



**[4910-13]**

**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 33**

**[Docket No. FAA-2017-1110; Special Conditions No. 33-021-SC]**

**Special Conditions: Light Helicopter Turbine Engine Company (LHTEC), CTS800-4AT; 30-minute All Engines Operating Power Rating.**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final special conditions; request for comments.

**SUMMARY:** These special conditions are issued for the Light Helicopter Turbine Engine Company (LHTEC), CTS800-4AT turboshaft engine model. This engine model will have a novel or unusual design feature associated with a 30-minute all engines operating (AEO) power rating. The applicable airworthiness regulations do not contain adequate or appropriate safety standards for this design feature. These special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

**DATES:** The effective date of these special conditions is *[Insert date 15 days after publication in the Federal Register]*. We must receive your comments by *[Insert Date 30 days after publication in the Federal Register]*.

**ADDRESSES:** Send comments identified by docket number FAA-2017-1110 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, DC, 20590-0001.
- Hand Delivery or Courier: Take comments to Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE, Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.
- Fax: Fax comments to Docket Operations at 202-493-2251.

*Privacy*: In accordance with 5 U.S.C 553(c), DOT solicits comments from the public to better inform its rulemaking process. DOT posts these comments, without edit, including any personal information the commenter provides, to [www.regulations.gov](http://www.regulations.gov), as described in the system of records notice (DOT/ALL-14 FDMS), which can be reviewed at [www.dot.gov/privacy](http://www.dot.gov/privacy).

*Docket*: Background documents or comments received may be read 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, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

**FOR FURTHER INFORMATION CONTACT:** Christopher Richards, AIR-6A2, Engine and Propeller Standards Branch, Aircraft Certification Service, 1200 District Avenue, Burlington, Massachusetts, 01803-5213; telephone (847) 361-0837; facsimile (781) 238-7199; e-mail [Christopher.J.Richards@faa.gov](mailto:Christopher.J.Richards@faa.gov).

**SUPPLEMENTARY INFORMATION:** The FAA has determined that notice of, and opportunity for prior public comment on, these special conditions is impracticable because these procedures would significantly delay issuance of the Type Certificate approval and thus, delivery of the affected engines.

In addition, the substance of these special conditions has been subjected to the notice and comment period in prior instances, and has been derived without substantive change from those previously issued. It is unlikely that prior public comment would result in a significant change from the substance contained herein. Therefore, because a delay would significantly affect the certification of the engine, which is imminent, the FAA has determined that prior public notice and comment are unnecessary and impracticable, and good cause exists for adopting these special conditions.

### **Comments Invited**

We invite interested people to take part in this rulemaking by sending written comments, data, or views. 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 we receive by the closing date for comments. We may change these special conditions based on the comments we receive.

### **Background**

On April 14, 2017, LHTEC applied for an amendment to Type Certificate No. TE2CH to include the new CTS800-4AT turboshaft engine model. The CTS800-4AT turboshaft engine model is a derivative model in the CTS800 turboshaft engine series. The CTS800-4AT is a free-turbine turboshaft engine and will incorporate a novel or unusual design feature, which is a 30-

minute AEO power rating. LHTEC has requested this rating to support helicopter search and rescue missions that require hover operations at high power.

### **Type Certification Basis**

Under the provisions of Title 14, Code of Federal Regulations (14 CFR) § 21.101, LHTEC must show that the CTS800-4AT turboshaft engine model meets the applicable provisions of the regulations incorporated by reference in Type Certificate No. TE2CH or the applicable regulations in effect on the date of application for the change, except for earlier amendments as agreed upon by the FAA. The regulations incorporated by reference in the type certificate are commonly referred to as the “original type certification basis.” The regulations incorporated by reference in TE2CH are as follows: 14 CFR part 33 dated June 3, 1964, as amended by Amendments 33-1 through 33-18 inclusive.

If the Administrator finds that the applicable airworthiness regulations do not contain adequate or appropriate safety standards for the LHTEC, CTS800-4AT turboshaft engine model because of a novel or unusual design feature, special conditions are prescribed under the provisions of § 21.16.

Special conditions are initially applicable to the engine model(s) for which they are issued. Should the type certificate for that engine model be amended later to include any other engine model(s) that incorporates the same novel or unusual design feature, or should any other engine model(s) already included on the same type certificate be modified to incorporate the same novel or unusual design feature, the special conditions would also apply to the other engine model(s) under § 21.101.

The FAA issues special conditions, as defined in 14 CFR § 11.19, in accordance with § 11.38, and they become part of the type certification basis under § 21.17 or § 21.101.

