

## § 25.1587

## 14 CFR Ch. I (1–1–11 Edition)

is necessary for safety must be furnished, together with instructions for placing the fuel system in a configuration used to show compliance with that section.

(d) The buffet onset envelopes, determined under § 25.251 must be furnished. The buffet onset envelopes presented may reflect the center of gravity at which the airplane is normally loaded during cruise if corrections for the effect of different center of gravity locations are furnished.

(e) Information must be furnished that indicates that when the fuel quantity indicator reads “zero” in level flight, any fuel remaining in the fuel tank cannot be used safely in flight.

(f) Information on the total quantity of usable fuel for each fuel tank must be furnished.

[Doc. No. 2000–8511, 66 FR 34024, June 26, 2001]

### § 25.1587 Performance information.

(a) Each Airplane Flight Manual must contain information to permit conversion of the indicated temperature to free air temperature if other than a free air temperature indicator is used to comply with the requirements of § 25.1303(a)(1).

(b) Each Airplane Flight Manual must contain the performance information computed under the applicable provisions of this part (including §§ 25.115, 25.123, and 25.125 for the weights, altitudes, temperatures, wind components, and runway gradients, as applicable) within the operational limits of the airplane, and must contain the following:

(1) In each case, the conditions of power, configuration, and speeds, and the procedures for handling the airplane and any system having a significant effect on the performance information.

(2)  $V_{SR}$  determined in accordance with § 25.103.

(3) The following performance information (determined by extrapolation and computed for the range of weights between the maximum landing weight and the maximum takeoff weight):

(i) Climb in the landing configuration.

(ii) Climb in the approach configuration.

(iii) Landing distance.

(4) Procedures established under § 25.101(f) and (g) that are related to the limitations and information required by § 25.1533 and by this paragraph (b) in the form of guidance material, including any relevant limitations or information.

(5) An explanation of significant or unusual flight or ground handling characteristics of the airplane.

(6) Corrections to indicated values of airspeed, altitude, and outside air temperature.

(7) An explanation of operational landing runway length factors included in the presentation of the landing distance, if appropriate.

[Doc. No. 2000–8511, 66 FR 34024, June 26, 2001, as amended by Amdt. 25–108, 67 FR 70828, Nov. 26, 2002]

### Subpart H—Electrical Wiring Interconnection Systems (EWIS)

SOURCE: Docket No. FAA–2004–18379, 72 FR 63406, Nov. 8, 2007, unless otherwise noted.

### § 25.1701 Definition.

(a) As used in this chapter, electrical wiring interconnection system (EWIS) means any wire, wiring device, or combination of these, including termination devices, installed in any area of the airplane for the purpose of transmitting electrical energy, including data and signals, between two or more intended termination points. This includes:

(1) Wires and cables.

(2) Bus bars.

(3) The termination point on electrical devices, including those on relays, interrupters, switches, contactors, terminal blocks and circuit breakers, and other circuit protection devices.

(4) Connectors, including feed-through connectors.

(5) Connector accessories.

(6) Electrical grounding and bonding devices and their associated connections.

(7) Electrical splices.

(8) Materials used to provide additional protection for wires, including wire insulation, wire sleeving, and conduits that have electrical termination for the purpose of bonding.

(9) Shields or braids.

(10) Clamps and other devices used to route and support the wire bundle.

(11) Cable tie devices.

(12) Labels or other means of identification.

(13) Pressure seals.

(14) EWIS components inside shelves, panels, racks, junction boxes, distribution panels, and back-planes of equipment racks, including, but not limited to, circuit board back-planes, wire integration units, and external wiring of equipment.

(b) Except for the equipment indicated in paragraph (a)(14) of this section, EWIS components inside the following equipment, and the external connectors that are part of that equipment, are excluded from the definition in paragraph (a) of this section:

(1) Electrical equipment or avionics that are qualified to environmental conditions and testing procedures when those conditions and procedures are—

(i) Appropriate for the intended function and operating environment, and

(ii) Acceptable to the FAA.

(2) Portable electrical devices that are not part of the type design of the airplane. This includes personal entertainment devices and laptop computers.

(3) Fiber optics.

#### **§ 25.1703 Function and installation: EWIS.**

(a) Each EWIS component installed in any area of the aircraft must:

(1) Be of a kind and design appropriate to its intended function.

(2) Be installed according to limitations specified for the EWIS components.

(3) Perform the function for which it was intended without degrading the airworthiness of the airplane.

(4) Be designed and installed in a way that will minimize mechanical strain.

(b) Selection of wires must take into account known characteristics of the wire in relation to each installation and application to minimize the risk of wire damage, including any arc tracking phenomena.

(c) The design and installation of the main power cables (including generator cables) in the fuselage must allow for a reasonable degree of deformation and stretching without failure.

(d) EWIS components located in areas of known moisture accumulation must be protected to minimize any hazardous effects due to moisture.

#### **§ 25.1705 Systems and functions: EWIS.**

(a) EWIS associated with any system required for type certification or by operating rules must be considered an integral part of that system and must be considered in showing compliance with the applicable requirements for that system.

(b) For systems to which the following rules apply, the components of EWIS associated with those systems must be considered an integral part of that system or systems and must be considered in showing compliance with the applicable requirements for that system.

(1) § 25.773(b)(2) Pilot compartment view.

(2) § 25.981 Fuel tank ignition prevention.

(3) § 25.1165 Engine ignition systems.

(4) § 25.1310 Power source capacity and distribution.

(5) § 25.1316 System lightning protection.

(6) § 25.1331(a)(2) Instruments using a power supply.

(7) § 25.1351 General.

(8) § 25.1355 Distribution system.

(9) § 25.1360 Precautions against injury.

(10) § 25.1362 Electrical supplies for emergency conditions.

(11) § 25.1365 Electrical appliances, motors, and transformers.

(12) § 25.1431(c) and (d) Electronic equipment.

#### **§ 25.1707 System separation: EWIS.**

(a) Each EWIS must be designed and installed with adequate physical separation from other EWIS and airplane systems so that an EWIS component failure will not create a hazardous condition. Unless otherwise stated, for the purposes of this section, adequate physical separation must be achieved by separation distance or by a barrier that provides protection equivalent to that separation distance.