1984, unless that engine's ice accumulation service history has resulted in an unsafe condition; or

(iv) Be shown to have an ice accumulation service history in similar installation locations which has not resulted in any unsafe conditions.

(b) *Engine isolation.* The powerplants must be arranged and isolated from each other to allow operation, in at least one configuration, so that the failure or malfunction of any engine, or of any system that can affect the engine, will not—

(1) Prevent the continued safe operation of the remaining engines; or

(2) Require immediate action by any crewmember for continued safe operation.

(c) *Control of engine rotation.* There must be means for stopping the rotation of any engine individually in flight, except that, for turbine engine installations, the means for stopping the rotation of any engine need be provided only where continued rotation could jeopardize the safety of the airplane. Each component of the stopping system on the engine side of the firewall that might be exposed to fire must be at least fire-resistant. If hydraulic propeller feathering systems are used for this purpose, the feathering lines must be at least fire resistant under the operating conditions that may be expected to exist during feathering.

(d) *Turbine engine installations.* For turbine engine installations—

(1) Design precautions must be taken to minimize the hazards to the airplane in the event of an engine rotor failure or of a fire originating within the engine which burns through the engine case.

(2) The powerplant systems associated with engine control devices, systems, and instrumentation, must be designed to give reasonable assurance that those engine operating limitations that adversely affect turbine rotor structural integrity will not be exceeded in service.

(e) *Restart capability.* (1) Means to restart any engine in flight must be provided.

(2) An altitude and airspeed envelope must be established for in-flight engine restarting, and each engine must have a restart capability within that envelope.

(3) For turbine engine powered airplanes, if the minimum windmilling speed of the engines, following the inflight shutdown of all engines, is insufficient to provide the necessary electrical power for engine ignition, a power source independent of the engine-driven electrical power generating system must be provided to permit inflight engine ignition for restarting.

(f) *Auxiliary Power Unit.* Each auxiliary power unit must be approved or meet the requirements of the category for its intended use.

[Doc. No. 5066, 29 FR 18291, Dec. 24, 1964, as amended by Amdt. 25–23, 35 FR 5676, Apr. 8, 1970; Amdt. 25–40, 42 FR 15042, Mar. 17, 1977; Amdt. 25–57, 49 FR 6848, Feb. 23, 1984; Amdt. 25–72, 55 FR 29784, July 20, 1990; Amdt. 25–73, 55 FR 32861, Aug. 10, 1990; Amdt. 25–94, 63 FR 8848, Feb. 23, 1998; Amdt. 25–95, 63 FR 14798, Mar. 26, 1998; Amdt. 25–100, 65 FR 55854, Sept. 14, 2000; Amdt. 25–140, 79 FR 65525, Nov. 4, 2014]

§ 25.904 Automatic takeoff thrust control system (ATTCS).

Each applicant seeking approval for installation of an engine power control system that automatically resets the power or thrust on the operating engine(s) when any engine fails during the takeoff must comply with the requirements of appendix I of this part.

[Amdt. 25–62, 52 FR 43156, Nov. 9, 1987]

§ 25.905 Propellers.

(a) Each propeller must have a type certificate.

(b) Engine power and propeller shaft rotational speed may not exceed the limits for which the propeller is certificated.

(c) The propeller blade pitch control system must meet the requirements of §§ 35.21, 35.23, 35.42 and 35.43 of this chapter.

(d) Design precautions must be taken to minimize the hazards to the airplane in the event a propeller blade fails or is released by a hub failure. The hazards which must be considered include damage to structure and vital systems due to impact of a failed or released blade