

within or through each designated fire zone. This means must—

(1) Not restrict flow or limit operation of any remaining powerplant or auxiliary power unit, or equipment necessary for safety;

(2) Prevent inadvertent operation; and

(3) Be located outside the fire zone unless an equal degree of safety is provided with a means inside the fire zone.

(e) A means to ensure the prompt detection of fire must be provided for each designated fire zone—

(1) On a multiengine airplane where detection will mitigate likely hazards to the airplane; or

(2) That contains a fire extinguisher.

(f) A means to extinguish fire within a fire zone, except a combustion heater fire zone, must be provided for—

(1) Any fire zone located outside the pilot's view;

(2) Any fire zone embedded within the fuselage, which must also include a redundant means to extinguish fire; and

(3) Any fire zone on a level 4 airplane.

Subpart F—Equipment

§ 23.2500 Airplane level systems requirements.

This section applies generally to installed equipment and systems unless a section of this part imposes requirements for a specific piece of equipment, system, or systems.

(a) The equipment and systems required for an airplane to operate safely in the kinds of operations for which certification is requested (Day VFR, Night VFR, IFR) must be designed and installed to—

(1) Meet the level of safety applicable to the certification and performance level of the airplane; and

(2) Perform their intended function throughout the operating and environmental limits for which the airplane is certificated.

(b) The systems and equipment not covered by paragraph (a), considered separately and in relation to other systems, must be designed and installed so their operation does not have an adverse effect on the airplane or its occupants.

§ 23.2505 Function and installation.

When installed, each item of equipment must function as intended.

§ 23.2510 Equipment, systems, and installations.

For any airplane system or equipment whose failure or abnormal operation has not been specifically addressed by another requirement in this part, the applicant must design and install each system and equipment, such that there is a logical and acceptable inverse relationship between the average probability and the severity of failure conditions to the extent that:

(a) Each catastrophic failure condition is extremely improbable;

(b) Each hazardous failure condition is extremely remote; and

(c) Each major failure condition is remote.

§ 23.2515 Electrical and electronic system lightning protection.

An airplane approved for IFR operations must meet the following requirements, unless an applicant shows that exposure to lightning is unlikely:

(a) Each electrical or electronic system that performs a function, the failure of which would prevent the continued safe flight and landing of the airplane, must be designed and installed such that—

(1) The function at the airplane level is not adversely affected during and after the time the airplane is exposed to lightning; and

(2) The system recovers normal operation of that function in a timely manner after the airplane is exposed to lightning unless the system's recovery conflicts with other operational or functional requirements of the system.

(b) Each electrical and electronic system that performs a function, the failure of which would significantly reduce the capability of the airplane or the ability of the flightcrew to respond to an adverse operating condition, must be designed and installed such that the system recovers normal operation of that function in a timely manner after the airplane is exposed to lightning.