with airframe and powerplant ratings who has overall responsibility for inspection aspects of the CAMP. This person cannot also act as Director of Maintenance.

(3) Have the personnel to perform the maintenance of program aircraft, including airframes, aircraft engines, propellers, rotors, appliances, emergency equipment and parts, under its manual and this chapter; or make arrangements with another person for the performance of maintenance. However, the program manager must ensure that any maintenance, preventive maintenance, or alteration that is performed by another person is performed under the program manager's operating manual and this chapter.

### § 91.1415 CAMP: Mechanical reliability reports.

(a) Each program manager who maintains program aircraft under a CAMP must report the occurrence or detection of each failure, malfunction, or defect in an aircraft concerning—

(1) Fires during flight and whether the related fire-warning system functioned properly;

(2) Fires during flight not protected by related fire-warning system;

(3) False fire-warning during flight;

(4) An exhaust system that causes damage during flight to the engine, adjacent structure, equipment, or components;

(5) An aircraft component that causes accumulation or circulation of smoke, vapor, or toxic or noxious fumes in the crew compartment or passenger cabin during flight;

(6) Engine shutdown during flight because of flameout;

(7) Engine shutdown during flight when external damage to the engine or aircraft structure occurs;

(8) Engine shutdown during flight because of foreign object ingestion or icing;

(9) Shutdown of more than one engine during flight;

(10) A propeller feathering system or ability of the system to control overspeed during flight;

(11) A fuel or fuel-dumping system that affects fuel flow or causes hazardous leakage during flight;

(12) An unwanted landing gear extension or retraction or opening or closing of landing gear doors during flight;

(13) Brake system components that result in loss of brake actuating force when the aircraft is in motion on the ground;

(14) Aircraft structure that requires major repair;

(15) Cracks, permanent deformation, or corrosion of aircraft structures, if more than the maximum acceptable to the manufacturer or the FAA; and

(16) Aircraft components or systems that result in taking emergency actions during flight (except action to shut down an engine).

(b) For the purpose of this section, *during flight* means the period from the moment the aircraft leaves the surface of the earth on takeoff until it touches down on landing.

(c) In addition to the reports required by paragraph (a) of this section, each program manager must report any other failure, malfunction, or defect in an aircraft that occurs or is detected at any time if, in the manager's opinion, the failure, malfunction, or defect has endangered or may endanger the safe operation of the aircraft.

(d) Each program manager must send each report required by this section, in writing, covering each 24-hour period beginning at 0900 hours local time of each day and ending at 0900 hours local time on the next day to the Flight Standards District Office that issued the program manager's management

specifications. Each report of occurrences during a 24-hour period must be mailed or transmitted to that office within the next 72 hours. However, a report that is due on Saturday or Sunday may be mailed or transmitted on the following Monday and one that is due on a holiday may be mailed or transmitted on the next workday. For aircraft operated in areas where mail is not collected, reports may be mailed or transmitted within 72 hours after the aircraft returns to a point where the mail is collected.

(e) The program manager must transmit the reports required by this section on a form and in a manner prescribed by the Administrator, and must include as much of the following as is available:

(1) The type and identification number of the aircraft.

(2) The name of the program manager.

(3) The date.

(4) The nature of the failure, malfunction, or defect.

(5) Identification of the part and system involved, including available information pertaining to type designation of the major component and time since last overhaul, if known.

(6) Apparent cause of the failure, malfunction or defect (for example, wear, crack, design deficiency, or personnel error).

(7) Other pertinent information necessary for more complete identification, determination of seriousness, or corrective action.

(f) A program manager that is also the holder of a type certificate (including a supplemental type certificate), a Parts Manufacturer Approval, or a Technical Standard Order Authorization, or that is the licensee of a type certificate need not report a failure, malfunction, or defect under this section if the failure, malfunction, or defect has been reported by it under §21.3 of this chapter or under the accident reporting provisions of part 830 of the regulations of the National Transportation Safety Board.

(g) No person may withhold a report required by this section even when not all information required by this section is available.

(h) When the program manager receives additional information, including information from the manufacturer or other agency, concerning a report required by this section, the program manager must expeditiously submit it as a supplement to the first report and reference the date and place of submission of the first report.

**§91.1417 CAMP: Mechanical interruption summary report.**

Each program manager who maintains program aircraft under a CAMP must mail or deliver, before the end of the 10th day of the following month, a summary report of the following occurrences in multiengine aircraft for the preceding month to the Flight Standards District Office that issued the management specifications:

(a) Each interruption to a flight, unscheduled change of aircraft en route, or unscheduled stop or diversion from a route, caused by known or suspected mechanical difficulties or malfunctions that are not required to be reported under §91.1415.

(b) The number of propeller featherings in flight, listed by type of propeller and engine and aircraft on which it was installed. Propeller featherings for training, demonstration, or flight check purposes need not be reported.

**§91.1423 CAMP: Maintenance organization.**

(a) Each program manager who maintains program aircraft under a CAMP that has its personnel perform any of its maintenance (other than required inspections), preventive maintenance, or alterations, and each person with whom it arranges for the performance of that work, must have an organization adequate to perform the work.

(b) Each program manager who has personnel perform any inspections required by the program manager's manual under §91.1427(b) (2) or (3), (in this subpart referred to as required inspections), and each person with whom the program manager arranges for the performance of that work, must have an organization adequate to perform that work.

(c) Each person performing required inspections in addition to other maintenance, preventive maintenance, or alterations, must organize the performance of those functions so as to separate the required inspection functions from the other maintenance, preventive maintenance, or alteration functions. The separation must be below the level of administrative control at which overall responsibility for the required inspection functions and other maintenance, preventive maintenance, or alterations is exercised.

### § 91.1425 CAMP: Maintenance, preventive maintenance, and alteration programs.

Each program manager who maintains program aircraft under a CAMP must have an inspection program and a program covering other maintenance, preventive maintenance, or alterations that ensures that—

(a) Maintenance, preventive maintenance, or alterations performed by its personnel, or by other persons, are performed under the program manager's manual;

(b) Competent personnel and adequate facilities and equipment are provided for the proper performance of maintenance, preventive maintenance, or alterations; and

(c) Each aircraft released to service is airworthy and has been properly maintained for operation under this part.

### § 91.1427 CAMP: Manual requirements.

(a) Each program manager who maintains program aircraft under a CAMP must put in the operating manual the chart or description of the program manager's organization required by § 91.1423 and a list of persons with whom it has arranged for the performance of any of its required inspections, and other maintenance, preventive maintenance, or alterations, including a general description of that work.

(b) Each program manager must put in the operating manual the programs required by § 91.1425 that must be followed in performing maintenance, preventive maintenance, or alterations of that program manager's aircraft, including airframes, aircraft engines, propellers, rotors, appliances, emergency equipment, and parts, and must include at least the following:

(1) The method of performing routine and nonroutine maintenance (other than required inspections), preventive maintenance, or alterations.

(2) A designation of the items of maintenance and alteration that must be inspected (required inspections) including at least those that could result in a failure, malfunction, or defect endangering the safe operation of the aircraft, if not performed properly or if improper parts or materials are used.

(3) The method of performing required inspections and a designation by occupational title of personnel authorized to perform each required inspection.

(4) Procedures for the reinspection of work performed under previous required inspection findings (buy-back procedures).

(5) Procedures, standards, and limits necessary for required inspections and acceptance or rejection of the items required to be inspected and for periodic inspection and calibration of precision tools, measuring devices, and test equipment.

(6) Procedures to ensure that all required inspections are performed.

(7) Instructions to prevent any person who performs any item of work from performing any required inspection of that work.

(8) Instructions and procedures to prevent any decision of an inspector regarding any required inspection from being countermanded by persons other than supervisory personnel of the inspection unit, or a person at the level of administrative control that has overall responsibility for the management of both the required inspection functions and the other maintenance, preventive maintenance, or alterations functions.

(9) Procedures to ensure that maintenance (including required inspections), preventive maintenance, or alterations that are not completed because of work interruptions are properly completed before the aircraft is released to service.

(c) Each program manager must put in the manual a suitable system (which

may include an electronic or coded system) that provides for the retention of the following information—

(1) A description (or reference to data acceptable to the Administrator) of the work performed;

(2) The name of the person performing the work if the work is performed by a person outside the organization of the program manager; and

(3) The name or other positive identification of the individual approving the work.

