

**§ 135.153**

**14 CFR Ch. I (1–1–23 Edition)**

(70) Yaw or sideslip angle (when an information source is installed);

(71) Engine bleed valve position (when an information source is installed);

(72) De-icing or anti-icing system selection (when an information source is installed);

(73) Computed center of gravity (when an information source is installed);

(74) AC electrical bus status;

(75) DC electrical bus status;

(76) APU bleed valve position (when an information source is installed);

(77) Hydraulic pressure (each system);

(78) Loss of cabin pressure;

(79) Computer failure;

(80) Heads-up display (when an information source is installed);

(81) Para-visual display (when an information source is installed);

(82) Cockpit trim control input position—pitch;

(83) Cockpit trim control input position—roll;

(84) Cockpit trim control input position—yaw;

(85) Trailing edge flap and cockpit flap control position;

(86) Leading edge flap and cockpit flap control position;

(87) Ground spoiler position and speed brake selection; and

(88) All cockpit flight control input forces (control wheel, control column, rudder pedal).

(i) For all turbine-engine powered airplanes with a seating configuration, excluding any required crewmember seat, of 10 to 30 passenger seats, manufactured after August 18, 2000—

(1) The parameters listed in paragraphs (h)(1) through (h)(57) of this section must be recorded within the ranges, accuracies, resolutions, and recording intervals specified in Appendix F of this part.

(2) Commensurate with the capacity of the recording system, all additional parameters for which information sources are installed and which are connected to the recording system must be recorded within the ranges, accuracies, resolutions, and sampling intervals specified in Appendix F of this part.

(j) For all turbine-engine-powered airplanes with a seating configuration, excluding any required crewmember seat, of 10 to 30 passenger seats, that are manufactured after August 19, 2002 the parameters listed in paragraph (a)(1) through (a)(88) of this section must be recorded within the ranges, accuracies, resolutions, and recording intervals specified in Appendix F of this part.

(k) For aircraft manufactured before August 18, 1997, the following aircraft types need not comply with this section: Bell 212, Bell 214ST, Bell 412, Bell 412SP, Boeing Chinook (BV-234), Boeing/Kawasaki Vertol 107 (BV/KV-107-II), deHavilland DHC-6, Eurocopter Puma 330J, Sikorsky 58, Sikorsky 61N, Sikorsky 76A.

(l) By April 7, 2012, all aircraft manufactured before April 7, 2010, must also meet the requirements in § 23.1459(a)(7), § 25.1459(a)(8), § 27.1459(e), or § 29.1459(e) of this chapter, as applicable.

(m) All aircraft manufactured on or after April 7, 2010, must have a flight data recorder installed that also—

(1) Meets the requirements of § 23.1459(a)(3), (a)(6), and (a)(7), § 25.1459(a)(3), (a)(7), and (a)(8), § 27.1459(a)(3), (a)(6), and (e), or § 29.1459(a)(3), (a)(6), and (e) of this chapter, as applicable; and

(2) Retains the 25 hours of recorded information required in paragraph (d) of this section using a recorder that meets the standards of TSO-C124a, or later revision.

[Doc. No. 25530, 53 FR 26151, July 11, 1988, as amended by Amdt. 135-69, 62 FR 38396, July 17, 1997; 62 FR 48135, Sept. 12, 1997; Amdt. 135-89, 68 FR 42939, July 18, 2003; Amdt. 135-113, 73 FR 12570, Mar. 7, 2008; Amdt. 135-113, 74 FR 32801, July 9, 2009]

**§ 135.153 [Reserved]**

**§ 135.154 Terrain awareness and warning system.**

(a) *Airplanes manufactured after March 29, 2002:*

(1) No person may operate a turbine-powered airplane configured with 10 or more passenger seats, excluding any pilot seat, unless that airplane is equipped with an approved terrain awareness and warning system that meets the requirements for Class A equipment in Technical Standard Order

(TSO)-C151. The airplane must also include an approved terrain situational awareness display.

(2) No person may operate a turbine-powered airplane configured with 6 to 9 passenger seats, excluding any pilot seat, unless that airplane is equipped with an approved terrain awareness and warning system that meets as a minimum the requirements for Class B equipment in Technical Standard Order (TSO)-C151.

(b) *Airplanes manufactured on or before March 29, 2002:*

(1) No person may operate a turbine-powered airplane configured with 10 or more passenger seats, excluding any pilot seat, after March 29, 2005, unless that airplane is equipped with an approved terrain awareness and warning system that meets the requirements for Class A equipment in Technical Standard Order (TSO)-C151. The airplane must also include an approved terrain situational awareness display.

(2) No person may operate a turbine-powered airplane configured with 6 to 9 passenger seats, excluding any pilot seat, after March 29, 2005, unless that airplane is equipped with an approved terrain awareness and warning system that meets as a minimum the requirements for Class B equipment in Technical Standard Order (TSO)-C151.

(Approved by the Office of Management and Budget under control number 2120-0631)

(c) *Airplane Flight Manual.* The Airplane Flight Manual shall contain appropriate procedures for—

(1) The use of the terrain awareness and warning system; and

(2) Proper flight crew reaction in response to the terrain awareness and warning system audio and visual warnings.

[Doc. No. 29312, 65 FR 16755, Mar. 29, 2000]

**§ 135.155 Fire extinguishers: Passenger-carrying aircraft.**

No person may operate an aircraft carrying passengers unless it is equipped with hand fire extinguishers of an approved type for use in crew and passenger compartments as follows—

(a) The type and quantity of extinguishing agent must be suitable for the kinds of fires likely to occur;

(b) At least one hand fire extinguisher must be provided and conveniently located on the flight deck for use by the flight crew; and

(c) At least one hand fire extinguisher must be conveniently located in the passenger compartment of each aircraft having a passenger seating configuration, excluding any pilot seat, of at least 10 seats but less than 31 seats.

**§ 135.156 Flight data recorders: filtered data.**

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

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

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

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

(b) An original sensor signal for any flight recorder parameter required to be recorded under § 135.152 may be filtered only if the recorded signal value continues to meet the requirements of Appendix D or F of this part, as applicable.

(c) For a parameter described in § 135.152(h)(12) through (17), (42), or (88), or the corresponding parameter in Appendix D of this part, if the recorded signal value is filtered and does not meet the requirements of Appendix D or F of this part, as applicable, the certificate holder must:

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

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

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

(ii) The certificate holder maintains documentation of the procedure required to reconstruct the original sensor signal value. This documentation is