250–C40 turboshaft engine meets the requirements of the applicable regulations in effect on the date of the application. The applicable regulations for this engine is FAR part 33, effective February 1, 1965, as amended by Amendments 33–1 through 33–4.

The Administrator finds that the applicable airworthiness regulations in 33, as amended, do not contain adequate or appropriate safety standards for the AE Model 250–C40 turboshaft engine because of the new and unique engine ratings. Therefore, the Administrator proposes special conditions under the provisions of section 21.16 to establish a level of safety equivalent to that established in the regulations.

Special conditions, as appropriate, are issued in accordance with section 11.49 of the FAR after public notice and opportunity for comment, as required by sections 11.28 and 11.29(b), and become part of the type certification basis in accordance with section 21.17(a)(2).

Conclusion

This action affects only certain novel or unusual design features on one model engine. It is not a rule of general applicability and affects only the manufacturer who applied to the FAA for approval of these features on the engine.

List of Subjects in 14 CFR Part 33

Air transportation, Aircraft, Aviation safety, Safety.

The authority citations for these special conditions is as follows:

Authority: 49 U.S.C. App. 1354(a), 1421, 1423; 49 U.S.C. 106(g).

The Proposed Special Conditions

Accordingly, the Federal Aviation Administration (FAA) proposes the following special conditions as part of the type certification basis for the Allison Engine Company (AE) Model 250–C40 turboshaft engine:

§ 33.7 Engine ratings and operating limitations.

In addition to the requirements of section 33.7, the following ratings are defined as:

(a) Rated 30-Second One-Engine-Inoperative (OEI) Power: The approved brake horsepower developed statically in standard atmosphere at sea level, or at a specified altitude and temperature, for continued one-flight operation after the failure of one engine in multi-engine rotorcraft, limited to three periods of use, no greater than 30 seconds each, at rotor shaft rotation speed and gas temperature established for this rating by part 33 or this special condition.

(b) Rated 2-Minute OEI Power: The approved brake horsepower, developed statically in standard atmosphere at sea level, or at a specified altitude and temperature, for continued one-flight operation, after failure of one engine in multi-engine rotorcraft, limited to three periods of use, of up to two minutes each, at rotor shaft rotation speed and gas temperature established for this rating by part 33 or this special condition.

§ 33.4 Instructions for continued airworthiness.

In addition to the requirements of section 33.4, the mandatory inspection and maintenance actions required following the use of the 30-Second or 2-Minute OEI rating, must be included in the airworthiness limitations section of the appropriate engine manuals.

§ 33.27 Turbine, compressor, fan, and turbo-supercharger rotors.

In addition to the requirements of section 33.27, the following additional test requirements must be considered under 33.27(c)(2). For 30-Second and 2-Minute OEI conditions, test for a period of 5 minutes—

(a) At 100 percent of the highest speed that would result from failure of the most critical component of each turbine and compressor or system in a representative installation of the engine when operating at 30-Second and 2-Minute OEI rating conditions.

(b) The test speed must take into account minimum material properties, maximum operating temperature, and the most adverse dimensional tolerances.

(c) Following the test, rotor growth and distress beyond dimensional limits for an overspeed condition is permitted for 30-Second and 2-Minute OEI rating only, provided the structural integrity of the rotor is maintained, as shown by a procedure acceptable to the Administrator.

§ 33.29 Instrument connection.

In addition to the requirements of section 33.29, the engine must provide for a means:

(a) To indicate when the engine is at either 30-Second or 2-Minute OEI-rated power level; and

(b) To determine the elapsed time of operation at 2-Minute OEI and 30-Second OEI rated power levels.

§ 33.67 Fuel system.

In addition to the requirements of section 33.67, the engine must provide for a means for automatic availability and automatic control of the 30-second OEI power; and engine test runs must be performed to demonstrate automatic switching to a 30-Second OEI rating condition.

§ 33.83 Vibration test.

In addition to the requirements of section 33.83, the following additional test requirements must be considered under 33.83(a):

For 30-Second and 2-Minute OEI rating conditions, the vibration survey shall cover the ranges of power, and both the physical and corrected rotational speeds for each rotor system, corresponding to operations throughout the range of ambient conditions in the declared flight envelope, from the minimum rotor speed up to 103 percent of the maximum rotor speed permitted for 2-Minute OEI rating, and up to 100 percent of the maximum rotor speed permitted for 30-Second OEI rating speed. If there is any indication of a stress peak arising at high physical or corrected rotational speeds, the surveys shall be extended in order to quantify the phenomenon and to ensure compliance with the requirements of section 33.63.

§ 33.85 Calibration tests.

In addition to the requirements of section 33.85, tests performed at the 30-Second and 2-Minute OEI ratings, during the applicable endurance test prescribed in section 33.87, may be used to show compliance with the requirements of section 33.85.

§ 33.87 Endurance test.

In addition to the requirements of section 33.87, an engine test must be conducted four times, using the following test sequence, for a total of not less than 120 minutes:

(a) Takeoff Power—three minutes at rated takeoff power.

(b) 30-Second OEI power—thirty seconds at rated 30-Second OEI power.

(c) 2-Minute OEI power—two minutes at rated 2-Minute OEI power.

(d) 30-Minute OEI, Continuous OEI, or Maximum Continuous power—five minutes at rated 30-Minute OEI power, or rated Continuous OEI power, or rated Maximum Continuous power, whichever is greatest, except that during the first test sequence this period shall be 65 minutes.

(e) 50 percent takeoff power—one minute at 50 percent takeoff power.

(f) 30-second OEI power—thirty seconds at rated 30-Second OEI power.

(g) 2-minute OEI power—two minutes at rated 2-Minute OEI power.

(h) Idle power—one minute at Idle power.