(d) For the purposes of this part, the program manager must prepare that part of its manual containing maintenance information and instructions, in whole or in part, in a format acceptable to the Administrator, that is retrievable in the English language.

**§91.1429 CAMP: Required inspection personnel.**

(a) No person who maintains an aircraft under a CAMP may use any person to perform required inspections unless the person performing the inspection is appropriately certificated, properly trained, qualified, and authorized to do so.

(b) No person may allow any person to perform a required inspection unless, at the time the work was performed, the person performing that inspection is under the supervision and control of the chief inspector.

(c) No person may perform a required inspection if that person performed the item of work required to be inspected.

(d) Each program manager must maintain, or must ensure that each person with whom it arranges to perform required inspections maintains, a current listing of persons who have been trained, qualified, and authorized to conduct required inspections. The persons must be identified by name, occupational title, and the inspections that they are authorized to perform. The program manager (or person with whom it arranges to perform its required inspections) must give written information to each person so authorized, describing the extent of that person's responsibilities, authorities, and inspectional limitations. The list must be made available for inspection by the Administrator upon request.

**§91.1431 CAMP: Continuing analysis and surveillance.**

(a) Each program manager who maintains program aircraft under a CAMP must establish and maintain a system for the continuing analysis and surveillance of the performance and effectiveness of its inspection program and the program covering other maintenance, preventive maintenance, and alterations and for the correction of any deficiency in those programs, regardless of whether those programs are carried out by employees of the program manager or by another person.

(b) Whenever the Administrator finds that the programs described in paragraph (a) of this section does not contain adequate procedures and standards to meet this part, the program manager must, after notification by the Administrator, make changes in those programs requested by the Administrator.

(c) A program manager may petition the Administrator to reconsider the notice to make a change in a program. The petition must be filed with the Director, Flight Standards Service, within 30 days after the program manager receives the notice. Except in the case of an emergency requiring immediate action in the interest of safety, the filing of the petition stays the notice pending a decision by the Administrator.

**§91.1433 CAMP: Maintenance and preventive maintenance training program.**

Each program manager who maintains program aircraft under a CAMP or a person performing maintenance or preventive maintenance functions for it must have a training program to ensure that each person (including inspection personnel) who determines the adequacy of work done is fully informed about procedures and techniques and new equipment in use and is competent to perform that person's duties.

**§91.1435 CAMP: Certificate requirements.**

(a) Except for maintenance, preventive maintenance, alterations, and required inspections performed by repair stations located outside the United

States certificated under the provisions of part 145 of this chapter, each person who is directly in charge of maintenance, preventive maintenance, or alterations for a CAMP, and each person performing required inspections for a CAMP must hold an appropriate airman certificate.

(b) For the purpose of this section, a person ''directly in charge'' is each person assigned to a position in which that person is responsible for the work of a shop or station that performs maintenance, preventive maintenance, alterations, or other functions affecting airworthiness. A person who is directly in charge need not physically observe and direct each worker constantly but must be available for consultation and decision on matters requiring instruction or decision from higher authority than that of the person performing the work.

### § 91.1437 CAMP: Authority to perform and approve maintenance.

A program manager who maintains program aircraft under a CAMP may employ maintenance personnel, or make arrangements with other persons to perform maintenance and preventive maintenance as provided in its maintenance manual. Unless properly certificated, the program manager may not perform or approve maintenance for return to service.

### § 91.1439 CAMP: Maintenance recording requirements.

(a) Each program manager who maintains program aircraft under a CAMP must keep (using the system specified in the manual required in § 91.1427) the following records for the periods specified in paragraph (b) of this section:

(1) All the records necessary to show that all requirements for the issuance of an airworthiness release under § 91.1443 have been met.

(2) Records containing the following information:

(i) The total time in service of the airframe, engine, propeller, and rotor.

(ii) The current status of life-limited parts of each airframe, engine, propeller, rotor, and appliance.

(iii) The time since last overhaul of each item installed on the aircraft that are required to be overhauled on a specified time basis.

(iv) The identification of the current inspection status of the aircraft, including the time since the last inspections required by the inspection program under which the aircraft and its appliances are maintained.

(v) The current status of applicable airworthiness directives, including the date and methods of compliance, and, if the airworthiness directive involves recurring action, the time and date when the next action is required.

(vi) A list of current major alterations and repairs to each airframe, engine, propeller, rotor, and appliance.

(b) Each program manager must retain the records required to be kept by this section for the following periods:

(1) Except for the records of the last complete overhaul of each airframe, engine, propeller, rotor, and appliance the records specified in paragraph (a)(1) of this section must be retained until the work is repeated or superseded by other work or for one year after the work is performed.

(2) The records of the last complete overhaul of each airframe, engine, propeller, rotor, and appliance must be retained until the work is superseded by work of equivalent scope and detail.

(3) The records specified in paragraph (a)(2) of this section must be retained as specified unless transferred with the aircraft at the time the aircraft is sold.

(c) The program manager must make all maintenance records required to be kept by this section available for inspection by the Administrator or any representative of the National Transportation Safety Board.

### § 91.1441 CAMP: Transfer of maintenance records.

When a U.S.-registered fractional ownership program aircraft maintained under a CAMP is removed from the list of program aircraft in the management specifications, the program manager must transfer to the purchaser, at the time of the sale, the following records of that aircraft, in plain language form or in coded form that provides for the preservation and retrieval of information in a manner acceptable to the Administrator:

(a) The records specified in §91.1439(a)(2).

(b) The records specified in §91.1439(a)(1) that are not included in the records covered by paragraph (a) of this section, except that the purchaser may allow the program manager to keep physical custody of such records. However, custody of records by the program manager does not relieve the purchaser of its responsibility under §91.1439(c) to make the records available for inspection by the Administrator or any representative of the National Transportation Safety Board.

### §91.1443 CAMP: Airworthiness release or aircraft maintenance log entry.

(a) No program aircraft maintained under a CAMP may be operated after maintenance, preventive maintenance, or alterations are performed unless qualified, certificated personnel employed by the program manager prepare, or cause the person with whom the program manager arranges for the performance of the maintenance, preventive maintenance, or alterations, to prepare—

(1) An airworthiness release; or

(2) An appropriate entry in the aircraft maintenance log.

(b) The airworthiness release or log entry required by paragraph (a) of this section must—

(1) Be prepared in accordance with the procedure in the program manager's manual;

(2) Include a certification that—

(i) The work was performed in accordance with the requirements of the program manager's manual;

(ii) All items required to be inspected were inspected by an authorized person who determined that the work was satisfactorily completed;

(iii) No known condition exists that would make the aircraft unairworthy;

(iv) So far as the work performed is concerned, the aircraft is in condition for safe operation; and

(3) Be signed by an authorized certificated mechanic.

(c) Notwithstanding paragraph (b)(3) of this section, after maintenance, preventive maintenance, or alterations performed by a repair station certificated under the provisions of part 145 of this chapter, the approval for return to service or log entry required by paragraph (a) of this section may be signed by a person authorized by that repair station.

(d) Instead of restating each of the conditions of the certification required by paragraph (b) of this section, the program manager may state in its manual that the signature of an authorized certificated mechanic or repairman constitutes that certification.

## Subpart L—Continued Airworthiness and Safety Improvements

SOURCE: Amdt. 91–297, 72 FR 63410, Nov. 8, 2007, unless otherwise noted.

### §91.1501 Purpose and definition.

(a) This subpart requires operators to support the continued airworthiness of each airplane. These requirements may include, but are not limited to, revising the inspection program, incorporating design changes, and incorporating revisions to Instructions for Continued Airworthiness.

(b) For purposes of this subpart, the ''FAA Oversight Office'' is the aircraft certification office or office of the Transport Airplane Directorate with oversight responsibility for the relevant type certificate or supplemental type certificate, as determined by the Administrator.