## **Novel or Unusual Design Features**

The CTS800-4AT turboshaft engine model will incorporate a novel or unusual design feature, which is a 30-minute AEO power rating. This rating will be used to support helicopter search and rescue missions that require hover operations at high power.

## **Discussion**

Under the provisions of 14 CFR § 21.17(a)(1) and 21.101(a), LHTEC must show that the CTS800-4AT turboshaft engine meets the provisions of the applicable regulations in effect on the date of application, unless otherwise specified by the FAA. The type certification basis for the derivative model CTS800-4AT turboshaft engine is 14 CFR part 33, Amendments 33-1 through 33-18 effective August 19, 1996, which does not contain adequate safety standards concerning a 30-minute AEO power rating. Therefore, these special conditions will add requirements to the rating definition, instructions for continued airworthiness (ICA), engine ratings and operating limitations, instrument connection, and endurance testing.

The 30-minute time limit applies to each instance the rating is used. In addition, 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. The ICA requirement is intended to address the unknown nature of the actual rating usage and associated engine deterioration. LHTEC will assess the expected usage and publish ICAs with airworthiness limitations section (ALS) limits in accordance with those assumptions, such that engine deterioration is not excessive. Because the CTS800-4AT engine has a continuous one engine inoperative (OEI) rating and limits equal to or higher than the 30-minute AEO power rating, the test time performed at the continuous OEI rating may be credited toward the 25-hour requirement. However, test time spent at other rating elements of the test, such as takeoff or other OEI ratings (that may be equal to or higher), may not be counted

toward the 25 hours of required running. Therefore, special conditions are issued under the provisions of 14 CFR §§ 11.19, 21.16, and 21.17(a)(2).

### **Applicability**

As discussed above, these special conditions are applicable to the CTS800-4AT turboshaft engine model. Should LHTEC apply at a later date for a change to the type certificate to include another model on the same type certificate incorporating the same novel or unusual design feature, the special conditions would apply to that model as well.

### **Conclusion**

This action affects only certain novel or unusual design features on the CTS800-4AT turboshaft engine. It is not a rule of general applicability and applies only to LHTEC, who requested FAA approval of this engine feature.

### **List of Subjects in 14 CFR Part 33**

Aircraft, Engines, Aviation Safety, Reporting and Recordkeeping requirements.

The authority citation for these special conditions is as follows:

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

### **The Special Conditions**

Accordingly, pursuant to the authority delegated to me by the Administrator, the following special conditions are issued as part of the type certification basis for LHTEC, CTS800-4AT turboshaft engine model.

In addition to the requirements of § 1.1, the following definition applies to this special condition: “Rated 30-minute all engines operating (AEO) power means the approved brake horsepower developed under static conditions at the specified altitude and temperature, and

within the operating limitations under part 33, and limited in use to periods not exceeding 30 minutes each.”

In addition to the airworthiness standards in 14 CFR part 33, the following special conditions apply:

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

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

(1) Include instructions to ensure that in-service engine deterioration due to the rated 30-minute AEO power usage will not exceed that assumed for establishing the engine maintenance program and all other approved ratings, including OEI, are available (within associated limits and assumed usage) for every flight.

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

(3) Include in the airworthiness limitations section any mandatory inspections and serviceability limits related to the use of the 30-minute AEO power rating.

(c) Section 33.7, Engine ratings and operating limitations. In addition to the ratings provided in § 33.7(a) and (c), a rated 30-minute AEO power and operating limitations are established relating to the following:

(1) Horsepower, torque, shaft speed (r.p.m), and gas temperature.

(2) The rated 30-minute AEO power and associated limitations must not exceed the rated takeoff power and associated limitations.

(d) Section 33.29, Instrument connection. If dependence is placed on instrumentation needed to monitor the rating's use, the applicant must make provision for the installation of that instrumentation, specify the provisions for instrumentation in the engine installation instructions, and declare them mandatory in the engine approval documentation.

(e) Section 33.87, Endurance test. In addition to the requirements of § 33.87(a) and (d), the overall test run must include a minimum of 25 hours of operation at rated 30-minute AEO power and limits, divided into periods of not less than 30 minutes, but not more than 60 minutes at rated 30-minute AEO power, and alternate periods at maximum continuous power or less.

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

Issued in Burlington, Massachusetts on December 15, 2017.

Robert J. Ganley  
Manager, Engine and Propeller Standards Branch  
Aircraft Certification Service  
[FR Doc. 2017-27774 Filed: 12/22/2017 8:45 am; Publication Date: 12/26/2017]