[4910-13]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 33

[Docket No. FAA-2012-1085; Notice No. 33-12-02-SC1]

Special Conditions: Turbomeca Ardiden 3K Turboshaft Engine.

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed special conditions.

SUMMARY: This action proposes special conditions for the Turbomeca Ardiden 3K model engines. This engine model will have a novel or unusual design feature which is a 30-minute all engines operating (AEO) power rating for hovering at increased power (HIP). This rating is primarily intended for high-power hovering operations that are normal mission functions. The applicable airworthiness regulations do not contain adequate or appropriate safety standards for this design feature. These proposed special conditions contain the additional safety standards that the FAA considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

DATES: Send your comments on or before [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: Send comments identified by docket number FAA-2012-1085 using any of the following methods:

• Federal eRegulations Portal: Go to http://www.regulations.gov and follow the online instructions for sending your comments electronically.

• Mail: Send comments to Docket Operations, M-30, U.S. Department of Transportation (DOT), 1200 New Jersey Avenue, SE., Room W12-140, West Building Ground Floor, Washington, D.C., 20590-0001.

• Hand Delivery of Courier: Take comments to Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, S.E., Washington, D.C., between 8 a.m., and 5 p.m., Monday through Friday, except Federal holidays.

• Fax: Fax comments to Docket Operations at 202-493-2251.

Privacy: Docket Operations will post all comments it receives, without change, to http://regulations.gov, including any personal information the commenter provides. Using the search function of the docket web site, anyone can find and read the electronic form of all comments received into any FAA docket, including the name of the individual sending the comment (or signing the comment for an association, business, labor union, etc.). DOT's complete Privacy Act Statement can be found in the Federal Register published on April 11, 2000 (65 FR 19477-19478), as well as at http://DocketsInfo.dot.gov.

Docket: You may read background documents or comments received at http://www.regulations.gov at any time. Follow the online instructions for accessing the docket or go to the Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE., Washington, D.C., between 9 a.m., and 5 p.m., Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT: Tara Fitzgerald, ANE-111, Engine and Propeller Directorate, Aircraft Certification Service, 12 New England Executive Park, Burlington, Massachusetts 01803-5299; telephone (781) 238-7130; facsimile (781) 238-7199; email tara.fitzgerald@faa.gov. For legal questions concerning this proposed rule, contact Vincent Bennett, ANE-7 Engine and Propeller Directorate, Aircraft Certification Service, 12 New England Executive Park, Burlington, Massachusetts 01803-5299; telephone (781) 238-7044; facsimile (781) 238-7055; email vincent.bennett@faa.gov.

SUPPLEMENTARY INFORMATION:

Comments Invited

We invite interested people to take part in this rulemaking by sending written comments, data, or views to the docket. The most helpful comments reference a specific portion of the special conditions, explain the reason for any recommended change, and include supporting data.

We will consider all comments received in the docket on or before the closing date for comments. We will consider comments filed late if it is possible to do so without incurring expense or delay. We may change these special conditions based on the comments we receive.

Background

On September 15, 2010, Turbomeca S.A. (Turbomeca) applied for a type certificate for their new Ardiden 3K turboshaft engine. The Ardiden 3K engine is the first variant in the new Ardiden 3 series. This engine incorporates a two-stage centrifugal compressor that is driven by a single-stage high-pressure turbine. A two-stage power turbine drives the engine output shaft. The control system includes a dual-channel full-authority digital-electronic control.

The engine will incorporate a novel or unusual design feature, which is a 30-minute hovering at increased power (HIP) rating. The applicant requested this rating to support extended hover operations at high power.

A special condition is necessary to apply additional requirements for rating definition, instructions for continued airworthiness (ICA), instrumentation, and endurance testing because the applicable airworthiness standards do not contain adequate or appropriate airworthiness standards to address this design feature. The ICA requirement addresses the unknown nature of actual rating usage and associated engine deterioration. The applicant is expected to make an assessment of the expected usage, and publish ICAs and Airworthiness Limitations Section limits in accordance with those assumptions, such that engine deterioration is not excessive. The instrumentation requirement is to ensure that operators use this high-power rating within its limits, and that engine integrity is maintained. The endurance test requirement of 25 hours operation at 30-minutes HIP is similar to other special conditions recently issued. Because the Ardiden 3K model has a continuous one-engine inoperative (OEI) rating with limits equal to or higher than the proposed 30-minute HIP rating, the applicant may credit the test time performed at the continuous OEI rating toward the 25-hour requirement. However, test time spent at other rating elements of the test, such as takeoff or other OEI ratings (that are equal to or higher than HIP rating values), cannot be counted toward the 25 hours of required running.

These special conditions contain the additional airworthiness standards necessary to establish a level of safety equivalent to the level intended by the applicable standards of airworthiness in effect on the date of application.