### §91.1503 [Reserved]

### §91.1505 Repairs assessment for pressurized fuselages.

(a) No person may operate an Airbus Model A300 (excluding the –600 series), British Aerospace Model BAC 1–11, Boeing Model, 707, 720, 727, 737 or 747, McDonnell Douglas Model DC–8, DC–9/MD–80 or DC–10, Fokker Model F28, or Lockheed Model L–1011 airplane beyond applicable flight cycle implementation time specified below, or May 25, 2001, whichever occurs later, unless repair assessment guidelines applicable to the fuselage pressure boundary (fuselage skin, door skin, and bulkhead webs) that have been approved by the FAA Aircraft Certification Office (ACO), or office of the Transport Airplane Directorate, having cognizance over the type certificate for the affected airplane are

incorporated within its inspection program:

(1) For the Airbus Model A300 (excluding the –600 series), the flight cycle implementation time is:

(i) Model B2: 36,000 flights.

(ii) Model B4–100 (including Model B4–2C): 30,000 flights above the window line, and 36,000 flights below the window line.

(iii) Model B4–200: 25,500 flights above the window line, and 34,000 flights below the window line.

(2) For all models of the British Aerospace BAC 1–11, the flight cycle implementation time is 60,000 flights.

(3) For all models of the Boeing 707, the flight cycle implementation time is 15,000 flights.

(4) For all models of the Boeing 720, the flight cycle implementation time is 23,000 flights.

(5) For all models of the Boeing 727, the flight cycle implementation time is 45,000 flights.

(6) For all models of the Boeing 737, the flight cycle implementation time is 60,000 flights.

(7) For all models of the Boeing 747, the flight cycle implementation time is 15,000 flights.

(8) For all models of the McDonnell Douglas DC–8, the flight cycle implementation time is 30,000 flights.

(9) For all models of the McDonnell Douglas DC–9/MD–80, the flight cycle implementation time is 60,000 flights.

(10) For all models of the McDonnell Douglas DC–10, the flight cycle implementation time is 30,000 flights.

(11) For all models of the Lockheed L–1011, the flight cycle implementation time is 27,000 flights.

(12) For the Fokker F–28 Mark 1000, 2000, 3000, and 4000, the flight cycle implementation time is 60,000 flights.

(b) [Reserved]

[Doc. No. 29104, 65 FR 24125, Apr. 25, 2000; 65 FR 35703, June 5, 2000; 65 FR 50744, Aug. 21, 2000, as amended by Amdt. 91–266, 66 FR 23130, May 7, 2001; Amdt. 91–277, 67 FR 72834, Dec. 9, 2002; Amdt. 91–283, 69 FR 45941, July 30, 2004. Redesignated and amended by Amdt. 91–297, 72 FR 63410, Nov. 8, 2007]

### § 91.1507 Fuel tank system inspection program.

(a) Except as provided in paragraph (g) of this section, this section applies to transport category, turbine-powered airplanes with a type certificate issued after January 1, 1958, that, as a result of original type certification or later increase in capacity, have—

(1) A maximum type-certificated passenger capacity of 30 or more, or

(2) A maximum payload capacity of 7,500 pounds or more.

(b) For each airplane on which an auxiliary fuel tank is installed under a field approval, before June 16, 2008, the operator must submit to the FAA Oversight Office proposed maintenance instructions for the tank that meet the requirements of Special Federal Aviation Regulation No. 88 (SFAR 88) of this chapter.

(c) After December 16, 2008, no operator may operate an airplane identified in paragraph (a) of this section unless the inspection program for that airplane has been revised to include applicable inspections, procedures, and limitations for fuel tank systems.

(d) The proposed fuel tank system inspection program revisions specified in paragraph (c) of this section must be based on fuel tank system Instructions for Continued Airworthiness (ICA) that have been developed in accordance with the applicable provisions of SFAR 88 of this chapter or § 25.1529 and part 25, Appendix H, of this chapter, in effect on June 6, 2001 (including those developed for auxiliary fuel tanks, if any, installed under supplemental type certificates or other design approval) and that have been approved by the FAA Oversight Office.

(e) After December 16, 2008, before returning an airplane to service after any alterations for which fuel tank ICA are developed under SFAR 88, or under § 25.1529 in effect on June 6, 2001, the operator must include in the inspection program for the airplane inspections and procedures for the fuel tank system based on those ICA.

(f) The fuel tank system inspection program changes identified in paragraphs (d) and (e) of this section and any later fuel tank system revisions must be submitted to the Flight Standards District Office (FSDO) responsible for review and approval.

(g) This section does not apply to the following airplane models:

(1) Bombardier CL–44

(2) Concorde

(3) deHavilland D.H. 106 Comet 4C
(4) VFW-Vereinigte Flugtechnische Werk VFW–614
(5) Illyushin Aviation IL 96T
(6) Bristol Aircraft Britannia 305
(7) Handley Page Herald Type 300
(8) Avions Marcel Dassault—Breguet Aviation Mercure 100C
(9) Airbus Caravelle
(10) Lockheed L–300

## APPENDIX A TO PART 91—CATEGORY II OPERATIONS: MANUAL, INSTRUMENTS, EQUIPMENT, AND MAINTENANCE

### *1. Category II Manual*

(a) *Application for approval.* An applicant for approval of a Category II manual or an amendment to an approved Category II manual must submit the proposed manual or amendment to the Flight Standards District Office having jurisdiction of the area in which the applicant is located. If the application requests an evaluation program, it must include the following:

(1) The location of the aircraft and the place where the demonstrations are to be conducted; and

(2) The date the demonstrations are to commence (at least 10 days after filing the application).

(b) *Contents.* Each Category II manual must contain:

(1) The registration number, make, and model of the aircraft to which it applies;

(2) A maintenance program as specified in section 4 of this appendix; and

(3) The procedures and instructions related to recognition of decision height, use of runway visual range information, approach monitoring, the decision region (the region between the middle marker and the decision height), the maximum permissible deviations of the basic ILS indicator within the decision region, a missed approach, use of airborne low approach equipment, minimum altitude for the use of the autopilot, instrument and equipment failure warning systems, instrument failure, and other procedures, instructions, and limitations that may be found necessary by the Administrator.

### *2. Required Instruments and Equipment*

The instruments and equipment listed in this section must be installed in each aircraft operated in a Category II operation. This section does not require duplication of instruments and equipment required by § 91.205 or any other provisions of this chapter.

(a) *Group I.* (1) Two localizer and glide slope receiving systems. Each system must provide a basic ILS display and each side of the instrument panel must have a basic ILS display. However, a single localizer antenna and a single glide slope antenna may be used.

(2) A communications system that does not affect the operation of at least one of the ILS systems.

(3) A marker beacon receiver that provides distinctive aural and visual indications of the outer and the middle markers.

(4) Two gyroscopic pitch and bank indicating systems.

(5) Two gyroscopic direction indicating systems.

(6) Two airspeed indicators.

(7) Two sensitive altimeters adjustable for barometric pressure, each having a placarded correction for altimeter scale error and for the wheel height of the aircraft. After June 26, 1979, two sensitive altimeters adjustable for barometric pressure, having markings at 20-foot intervals and each having a placarded correction for altimeter scale error and for the wheel height of the aircraft.

(8) Two vertical speed indicators.

(9) A flight control guidance system that consists of either an automatic approach coupler or a flight director system. A flight director system must display computed information as steering command in relation to an ILS localizer and, on the same instrument, either computed information as pitch command in relation to an ILS glide slope or basic ILS glide slope information. An automatic approach coupler must provide at least automatic steering in relation to an ILS localizer. The flight control guidance system may be operated from one of the receiving systems required by subparagraph (1) of this paragraph.

(10) For Category II operations with decision heights below 150 feet either a marker beacon receiver providing aural and visual indications of the inner marker or a radio altimeter.

(b) *Group II.* (1) Warning systems for immediate detection by the pilot of system faults in items (1), (4), (5), and (9) of Group I and, if installed for use in Category III operations, the radio altimeter and autothrottle system.

(2) Dual controls.

(3) An externally vented static pressure system with an alternate static pressure source.

(4) A windshield wiper or equivalent means of providing adequate cockpit visibility for a safe visual transition by either pilot to touchdown and rollout.

(5) A heat source for each airspeed system pitot tube installed or an equivalent means of preventing malfunctioning due to icing of the pitot system.

### *3. Instruments and Equipment Approval*

(a) *General.* The instruments and equipment required by section 2 of this appendix must be approved as provided in this section before being used in Category II operations.

Before presenting an aircraft for approval of the instruments and equipment, it must be shown that since the beginning of the 12th calendar month before the date of submission—

(1) The ILS localizer and glide slope equipment were bench checked according to the manufacturer's instructions and found to meet those standards specified in RTCA Paper 23–63/DO–117 dated March 14, 1963, ''Standard Adjustment Criteria for Airborne Localizer and Glide Slope Receivers,'' which may be obtained from the RTCA Secretariat, 1425 K St., NW., Washington, DC 20005.

