

DEPARTMENT OF TRANSPORTATION**Federal Aviation Administration****14 CFR Part 39**

[Docket No. 2000-NE-22-AD]

RIN 2120-AA64

Airworthiness Directives; General Electric Company (GE) CF34-1A, -3A, -3A1, -3A2, -3B, and -3B1 Turbofan Engines**AGENCY:** Federal Aviation Administration, DOT.**ACTION:** Notice of proposed rulemaking (NPRM).

SUMMARY: The FAA proposes to adopt a new airworthiness directive (AD) that applies to GE CF34-1 and -3 series turbofan engines with No. 5 bearing rotating air seal part number (P/N) 4019T60G01 installed. This proposal would require initial and repetitive checks of the magnetic chip detector indicators, which are located in the lubrication system for the engine bearings, and installation of an improved No. 5 bearing rotating air seal as a terminating action. This proposal is prompted by a report of the failure of a No. 5 bearing rotating air seal that led to a fire in the cavity of the low pressure turbine (LPT), overtemperature of the LPT turbine disk, and excessive turbine disk growth. The FAA is proposing this AD to prevent No.5 bearing rotating air seal failures and possible uncontained engine failures.

DATES: The FAA must receive comments on this proposal by March 29, 2001.

ADDRESSES: Submit comments in triplicate to the Federal Aviation Administration (FAA), New England Region, Office of the Regional Counsel, Attention: Rules Docket No. 2000-NE-22-AD, 12 New England Executive Park, Burlington, MA 01803-5299. Comments may also be sent via the Internet using the following address: "9-ane-adcomment@faa.gov". Comments sent via the Internet must contain the docket number in the subject line. Comments may be inspected at this location between 8:00 a.m. and 4:30 p.m., Monday through Friday, except Federal holidays. The service information referenced in the proposed rule may be obtained from GEAE Technical Publications, Attention N. Hanna MZ340M2, 1000 Western Avenue, Lynn, MA 01910; telephone: 781 594-2906; fax: 781 594-0600. This information may be examined at the FAA, New England Region, Office of the Regional Counsel, 12 New England Executive Park, Burlington, MA.

FOR FURTHER INFORMATION CONTACT:

Eugene Triozzi, Aerospace Engineer, Engine Certification Office, FAA, Engine and Propeller Directorate, 12 New England Executive Park, Burlington MA 01803-5299; telephone: 781 238-7148, fax: 781 238-7199.

SUPPLEMENTARY INFORMATION:**Comments Invited**

Interested persons are invited to participate in the making of the proposed rule by submitting such written data, views, or arguments as they may desire. Communications should identify the Rules Docket number and be submitted to the address specified above. All communications received on or before the closing date for comments, specified above, will be considered before we take action on the proposed rule. The proposals contained in this action may be changed in light of the comments received.

Comments are specifically invited on the overall regulatory, economic, environmental, and energy aspects of the proposed rule. All comments sent will be available, both before and after the closing date for comments, in the Rules Docket for examination by interested persons. A report summarizing each FAA-public contact concerned with the substance of this proposal will be filed in the Rules Docket.

Commenters wishing the FAA to acknowledge receipt of their comments submitted in response to this action must send a self-addressed, stamped postcard on which the following statement is made: "Comments to Docket Number 2000-NE-22-AD." The postcard will be date stamped and returned to the commenter.

Availability of NPRM's

Any person may obtain a copy of this NPRM by submitting a request to the FAA, New England Region, Office of the Regional Counsel, Attention: Rules Docket No. 2000-NE-22-AD, 12 New England Executive Park, Burlington, MA 01803-5299.

Discussion

The FAA was recently made aware of a CF34-3A1 turbofan engine that experienced an in-flight failure of the No. 5 bearing rotating air seal. The manufacturer's investigation revealed that the engine experienced spalling and wear of the No. 5 bearing roller bearing outer race. This caused the No. 5 bearing rotating air seal to rub and separate at the seal braze joint. The air seal failure resulted in a fire in the low pressure turbine cavity which caused the stage 3 low pressure turbine disk to

overheat and grow excessively, resulting in an in-flight shutdown. The FAA has concluded that this failure sequence, under certain conditions, could progress further and result in a disk rupture and uncontained engine failure. This proposal would require initial and repetitive checks of magnetic chip detector indicators, which are located in the lubrication system for the engine bearings, in order to detect No. 5 bearing roller distress before air seal failure. Risk analyses of a potential disk rupture were conducted separately for CF34-3A1, -3B, and -3B1 engines, and for CF34-1A, -3A, and -3A2 engines, in consideration of differences in engine maintenance programs for different engine models. The FAA has determined that the repetitive check intervals in this proposed rule would result in acceptable levels of safety for each type of operation, provided that terminating actions are completed fleet-wide in accordance with the requirements of this AD. The installation of the modified design No. 5 bearing rotating air seal, P/N 4019T60G03, constitutes terminating action for the inspection requirements of this AD. This proposal is prompted by reports of one No. 5 bearing rotating air seal failure, and seven No. 5 bearing failures, that had the potential to lead to air seal failures. The actions specified by the proposed AD are intended to prevent No. 5 bearing rotating air seal failures and possible uncontained engine failures.

Proposed Actions

Since an unsafe condition has been identified that is likely to exist or develop on other products of this same type design, the proposed AD would require initial and repetitive checks of magnetic chip detector indicators, and installation of an improved No. 5 bearing rotating air seal as terminating action, to prevent No. 5 bearing rotating air seal failures and possible uncontained engine failures.