Type Certification Basis

Under the provisions of 14 CFR 21.17 and 21.101(a), Turbomeca must show that the model Ardiden 3K turboshaft engine meets the provisions of the applicable regulations in effect on the date of application, or later amendment if so elected. Accordingly, the certification basis for the Ardiden model turboshaft engine is determined to be part 33, effective February 1, 1965, as amended by Amendments 33-1 through 33-31.

If the FAA finds that the applicable airworthiness regulations in part 33, as amended, do not contain adequate or appropriate safety standards for the Turbomeca model Ardiden 3K turboshaft engine, because of a novel or unusual design feature, special conditions are prescribed under the provisions of § 21.16.

The FAA issues special conditions, as defined by 14 CFR 11.19, under 14 CFR 11.38, which become part of the type certification basis as specified in § 21.17(a)(2).

Special conditions are initially applicable to the model for which they are issued. If the type certificate for that model is amended later to include another related model that incorporates the same or similar novel or unusual design feature, or if any other model already included on the same type certificate is modified to incorporate the same or similar novel or unusual design feature, the special conditions would also apply to the other model.

Novel or Unusual Design Features

The Turbomeca model Ardiden 3K turboshaft engine will incorporate a 30-minute HIP rating, for use up to 30 minutes at any time between take-off and landing. The 30 minute time limit applies to each instance the rating is used; however there is no limit to the number of times the rating can be used during any one flight, and there is no cumulative time limitation. Special conditions for a 30-minute HIP rating are proposed to address this novel and unusual design feature. The special conditions are discussed below.

Discussion

The Turbomeca model Ardiden 3K turboshaft engine is a free turbine turboshaft designed for a transport category twin-engine helicopter. The helicopter manufacturer anticipates that extended hovering maneuvers may require more than maximum continuous power for up to 30 minutes. Turbomeca has requested a 30-minute HIP rating for use up to 30 minutes at any time between the take-off and landing phases of a flight. Turbomeca has indicated that the number of times this rating can be accessed in one flight is not limited, and there is no cumulative time limitation.

Applicability

As discussed above, these special conditions are applicable to TM model Ardiden 3K turboshaft engines. If TM applies later for a change to the type certificate to include another closely related model incorporating the same novel or unusual design feature, these special conditions would apply to that model as well.

Conclusion

This action affects only certain novel or unusual design features on the Turbomeca Model Ardiden 3K turboshaft engine. It is not a rule of general

applicability, and it affects only Turbomeca, 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 citation for these special conditions continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701-44702, 44704.

The Proposed Special Conditions

Accordingly, the FAA proposes the following special conditions as part of the type certification basis for the Turbomeca model Ardiden 3K turboshaft engine.

1. PART 1 DEFINITIONS.

Unless otherwise approved by the Administrator and documented in the appropriate manuals and certification documents, the following definition applies to this special condition: "Rated 30-Minute Hover at Increased Power (HIP)," means the approved shaft horsepower developed under static conditions at the specified altitude and temperature, and within the operating limitations established under part 33, and limited in use to periods not exceeding 30 minutes.

2. PART 33 REQUIREMENTS.

(a) §§ 33.1 Applicability and 33.3 General. As applicable, all documentation, testing and analysis required to comply with the part 33 certification basis must account for the 30-minute HIP rating, limits and usage.

(b) § 33.4, Instructions for Continued Airworthiness (ICA). In addition to the requirements of § 33.4, the ICA must:

(1) Include instructions to ensure that in-service engine deterioration due to rated 30-minute HIP usage will not be excessive, meaning that all approved ratings, including One Engine Inoperative (OEI), are available (within associated limits and assumed usage) for each flight; and that deterioration will not exceed that assumed for declaring a Time Between Overhaul period.

(2) Validate the adequacy of the maintenance actions required under paragraph (b)(1) of this section.

(3) Include in the Airworthiness Limitations section, any mandatory inspections and serviceability limits related to the use of the 30-minute HIP rating.

(c) § 33.29, Instrument Connection. The engine must have a means or a provision for a means, which alerts the pilot when the 30-minute HIP rating time limit has expired.

(d) § 33.87, Endurance Test. In addition to the applicable requirements of §§ 33.87(a), 33.87(d) and 33.87(e) (for engines that combine 2.5 minute and continuous OEI ratings):

(1) The overall test run must include a minimum of 25 hours of operation at 30-minute HIP rating and limits, divided into periods of not less than 30 minutes but not more than 60 minutes, with alternate periods at maximum continuous power or less.

(2) Each § 33.87(d)(3) continuous OEI rating test period of 60 minutes duration run at power and limits equal to or higher than the 30-minute HIP

rating, may be credited toward this requirement. Note that the test time required for the takeoff or other OEI ratings may not be counted toward the 25 hours of testing required at the 30-minute HIP rating.

Issued in Burlington, Massachusetts on September 17, 2012.

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