(2) The altimeters and the static pressure systems were tested and inspected in accordance with appendix E to part 43 of this chapter; and

(3) All other instruments and items of equipment specified in section 2(a) of this appendix that are listed in the proposed maintenance program were bench checked and found to meet the manufacturer's specifications.

(b) *Flight control guidance system.* All components of the flight control guidance system must be approved as installed by the evaluation program specified in paragraph (e) of this section if they have not been approved for Category III operations under applicable type or supplemental type certification procedures. In addition, subsequent changes to make, model, or design of the components must be approved under this paragraph. Related systems or devices, such as the autothrottle and computed missed approach guidance system, must be approved in the same manner if they are to be used for Category II operations.

(c) *Radio altimeter.* A radio altimeter must meet the performance criteria of this paragraph for original approval and after each subsequent alteration.

(1) It must display to the flight crew clearly and positively the wheel height of the main landing gear above the terrain.

(2) It must display wheel height above the terrain to an accuracy of plus or minus 5 feet or 5 percent, whichever is greater, under the following conditions:

(i) Pitch angles of zero to plus or minus 5 degrees about the mean approach attitude.

(ii) Roll angles of zero to 20 degrees in either direction.

(iii) Forward velocities from minimum approach speed up to 200 knots.

(iv) Sink rates from zero to 15 feet per second at altitudes from 100 to 200 feet.

(3) Over level ground, it must track the actual altitude of the aircraft without significant lag or oscillation.

(4) With the aircraft at an altitude of 200 feet or less, any abrupt change in terrain representing no more than 10 percent of the aircraft's altitude must not cause the altimeter to unlock, and indicator response to such changes must not exceed 0.1 seconds and, in addition, if the system unlocks for greater changes, it must reacquire the signal in less than 1 second.

(5) Systems that contain a push-to-test feature must test the entire system (with or without an antenna) at a simulated altitude of less than 500 feet.

(6) The system must provide to the flight crew a positive failure warning display any time there is a loss of power or an absence of ground return signals within the designed range of operating altitudes.

(d) *Other instruments and equipment.* All other instruments and items of equipment required by § 2 of this appendix must be capable of performing as necessary for Category II operations. Approval is also required after each subsequent alteration to these instruments and items of equipment.

(e) *Evaluation program*—(1) *Application.* Approval by evaluation is requested as a part of the application for approval of the Category II manual.

(2) *Demonstrations.* Unless otherwise authorized by the Administrator, the evaluation program for each aircraft requires the demonstrations specified in this paragraph. At least 50 ILS approaches must be flown with at least five approaches on each of three different ILS facilities and no more than one half of the total approaches on any one ILS facility. All approaches shall be flown under simulated instrument conditions to a 100-foot decision height and 90 percent of the total approaches made must be successful. A successful approach is one in which—

(i) At the 100-foot decision height, the indicated airspeed and heading are satisfactory for a normal flare and landing (speed must be plus or minus 5 knots of programmed airspeed, but may not be less than computed threshold speed if autothrottles are used);

(ii) The aircraft at the 100-foot decision height, is positioned so that the cockpit is within, and tracking so as to remain within, the lateral confines of the runway extended;

(iii) Deviation from glide slope after leaving the outer marker does not exceed 50 percent of full-scale deflection as displayed on the ILS indicator;

(iv) No unusual roughness or excessive attitude changes occur after leaving the middle marker; and

(v) In the case of an aircraft equipped with an approach coupler, the aircraft is sufficiently in trim when the approach coupler is disconnected at the decision height to allow for the continuation of a normal approach and landing.

(3) *Records.* During the evaluation program the following information must be maintained by the applicant for the aircraft with respect to each approach and made available to the Adninistrator upon request:

(i) Each deficiency in airborne instruments and equipment that prevented the initiation of an approach.

(ii) The reasons for discontinuing an approach, including the altitude above the runway at which it was discontinued.

(iii) Speed control at the 100-foot decision height if auto throttles are used.

(iv) Trim condition of the aircraft upon disconnecting the auto coupler with respect to continuation to flare and landing.

(v) Position of the aircraft at the middle marker and at the decision height indicated both on a diagram of the basic ILS display and a diagram of the runway extended to the middle marker. Estimated touchdown point must be indicated on the runway diagram.

(vi) Compatibility of flight director with the auto coupler, if applicable.

(vii) Quality of overall system performance.

(4) *Evaluation.* A final evaluation of the flight control guidance system is made upon successful completion of the demonstrations. If no hazardous tendencies have been displayed or are otherwise known to exist, the system is approved as installed.

*4. Maintenance program*

(a) Each maintenance program must contain the following:

(1) A list of each instrument and item of equipment specified in §2 of this appendix that is installed in the aircraft and approved for Category II operations, including the make and model of those specified in §2(a).

(2) A schedule that provides for the performance of inspections under subparagraph (5) of this paragraph within 3 calendar months after the date of the previous inspection. The inspection must be performed by a person authorized by part 43 of this chapter, except that each alternate inspection may be replaced by a functional flight check. This functional flight check must be performed by a pilot holding a Category II pilot authorization for the type aircraft checked.

(3) A schedule that provides for the performance of bench checks for each listed instrument and item of equipment that is specified in section 2(a) within 12 calendar months after the date of the previous bench check.

(4) A schedule that provides for the performance of a test and inspection of each static pressure system in accordance with appendix E to part 43 of this chapter within 12 calendar months after the date of the previous test and inspection.

(5) The procedures for the performance of the periodic inspections and functional flight checks to determine the ability of each listed instrument and item of equipment specified in section 2(a) of this appendix to perform as approved for Category II operations including a procedure for recording functional flight checks.

(6) A procedure for assuring that the pilot is informed of all defects in listed instruments and items of equipment.

(7) A procedure for assuring that the condition of each listed instrument and item of equipment upon which maintenance is performed is at least equal to its Category II approval condition before it is returned to service for Category II operations.

(8) A procedure for an entry in the maintenance records required by §43.9 of this chapter that shows the date, airport, and reasons for each discontinued Category II operation because of a malfunction of a listed instrument or item of equipment.

(b) *Bench check.* A bench check required by this section must comply with this paragraph.

(1) It must be performed by a certificated repair station holding one of the following ratings as appropriate to the equipment checked:

(i) An instrument rating.

(ii) A radio rating.

(2) It must consist of removal of an instrument or item of equipment and performance of the following:

(i) A visual inspection for cleanliness, impending failure, and the need for lubrication, repair, or replacement of parts;

(ii) Correction of items found by that visual inspection; and

(iii) Calibration to at least the manufacturer's specifications unless otherwise specified in the approved Category II manual for the aircraft in which the instrument or item of equipment is installed.

(c) *Extensions.* After the completion of one maintenance cycle of 12 calendar months, a request to extend the period for checks, tests, and inspections is approved if it is shown that the performance of particular equipment justifies the requested extension.

[Doc. No. 18334, 54 FR 34325, Aug. 18, 1989, as amended by Amdt. 91–269, 66 FR 41116, Aug. 6, 2001]

## APPENDIX B TO PART 91—AUTHORIZATIONS TO EXCEED MACH 1 (§91.817)

*Section 1. Application*

(a) An applicant for an authorization to exceed Mach 1 must apply in a form and manner prescribed by the Administrator and must comply with this appendix.

(b) In addition, each application for an authorization to exceed Mach 1 covered by section 2(a) of this appendix must contain all information requested by the Administrator necessary to assist him in determining whether the designation of a particular test area or issuance of a particular authorization is a ''major Federal action significantly affecting the quality of the human environment'' within the meaning of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*), and to assist him in complying

with that act and with related Executive Orders, guidelines, and orders prior to such action.

(c) In addition, each application for an authorization to exceed Mach 1 covered by section 2(a) of this appendix must contain—

(1) Information showing that operation at a speed greater than Mach 1 is necessary to accomplish one or more of the purposes specified in section 2(a) of this appendix, including a showing that the purpose of the test cannot be safely or properly accomplished by overocean testing;

(2) A description of the test area proposed by the applicant, including an environmental analysis of that area meeting the requirements of paragraph (b) of this section; and

(3) Conditions and limitations that will ensure that no measurable sonic boom overpressure will reach the surface outside of the designated test area.