Economic Impact

There are about 1650 engines of the affected design in the worldwide fleet. The FAA estimates that 1075 engines installed on aircraft of U.S. registry would be affected by this proposed AD, that it would take about 0.5 work hours per engine to do the proposed checks, and that the average labor rate is \$60 per work hour. Based on these figures, the total proposed AD cost impact on U.S. operators, for the initial check is estimated to be \$32,250. In addition, the replacement air seal cost is approximately \$2,400 per unit, so the total proposed material cost impact on

U.S. operators is estimated to be \$2,580,000. No additional labor is required for air seal replacement, as this will occur during normal exposure at shop visit. Based on these figures, the total proposed AD cost impact on U.S. operators, is estimated to be \$2,612,250.

Regulatory Impact

This proposal does not have federalism implications, as defined in Executive Order 13132, because it would not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. Accordingly, the FAA has not consulted with state authorities prior to publication of this proposal.

For the reasons discussed above, I certify that this proposed regulation (1) is not a "significant regulatory action" under Executive Order 12866; (2) is not a "significant rule" under the DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); and (3) if promulgated, will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act. A copy of the draft

regulatory evaluation prepared for this action is contained in the Rules Docket. A copy of it may be obtained by contacting the Rules Docket at the location provided under the caption **ADDRESSES**.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Safety.

The Proposed Amendment

Accordingly, pursuant to the authority delegated to me by the Administrator, the Federal Aviation Administration proposes to amend part 39 of the Federal Aviation Regulations (14 CFR part 39) as follows:

PART 39—AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

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

39.13 [Amended]

2. Section 39.13 is amended by adding the following new airworthiness directive:

General Electric Company: Docket No. 2000-NE-22-AD.

Applicability: This airworthiness directive (AD) is applicable to CF34-1A, -3A, -3A1, -3A2, -3B, and -3B1 turbofan engines with No. 5 bearing rotating air seal, part number (P/N) 4019T60G01 installed. These engines are installed on but not limited to Bombardier Inc. (Canadair) Model CL-600-2A12, Model CL-600-2B16, and Model CL-600-2B19, airplanes.

Note 1: This AD applies to each engine identified in the preceding applicability provision, regardless of whether it has been modified, altered, or repaired in the area subject to the requirements of this AD. For engines that have been modified, altered, or repaired so that the performance of the requirements of this AD is affected, the owner/operator must request approval for an alternative method of compliance in accordance with paragraph (f) of this AD. The request should include an assessment of the effect of the modification, alteration, or repair on the unsafe condition addressed by this AD; and, if the unsafe condition has not been eliminated, the request should include specific proposed actions to address it.

Compliance: Compliance with this AD is required as indicated, unless accomplished previously.

To prevent No. 5 bearing rotating air seal failures and possible uncontained engine failures, accomplish the following:

Magnetic Chip Detector Indicator Check

(a) Check magnetic chip detector indicators in accordance with Table 1 as follows:

TABLE 1.—INITIAL AND REPETITIVE CHECKS

Engine model	Initial check within	Then within every:
(1) CF34-3A1, -3B1, and 3B	30 flight hours or 3 calendar days, whichever is greater, from effective date of this AD.	30 flight hours time-since-last-inspected (TSLI) or 3 calendar days TSLI, whichever is greater.
(2) CF34-1A, -3A, and -3A2	30 flight hours, from the effective date of this AD	100 flight hours TSLI.

Chip Detector Indicator Check, Authorization

(b) Notwithstanding section 43.3 of the Federal Aviation Regulations (14 CFR 43.3), the checks required by paragraph (a) of this AD may be performed by an aircrew member holding at least a private pilot certificate. Completion of the checks must be entered into the airplane records showing compliance with this AD, in accordance with sections 43.9 and 91.417(a)(2)(v) of the Federal Aviation Regulations (14 CFR 43.9 and 14 CFR 91.417(a)(2)(v)). The records must be maintained as required by the applicable Federal Aviation Regulation.

Detection of Chips

(c) If the magnetic chip detector indicator shows a white triangle or is illuminated, either condition indicates a chip detection. Remove the chip detector and disposition the chip, and the engine, using the engine maintenance manual procedures.

Replacement of Air Seal

(d) Remove No. 5 bearing rotating air seal P/N 4019T60G01, and replace with air seal

P/N 4019T60G03, in accordance with Table 2 as follows:

TABLE 2.—COMPLIANCE TIMES FOR REPLACEMENT OF AIR SEAL

Engine model	Replace At
(1) CF34-3A1, -3B1, and -3B.	Next shop visit when HPT is exposed, but do not exceed 15,000 cycles-in-service after the effective date of this AD.
(2) CF34-1A, -3A, and -3A2.	Next 3000-hour hot section inspection or at next 6,000-hour overhaul, whichever occurs first, but not to exceed 3,000 hours time-in-service after the effective date of this AD.

Terminating Action

(e) Replacement of air seal P/N 4019T60G01 with air seal P/N 4019T60G03 constitutes terminating action for the

repetitive inspection requirements specified in paragraph (a) of this AD.

Alternative Methods of Compliance

(f) An alternative method of compliance or adjustment of the compliance time that provides an acceptable level of safety may be used if approved by the Manager, Engine Certification Office (ECO). Operators shall submit their request through an appropriate Federal Aviation Administration (FAA) Principal Maintenance Inspector, who may add comments and then send it to the Manager, ECO.

Note 2: Information concerning the existence of approved alternative methods of compliance with this airworthiness directive, if any, may be obtained from the ECO.

Issued in Burlington, Massachusetts, on February 20, 2001.

Jay J. Pardee,

Manager, Engine and Propeller Directorate, Aircraft Certification Service.

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