(d) An application is denied if the Administrator finds that such action is necessary to protect or enhance the environment.

*Section 2. Issuance*

(a) For a flight in a designated test area, an authorization to exceed Mach 1 may be issued when the Administrator has taken the environmental protective actions specified in section 1(b) of this appendix and the applicant shows one or more of the following:

(1) The flight is necessary to show compliance with airworthiness requirements.

(2) The flight is necessary to determine the sonic boom characteristics of the airplane or to establish means of reducing or eliminating the effects of sonic boom.

(3) The flight is necessary to demonstrate the conditions and limitations under which speeds greater than a true flight Mach number of 1 will not cause a measurable sonic boom overpressure to reach the surface.

(b) For a flight outside of a designated test area, an authorization to exceed Mach 1 may be issued if the applicant shows conservatively under paragraph (a)(3) of this section that—

(1) The flight will not cause a measurable sonic boom overpressure to reach the surface when the aircraft is operated under conditions and limitations demonstrated under paragraph (a)(3) of this section; and

(2) Those conditions and limitations represent all foreseeable operating conditions.

*Section 3. Duration*

(a) An authorization to exceed Mach 1 is effective until it expires or is surrendered, or until it is suspended or terminated by the Administrator. Such an authorization may be amended or suspended by the Administrator at any time if the Administrator finds that such action is necessary to protect the environment. Within 30 days of notification of amendnent, the holder of the authorization must request reconsideration or the amendnent becomes final. Within 30 days of notification of suspension, the holder of the authorization must request reconsideration or the authorization is automatically terminated. If reconsideration is requested within the 30-day period, the amendment or suspension continues until the holder shows why the authorization should not be amended or terminated. Upon such showing, the Administrator may terminate or amend the authorization if the Administrator finds that such action is necessary to protect the environment, or he may reinstate the authorization without amendment if he finds that termination or amendnent is not necessary to protect the environment.

(b) Findings and actions by the Administrator under this section do not affect any certificate issued under title VI of the Federal Aviation Act of 1958.

[Doc. No. 18334, 54 FR 34327, Aug. 18, 1989]

## APPENDIX C TO PART 91—OPERATIONS IN THE NORTH ATLANTIC (NAT) MINIMUM NAVIGATION PERFORMANCE SPECIFICATIONS (MNPS) AIRSPACE

*Section 1*

NAT MNPS airspace is that volume of airspace between FL 285 and FL 420 extending between latitude 27 degrees north and the North Pole, bounded in the east by the eastern boundaries of control areas Santa Maria Oceanic, Shanwick Oceanic, and Reykjavik Oceanic and in the west by the western boundary of Reykjavik Oceanic Control Area, the western boundary of Gander Oceanic Control Area, and the western boundary of New York Oceanic Control Area, excluding the areas west of 60 degrees west and south of 38 degrees 30 minutes north.

*Section 2*

The navigation performance capability required for aircraft to be operated in the airspace defined in section 1 of this appendix is as follows:

(a) The standard deviation of lateral track errors shall be less than 6.3 NM (11.7 Km). Standard deviation is a statistical measure of data about a mean value. The mean is zero nautical miles. The overall form of data is such that the plus and minus 1 standard deviation about the mean encompasses approximately 68 percent of the data and plus or minus 2 deviations encompasses approximately 95 percent.

(b) The proportion of the total flight time spent by aircraft 30 NM (55.6 Km) or more off the cleared track shall be less than $5.3\times10^{-4}$ (less than 1 hour in 1,887 flight hours).

(c) The proportion of the total flight time spent by aircraft between 50 NM and 70 NM (92.6 Km and 129.6 Km) off the cleared track

shall be less than $13 \times 10^{-5}$ (less than 1 hour in 7,693 flight hours.)

*Section 3*

Air traffic control (ATC) may authorize an aircraft operator to deviate from the requirements of §91.705 for a specific flight if, at the time of flight plan filing for that flight, ATC determines that the aircraft may be provided appropriate separation and that the flight will not interfere with, or impose a burden upon, the operations of other aircraft which meet the requirements of §91.705.

[Doc. No. 18334, 54 FR 34327, Aug. 18, 1989, as amended by Amdt. 91–254, 62 FR 17487, Apr. 9, 1997]

## APPENDIX D TO PART 91—AIRPORTS/LOCATIONS: SPECIAL OPERATING RESTRICTIONS

*Section 1.* Locations at which the requirements of §91.215(b)(2) apply.

The requirements of §91.215(b)(2) apply below 10,000 feet above the surface within a 30-nautical-mile radius of each location in the following list:

Atlanta, GA (The William B. Hartsfield Atlanta International Airport)
Baltimore, MD (Baltimore Washington International Airport)
Boston, MA (General Edward Lawrence Logan International Airport)
Chantilly, VA (Washington Dulles International Airport)
Charlotte, NC (Charlotte/Douglas International Airport)
Chicago, IL Chicago-O'Hare International Airport)
Cleveland, OH (Cleveland-Hopkins International Airport)
Covington, KY (Cincinnati Northern Kentucky International Airport)
Dallas, TX (Dallas/Fort Worth Regional Airport)
Denver, CO (Denver International Airport)
Detroit, MI (Metropolitan Wayne County Airport)
Honolulu, HI (Honolulu International Airport)
Houston, TX (George Bush Intercontinental Airport/Houston)
Kansas City, KS (Mid-Continent International Airport)
Las Vegas, NV (McCarran International Airport)
Los Angeles, CA (Los Angeles International Airport)
Memphis, TN (Memphis International Airport)
Miami, FL (Miami International Airport)
Minneapolis, MN (Minneapolis-St. Paul International Airport)
Newark, NJ (Newark International Airport)
New Orleans, LA (New Orleans International Airport-Moisant Field)
New York, NY (John F. Kennedy International Airport)
New York, NY (LaGuardia Airport)
Orlando, FL (Orlando International Airport)
Philadelphia, PA (Philadelphia International Airport)
Phoenix, AZ (Phoenix Sky Harbor International Airport)
Pittsburgh, PA (Greater Pittsburgh International Airport)
St. Louis, MO (Lambert-St. Louis International Airport)
Salt Lake City, UT (Salt Lake City International Airport)
San Diego, CA (San Diego International Airport)
San Francisco, CA (San Francisco International Airport)
Seattle, WA (Seattle-Tacoma International Airport)
Tampa, FL (Tampa International Airport)
Washington, DC (Ronald Reagan Washington National Airport and Andrews Air Force Base, MD)

*Section 2.* Airports at which the requirements of §91.215(b)(5)(ii) apply. [Reserved]

*Section 3.* Locations at which fixed-wing Special VFR operations are prohibited.

The Special VFR weather minimums of §91.157 do not apply to the following airports:

Atlanta, GA (The William B. Hartsfield Atlanta International Airport)
Baltimore, MD (Baltimore/Washington International Airport)
Boston, MA (General Edward Lawrence Logan International Airport)
Buffalo, NY (Greater Buffalo International Airport)
Chicago, IL (Chicago-O'Hare International Airport)
Cleveland, OH (Cleveland-Hopkins International Airport)
Columbus, OH (Port Columbus International Airport)
Covington, KY (Cincinnati Northern Kentucky International Airport)
Dallas, TX (Dallas/Fort Worth Regional Airport)
Dallas, TX (Love Field)
Denver, CO (Denver International Airport)
Detroit, MI (Metropolitan Wayne County Airport)
Honolulu, HI (Honolulu International Airport)
Houston, TX (George Bush Intercontinental Airport/Houston)
Indianapolis, IN (Indianapolis International Airport)
Los Angeles, CA (Los Angeles International Airport)
Louisville, KY (Standiford Field)
Memphis, TN (Memphis International Airport)
Miami, FL (Miami International Airport)
Minneapolis, MN (Minneapolis-St. Paul International Airport)

Newark, NJ (Newark International Airport)
New York, NY (John F. Kennedy International Airport)
New York, NY (LaGuardia Airport)
New Orleans, LA (New Orleans International Airport-Moisant Field)
Philadelphia, PA (Philadelphia International Airport)
Pittsburgh, PA (Greater Pittsburgh International Airport)
Portland, OR (Portland International Airport)
San Francisco, CA (San Francisco International Airport)
Seattle, WA (Seattle-Tacoma International Airport)
St. Louis, MO (Lambert-St. Louis International Airport)
Tampa, FL (Tampa International Airport)
Washington, DC (Ronald Reagan Washington National Airport and Andrews Air Force Base, MD)

*Section 4.* Locations at which solo student, sport, and recreational pilot activity is not permitted.

Pursuant to §91.131(b)(2), solo student, sport, and recreational pilot operations are not permitted at any of the following airports.

Atlanta, GA (The William B. Hartsfield Atlanta International Airport)
Boston, MA (General Edward Lawrence Logan International Airport)
Chicago, IL (Chicago-O'Hare International Airport)
Dallas, TX (Dallas/Fort Worth Regional Airport)
Los Angeles, CA (Los Angeles International Airport)
Miami, FL (Miami International Airport)
Newark, NJ (Newark International Airport)
New York, NY (John F. Kennedy International Airport)
New York, NY (LaGuardia Airport)
San Francisco, CA (San Francisco International Airport)
Washington, DC (Ronald Reagan Washington National Airport)
Andrews Air Force Base, MD

[Amdt. 91–227, 56 FR 65661, Dec. 17, 1991, as amended by Amdt. 91–235, 58 FR 51968, Oct. 5, 1993; Amdt. 91–236, 59 FR 2918, Jan. 19, 1994; Amdt. 91–237, 59 FR 6547, Feb. 11, 1994; 59 FR 37667, July 25, 1994; Amdt. 91–258, 64 FR 66769, Nov. 30, 1999; Amdt. 91–278, 68 FR 9795, Feb. 28, 2003; Amdt. 91–282, 69 FR 44882, July 27, 2004]

EFFECTIVE DATE NOTE: By Amdt. 91–236, 59 FR 2918, Jan. 19, 1994, as corrected by Amdt. 91–237, 59 FR 6547, Feb. 11, 1994, appendix D to part 91 was amended in sections 1 and 3 in the Denver, CO entry by revising ''Stapleton'' to read ''Denver'' effective March 9, 1994. By Amdt. 91–238, 59 FR 10958, Mar. 9, 1994, the effective date was delayed to May 15, 1994. By Amdt. 91–241, 59 FR 24916, May 13, 1994, the effective date was suspended indefinitely.

## APPENDIX E TO PART 91—AIRPLANE FLIGHT RECORDER SPECIFICATIONS

| Parameters | Range | Installed system [1] minimum accuracy (to recovered data) | Sampling interval (per second) | Resolution [4] read out |
|---|---|---|---|---|
| Relative Time (From Recorded on Prior to Takeoff). | 8 hr minimum | ±0.125% per hour | 1 | 1 sec. |
| Indicated Airspeed | Vso to VD (KIAS) | ±5% or ±10 kts., whichever is greater. Resolution 2 kts. below 175 KIAS. | 1 | 1% [3] |
| Altitude | −1,000 ft. to max cert. alt. of A/C. | ±100 to ±700 ft. (see Table 1, TSO C51-a). | 11 | 25 to 150 ft. |
| Magnetic Heading | 360° | ±5° | 1 | 1° |
| Vertical Acceleration | −3g to +6g | ±0.2g in addition to ±0.3g maximum datum. | 4 (or 1 per second where peaks, ref. to 1g are recorded). | 0.03g. |
| Longitudinal Acceleration. | ±1.0g | ±1.5% max. range excluding datum error of ±5%. | 2 | 0.01g. |
| Pitch Attitude | 100% of usable | ±2° | 1 | 0.8° |
| Roll Attitude | ±60° or 100% of usable range, whichever is greater. | ±2° | 1 | 0.8° |
| Stabilizer Trim Position, or. Pitch Control Position [5]. | Full Range | ±3% unless higher uniquely required. | 1 | 1% [3] |

| Parameters | Range | Installed system [1] minimum accuracy (to recovered data) | Sampling interval (per second) | Resolution [4] read out |
|---|---|---|---|---|
| Engine Power, Each Engine: | Full Range | ±3% unless higher uniquely required. | 1 | 1% [3] |
| Fan or N [1] Speed or EPR or Cockpit indications Used for Aircraft Certification OR. | Maximum Range | ±5% | 1 | 1% [3] |
| Prop. speed and Torque (Sample Once/Sec as Close together as Practicable). | | | 1 (prop Speed)<br>1 (torque) | 1%[3]<br>1% [3] |
| Altitude Rate [2] (need depends on altitude resolution). | ±8,000 fpm | ±10%. Resolution 250 fpm below 12,000 ft. indicated. | 1 | 250 fpm. below 12,000 |
| Angle of Attack [2] (need depends on altitude resolution). | −20° to 40° or 100% of usable range. | ±2° | 1 | 0.8%[3] |
| Radio Transmitter Keying (Discrete). | On/Off | | 1. | |
| TE Flaps (Discrete or Analog). | Each discrete position (U, D, T/O, AAP) OR. | | 1. | |
| LE Flaps (Discrete or Analog). | Analog 0–100% range | ±3% | 1 | 1%[3] |
| | Each discrete position (U, D, T/O, AAP) OR. | | 1. | |
| Thrust Reverser, Each Engine (Discrete). | Analog 0–100% range | ±3° | 1 | 1%[3] |
| | Stowed or full reverse. | | | |
| Spoiler/Speedbrake (Discrete). | Stowed or out | | 1. | |
| Autopilot Engaged (Discrete). | Engaged or Disengaged | | 1. | |

[1] When data sources are aircraft instruments (except altimeters) of acceptable quality to fly the aircraft the recording system excluding these sensors (but including all other characteristics of the recording system) shall contribute no more than half of the values in this column.
[2] If data from the altitude encoding altimeter (100 ft. resolution) is used, then either one of these parameters should also be recorded. If however, altitude is recorded at a minimum resolution of 25 feet, then these two parameters can be omitted.
[3] Per cent of full range.
[4] This column applies to aircraft manufactured after October 11, 1991.
[5] For Pitch Control Position only, for all aircraft manufactured on or after April 7, 2010, the sampling interval (per second) is 8. Each input must be recorded at this rate. Alternately sampling inputs (interleaving) to meet this sampling interval is prohibited.

[Doc. No. 18334, 54 FR 34327, Aug. 18, 1989, as amended by Amdt. 91–300, 73 FR 12565, Mar. 7, 2008; 73 FR 15280, Mar. 21, 2008]

## Appendix F to Part 91—Helicopter Flight Recorder Specifications

| Parameters | Range | Installed system [1] minimum accuracy (to recovered data) | Sampling interval (per second) | Resolution 3 read out |
|---|---|---|---|---|
| Relative Time (From Recorded on Prior to Takeoff). | 4 hr minimum | ±0.125% per hour | 1 | 1 sec. |
| Indicated Airspeed | VM in to VD (KIAS) (minimum airspeed signal attainable with installed pilot-static system). | ±5% or ±10 kts., whichever is greater. | 1 | 1 kt. |
| Altitude | −1,000 ft. to 20,000 ft. pressure altitude. | ±100 to ±700 ft. (see Table 1, TSO C51–a). | 1 | 25 to 150 ft. |
| Magnetic Heading | 360° | ±5° | 1 | 1° |
| Vertical Acceleration | −3g to +6g | ±0.2g in addition to ±0.3g maximum datum. | 4 (or 1 per second where peaks, ref. to 1g are recorded). | 0.05g. |
| Longitudinal Acceleration. | ±1.0g | ±1.5% max. range excluding datum error of ±5%. | 2 | 0.03g. |
| Pitch Attitude | 100% of usable range | ±2° | 1 | 0.8° |

| Parameters | Range | Installed system [1] minimum accuracy (to recovered data) | Sampling interval (per second) | Resolution 3 read out |
|---|---|---|---|---|
| Roll Attitude | ±60 or 100% of usable range, whichever is greater. | ±2° | 1 | 0.8° |
| Altitude Rate | ±8,000 fpm | ±10% Resolution 250 fpm below 12,000 ft. indicated. | 1 | 250 fpm below 12,000. |
| *Engine Power, Each Engine* | | | | |
| Main Rotor Speed | Maximum Range | ±5% | 1 | 1%2. |
| Free or Power Turbine. | Maximum Range | ±5% | 1 | 1%2. |
| Engine Torque | Maximum Range | ±5% | 1 | 1%2. |
| *Flight Control Hydraulic Pressure* | | | | |
| Primary (Discrete) | High/Low | | 1. | |
| Secondary—if applicable (Discrete). | High/Low | | 1. | |
| Radio Transmitter Keying (Discrete). | On/Off | | 1. | |
| Autopilot Engaged (Discrete). | Engaged or Disengaged | | 1. | |
| SAS Status-Engaged (Discrete). | Engaged or Disengaged | | 1. | |
| SAS Fault Status (Discrete). | Fault/OK | | 1. | |
| *Flight Controls* | | | | |
| Collective [4] | Full range | ±3% | 2 | 1%2. |
| Pedal Position [4] | Full range | ±3% | 2 | 1%2. |
| Lat. Cyclic [4] | Full range | ±3% | 2 | 1%2. |
| Long. Cyclic [4] | Full range | ±3% | 2 | 1%2. |
| Controllable Stabilator Position [4]. | Full range | ±3% | 2 | 1%2. |

[1] When data sources are aircraft instruments (except altimeters) of acceptable quality to fly the aircraft the recording system excluding these sensors (but including all other characteristics of the recording system) shall contribute no more than half of the values in this column.
[2] Per cent of full range.
[3] This column applies to aircraft manufactured after October 11, 1991.
[4] For all aircraft manufactured on or after April 7, 2010, the sampling interval per second is 4.

[Doc. No. 18334, 54 FR 34328, Aug. 18, 1989; 54 FR 41211, Oct. 5, 1989; 54 FR 53036, Dec. 26, 1989; Amdt. 91–300, 73 FR 12565, Mar. 7, 2008; 73 FR 15280, Mar. 21, 2008]

## APPENDIX G TO PART 91—OPERATIONS IN REDUCED VERTICAL SEPARATION MINIMUM (RVSM) AIRSPACE

### *Section 1. Definitions*

*Reduced Vertical Separation Minimum (RVSM) Airspace.* Within RVSM airspace, air traffic control (ATC) separates aircraft by a minimum of 1,000 feet vertically between flight level (FL) 290 and FL 410 inclusive. RVSM airspace is special qualification airspace; the operator and the aircraft used by the operator must be approved by the Administrator. Air-traffic control notifies operators of RVSM by providing route planning information. Section 8 of this appendix identifies airspace where RVSM may be applied.

*RVSM Group Aircraft.* Aircraft within a group of aircraft, approved as a group by the Administrator, in which each of the aircraft satisfy each of the following:

(a) The aircraft have been manufactured to the same design, and have been approved under the same type certificate, amended type certificate, or supplemental type certificate.

(b) The static system of each aircraft is installed in a manner and position that is the same as those of the other aircraft in the group. The same static source error correction is incorporated in each aircraft of the group.

(c) The avionics units installed in each aircraft to meet the minimum RVSM equipment requirements of this appendix are:

(1) Manufactured to the same manufacturer specification and have the same part number; or

(2) Of a different manufacturer or part number, if the applicant demonstrates that the equipment provides equivalent system performance.

*RVSM Nongroup Aircraft*. An aircraft that is approved for RVSM operations as an individual aircraft.

*RVSM Flight envelope*. An RVSM flight envelope includes the range of Mach number, weight divided by atmospheric pressure ratio, and altitudes over which an aircraft is approved to be operated in cruising flight within RVSM airspace. RVSM flight envelopes are defined as follows:

(a) The *full RVSM flight envelope* is bounded as follows:

(1) The altitude flight envelope extends from FL 290 upward to the lowest altitude of the following:

(i) FL 410 (the RVSM altitude limit);

(ii) The maximum certificated altitude for the aircraft; or

(iii) The altitude limited by cruise thrust, buffet, or other flight limitations.

(2) The airspeed flight envelope extends:

(i) From the airspeed of the slats/flaps-up maximum endurance (holding) airspeed, or the maneuvering airspeed, whichever is lower;

(ii) To the maximum operating airspeed ($V_{mo}/M_{mo}$), or airspeed limited by cruise thrust buffet, or other flight limitations, whichever is lower.

(3) All permissible gross weights within the flight envelopes defined in paragraphs (1) and (2) of this definition.

(b) The *basic RVSM flight envelope* is the same as the full RVSM flight envelope except that the airspeed flight envelope extends:

(1) From the airspeed of the slats/flaps-up maximum endurance (holding) airspeed, or the maneuver airspeed, whichever is lower;

(2) To the upper Mach/airspeed boundary defined for the full RVSM flight envelope, or a specified lower value not less than the long-range cruise Mach number plus .04 Mach, unless further limited by available cruise thrust, buffet, or other flight limitations.

*Section 2. Aircraft Approval*

(a) An operator may be authorized to conduct RVSM operations if the Administrator finds that its aircraft comply with this section.

(b) The applicant for authorization shall submit the appropriate data package for aircraft approval. The package must consist of at least the following:

(1) An identification of the RVSM aircraft group or the nongroup aircraft;

(2) A definition of the RVSM flight envelopes applicable to the subject aircraft;

(3) Documentation that establishes compliance with the applicable RVSM aircraft requirements of this section; and

(4) The conformity tests used to ensure that aircraft approved with the data package meet the RVSM aircraft requirements.

(c) *Altitude-keeping equipment: All aircraft*. To approve an aircraft group or a nongroup aircraft, the Administrator must find that the aircraft meets the following requirements:

(1) The aircraft must be equipped with two operational independent altitude measurement systems.

(2) The aircraft must be equipped with at least one automatic altitude control system that controls the aircraft altitude—

(i) Within a tolerance band of ±65 feet about an acquired altitude when the aircraft is operated in straight and level flight under nonturbulent, nongust conditions; or

(ii) Within a tolerance band of ±130 feet under nonturbulent, nongust conditions for aircraft for which application for type certification occurred on or before April 9, 1997 that are equipped with an automatic altitude control system with flight management/performance system inputs.

(3) The aircraft must be equipped with an altitude alert system that signals an alert when the altitude displayed to the flight crew deviates from the selected altitude by more than:

(i) ±300 feet for aircraft for which application for type certification was made on or before April 9, 1997; or

(ii) ±200 feet for aircraft for which application for type certification is made after April 9, 1997.

(d) *Altimetry system error containment: Group aircraft for which application for type certification was made on or before April 9, 1997*. To approve group aircraft for which application for type certification was made on or before April 9, 1997, the Administrator must find that the altimetry system error (ASE) is contained as follows:

(1) At the point in the basic RVSM flight envelope where mean ASE reaches its largest absolute value, the absolute value may not exceed 80 feet.

(2) At the point in the basic RVSM flight envelope where mean ASE plus three standard deviations reaches its largest absolute value, the absolute value may not exceed 200 feet.

(3) At the point in the full RVSM flight envelope where mean ASE reaches its largest absolute value, the absolute value may not exceed 120 feet.

(4) At the point in the full RVSM flight envelope where mean ASE plus three standard deviations reaches its largest absolute value, the absolute value may not exceed 245 feet.

(5) *Necessary operating restrictions*. If the applicant demonstrates that its aircraft otherwise comply with the ASE containment requirements, the Administrator may establish an operating restriction on that applicant's aircraft to restrict the aircraft from operating in areas of the basic RVSM flight envelope where the absolute value of mean ASE exceeds 80 feet, and/or the absolute

value of mean ASE plus three standard deviations exceeds 200 feet; or from operating in areas of the full RVSM flight envelope where the absolute value of the mean ASE exceeds 120 feet and/or the absolute value of the mean ASE plus three standard deviations exceeds 245 feet.

(e) *Altimetry system error containment: Group aircraft for which application for type certification is made after April 9, 1997.* To approve group aircraft for which application for type certification is made after April 9, 1997, the Administrator must find that the altimetry system error (ASE) is contained as follows:

(1) At the point in the full RVSM flight envelope where mean ASE reaches its largest absolute value, the absolute value may not exceed 80 feet.

(2) At the point in the full RVSM flight envelope where mean ASE plus three standard deviations reaches its largest absolute value, the absolute value may not exceed 200 feet.

(f) *Altimetry system error containment: Nongroup aircraft.* To approve a nongroup aircraft, the Administrator must find that the altimetry system error (ASE) is contained as follows:

(1) For each condition in the basic RVSM flight envelope, the largest combined absolute value for residual static source error plus the avionics error may not exceed 160 feet.

(2) For each condition in the full RVSM flight envelope, the largest combined absolute value for residual static source error plus the avionics error may not exceed 200 feet.

(g) Traffic Alert and Collision Avoidance System (TCAS) Compatibility With RVSM Operations: All aircraft. After March 31, 2002, unless otherwise authorized by the Administrator, if you operate an aircraft that is equipped with TCAS II in RVSM airspace, it must be a TCAS II that meets TSO C–119b (Version 7.0), or a later version.

(h) If the Administrator finds that the applicant's aircraft comply with this section, the Administrator notifies the applicant in writing.

*Section 3. Operator Authorization*

(a) Authority for an operator to conduct flight in airspace where RVSM is applied is issued in operations specifications, a Letter of Authorization, or management specifications issued under subpart K of this part, as appropriate. To issue an RVSM authorization, the Administrator must find that the operator's aircraft have been approved in accordance with Section 2 of this appendix and the operator complies with this section.

(b) An applicant for authorization to operate within RVSM airspace shall apply in a form and manner prescribed by the Administrator. The application must include the following:

(1) An approved RVSM maintenance program outlining procedures to maintain RVSM aircraft in accordance with the requirements of this appendix. Each program must contain the following:

(i) Periodic inspections, functional flight tests, and maintenance and inspection procedures, with acceptable maintenance practices, for ensuring continued compliance with the RVSM aircraft requirements.

(ii) A quality assurance program for ensuring continuing accuracy and reliability of test equipment used for testing aircraft to determine compliance with the RVSM aircraft requirements.

(iii) Procedures for returning noncompliant aircraft to service.

(2) For an applicant who operates under part 121 or 135 of this chapter or under subpart K of this part, initial and recurring pilot training requirements.

(3) Policies and procedures: An applicant who operates under part 121 or 135 of this chapter or under subpart K of this part must submit RVSM policies and procedures that will enable it to conduct RVSM operations safely.

(c) Validation and Demonstration. In a manner prescribed by the Administrator, the operator must provide evidence that:

(1) It is capable to operate and maintain each aircraft or aircraft group for which it applies for approval to operate in RVSM airspace; and

(2) Each pilot has an adequate knowledge of RVSM requirements, policies, and procedures.

*Section 4. RVSM Operations*

(a) Each person requesting a clearance to operate within RVSM airspace shall correctly annotate the flight plan filed with air traffic control with the status of the operator and aircraft with regard to RVSM approval. Each operator shall verify RVSM applicability for the flight planned route through the appropriate flight planning information sources.

(b) No person may show, on the flight plan filed with air traffic control, an operator or aircraft as approved for RVSM operations, or operate on a route or in an area where RVSM approval is required, unless:

(1) The operator is authorized by the Administrator to perform such operations; and

(2) The aircraft has been approved and complies with the requirements of Section 2 of this appendix.

*Section 5. Deviation Authority Approval*

The Administrator may authorize an aircraft operator to deviate from the requirements of §91.180 or §91.706 for a specific flight in RVSM airspace if that operator has not been approved in accordance with section 3 of this appendix if:

(a) The operator submits a request in a time and manner acceptable to the Administrator; and

(b) At the time of filing the flight plan for that flight, ATC determines that the aircraft may be provided appropriate separation and that the flight will not interfere with, or impose a burden on, the operations of operators who have been approved for RVSM operations in accordance with Section 3 of this appendix.

*Section 6. Reporting Altitude-Keeping Errors*

Each operator shall report to the Administrator each event in which the operator's aircraft has exhibited the following altitude-keeping performance:

(a) Total vertical error of 300 feet or more;

(b) Altimetry system error of 245 feet or more; or

(c) Assigned altitude deviation of 300 feet or more.

*Section 7. Removal or Amendment of Authority*

The Administrator may amend operations specifications or management specifications issued under subpart K of this part to revoke or restrict an RVSM authorization, or may revoke or restrict an RVSM letter of authorization, if the Administrator determines that the operator is not complying, or is unable to comply, with this appendix or subpart H of this part. Examples of reasons for amendment, revocation, ore restriction include, but are not limited to, an operator's:

(a) Committing one or more altitude-keeping errors in RVSM airspace;

(b) Failing to make an effective and timely response to identify and correct an altitude-keeping error; or

(c) Failing to report an altitude-keeping error.

*Section 8. Airspace Designation*

(a) *RVSM in the North Atlantic.* (1) RVSM may be applied in the NAT in the following ICAO Flight Information Regions (FIRs): New York Oceanic, Gander Oceanic, Sondrestrom FIR, Reykjavik Oceanic, Shanwick Oceanic, and Santa Maria Oceanic.

(2) RVSM may be effective in the Minimum Navigation Performance Specification (MNPS) airspace within the NAT. The MNPS airspace within the NAT is defined by the volume of airspace between FL 285 and FL 420 (inclusive) extending between latitude 27 degrees north and the North Pole, bounded in the east by the eastern boundaries of control areas Santa Maria Oceanic, Shanwick Oceanic, and Reykjavik Oceanic and in the west by the western boundaries of control areas Reykjavik Oceanic, Gander Oceanic, and New York Oceanic, excluding the areas west of 60 degrees west and south of 38 degrees 30 minutes north.

(b) *RVSM in the Pacific.* (1) RVSM may be applied in the Pacific in the following ICAO Flight Information Regions (FIRs): Anchorage Arctic, Anchorage Continental, Anchorage Oceanic, Auckland Oceanic, Brisbane, Edmonton, Honiara, Los Angeles, Melbourne, Nadi, Naha, Nauru, New Zealand, Oakland, Oakland Oceanic, Port Moresby, Seattle, Tahiti, Tokyo, Ujung Pandang and Vancouver.

(c) *RVSM in the West Atlantic Route System (WATRS).* RVSM may be applied in the New York FIR portion of the West Atlantic Route System (WATRS). The area is defined as beginning at a point 38°30′ N/60°00′W direct to 38°30′N/69°15′ W direct to 38°20′ N/69°57′ W direct to 37°31′ N/71°41′ W direct to 37°13′ N/72°40′ W direct to 35°05′ N/72°40′ W direct to 34°54′ N/72°57′ W direct to 34°29′ N/73°34′ W direct to 34°33′ N/73°41′ W direct to 34°19′ N/74°02′ W direct to 34°14′ N/73°57′ W direct to 32°12′ N/76°49′ W direct to 32°20′ N/77°00′ W direct to 28°08′ N/77°00′ W direct to 27°50′ N/76°32′ W direct to 27°50′ N/74°50′ W direct to 25°00′ N/73°21′ W direct to 25°00′05′ N/69°13′06′ W direct to 25°00′ N/69°07′ W direct to 23°30′ N/68°40′ W direct to 23°30′ N/60°00′ W to the point of beginning.

(d) *RVSM in the United States.* RVSM may be applied in the airspace of the 48 contiguous states, District of Columbia, and Alaska, including that airspace overlying the waters within 12 nautical miles of the coast.

(e) *RVSM in the gulf of Mexico.* RVSM may be applied in the Gulf of Mexico in the following areas: Gulf of Mexico High Offshore Airspace, Houston Oceanic ICAO FIR and Miami Oceanic ICAO FIR.

(f) *RVSM in Atlantic High Offshore Airspace and the San Juan FIR.* RVSM may be applied in Atlantic High Offshore Airspace and in the San Juan ICAO FIR.

[Doc. No. 28870, 62 FR 17487, Apr. 9, 1997, as amended by Amdt. 91–261, 65 FR 5942, Feb. 7, 2000; Amdt. 91–271, 66 FR 63895, Dec. 10, 2001; Amdt. 91–274, 68 FR 54584, Sept. 17, 2003; Amdt. 91–276, 68 FR 70133, Dec. 17, 2003]

# PART 93—SPECIAL AIR TRAFFIC RULES

SPECIAL FEDERAL AVIATION REGULATION NO. 60 [NOTE]
SPECIAL FEDERAL AVIATION REGULATION NO. 105

## Subpart A—General

Sec.
93.1 Applicability.

## Subpart B—Congestion and Delay Reduction at Chicago O'Hare International Airport

93.21 Applicability.
93.22 Definitions.