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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. 2004-NE-06-AD; Amendment 39-13485; AD 2004-04-04]

RIN 2120-AA64

Airworthiness Directives; General Electric Company CF34-8E Series Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule; request for comments.

SUMMARY: The FAA is adopting a new airworthiness directive (AD) for General Electric Company (GE) CF34-8E series turbofan engines, with certain serial number (SN) master variable geometry (VG) actuators installed. This AD requires initial and repetitive reviews of the airplane computer systems for master VG actuator fault messages. This AD also requires replacement of actuators reported faulty by the Full Authority Digital Engine Control (FADEC). This AD results from nine reports of CF34-8C master VG actuator electrical signal faults, one report of which was a dual-channel fault, resulting in the FADEC commanding the engine power to idle. We are issuing this AD to prevent VG master actuator dual-channel electrical signal faults which will cause an uncommanded reduction of thrust to idle with a subsequent loss of the ability to advance thrust above idle; and which could result in a multi-engine loss of thrust if dual-channel faults occur on more than one engine simultaneously.

DATES: This AD becomes effective March 9, 2004. The Director of the Federal Register approved the incorporation by reference of certain publications listed in the regulations as of March 9, 2004.

We must receive any comments on this AD by April 23, 2004.

ADDRESSES: Use one of the following addresses to submit comments on this AD:

- By mail: The Federal Aviation Administration (FAA), New England Region, Office of the Regional Counsel, Attention: Rules Docket No. 2004-NE-06-AD, 12 New England Executive Park, Burlington, MA 01803-5299.
- By fax: (781) 238-7055.
- By e-mail: 9-ane-adcomment@faa.gov.

You can get the service information referenced in this AD from General Electric Company via Lockheed Martin Technology Services, 10525 Chester Road, Suite C, Cincinnati, Ohio 45215, telephone (513) 672-8400, fax (513) 672-8422.

You may examine the AD docket, by appointment, at the FAA, New England Region, Office of the Regional Counsel, 12 New England Executive Park, Burlington, MA. You may examine the service information, by appointment, at the FAA, New England Region, Office of the Regional Counsel, 12 New England Executive Park, Burlington, MA; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

FOR FURTHER INFORMATION CONTACT: Robert Grant, Aerospace Engineer, Aircraft Certification Office, FAA, Engine and Propeller Directorate, 12 New England Executive Park, Burlington, MA; telephone (781) 238-7757; fax (781) 238-7199.

SUPPLEMENTARY INFORMATION: In September of 2002, GE, the manufacturer of CF34-8E series turbofan engines, replaced its supplier of dual-channel linear variable differential transformers (LVDTs), installed on the master VG actuator, part number 4120T02P02. Since that changing of suppliers, nine master VG actuators, installed on CF34-8C engines, with LVDTs produced by the new supplier have been reported with single-channel electrical signal faults sent to the MDC and to the FADEC. The CF34-8E engines use the same part number VG master actuator as the CF34-8C series engines, and the same service experience is expected. One of these master VG actuators also experienced a failure of the second LVDT channel, seventeen days after the first single-channel fault report, resulting in the FADEC commanding the engine power to idle. The manufacturer's on-going investigation has revealed LVDT coil wire deformation and breakage, caused by thermal expansion of potting material. The affected master VG actuators are identified by serial numbers (SNs) APM238AE, and SNs APM242AE and up. A dual-channel LVDT failure that occurs at a certain phase of flight will result in a single engine loss of thrust control. VG master actuators with dual-channel LVDT failures that occur simultaneously on multiple engines will cause a multi-engine loss of thrust control.

Relevant Service Information

We have reviewed and approved the technical contents of GE Alert Service Bulletin (ASB) No. CF34-8E-AL S/B 75-A0001, Revision 1, dated February 10, 2004, that describes procedures for initial and repetitive reviews of the airplane computer systems for fault messages, and replacement of actuators reported faulty by the FADEC.

FAA's Determination and Requirements of This AD

The unsafe condition described previously is likely to exist or develop on other CF34-8E series turbofan engines of the same type design. We are issuing this AD to prevent VG master actuator dual-channel electrical signal faults:

- Which will cause an uncommanded reduction of thrust to idle with a subsequent loss of the ability to advance thrust above idle; and
- Which could result in a multi-engine loss of thrust if dual-channel faults occur on more than one engine simultaneously.

This AD requires an initial review within 10 days after the effective date of the AD, of the airplane computer systems for fault messages, and replacement of actuators reported faulty by the FADEC. Actuator hardware troubleshooting may be required to identify faulty actuators. This AD also requires the same reviews, repetitively, at intervals not to exceed 10 days. Replacement of actuators reported faulty by the FADEC is required either before further flight or within 10 days of the first fault occurrence, based on requirements defined in the service information described previously, for the actual fault reported. You must use the service information described previously to perform the actions required by this AD.

FAA's Determination of the Effective Date

Since an unsafe condition exists that requires the immediate adoption of this AD, we have found that notice and opportunity for public comment before issuing this AD are impracticable, and that good cause exists for making this amendment effective in less than 30 days.

Changes to 14 CFR Part 39–Effect on the AD

On July 10, 2002, we issued a new version of 14 CFR part 39 (67 FR 47998, July 22, 2002), which governs our AD system. This regulation now includes material that relates to special flight permits, alternative methods of compliance, and altered products. This material previously was included in each individual AD. Since this material is included in 14 CFR part 39, we will not include it in future AD actions.

Interim Action

These actions are interim actions and we may take further rulemaking actions in the future.

Comments Invited

This AD is a final rule that involves requirements affecting flight safety and was not preceded by notice and an opportunity for public comment; however, we invite you to submit any written relevant data, views, or arguments regarding this AD. Send your comments to an address listed under ADDRESSES. Include "AD Docket No. 2004-NE-06-AD" in the subject line of your comments. If you want us to acknowledge receipt of your mailed comments, send us a self-addressed, stamped postcard with the docket number written on it; we will date-stamp your postcard and mail it back to you. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of the rule that might suggest a need to modify it. If a person contacts us verbally, and that contact relates to a substantive part of this AD, we will summarize the contact and place the summary in the docket. We will consider all comments received by the closing date and may amend the AD in light of those comments.

We are reviewing the writing style we currently use in regulatory documents. We are interested in your comments on whether the style of this document is clear, and your suggestions to improve the clarity of our communications with you. You can get more information about plain language at *http://www.faa.gov/language* and *http://www.plainlanguage.gov*.

Examining the AD Docket

You may examine the AD Docket (including any comments and service information), by appointment, between 8 a.m. and 4:30 p.m., Monday through Friday, except Federal holidays. See ADDRESSES for the location.

Regulatory Findings

We have determined that this AD will not have federalism implications under Executive Order 13132. This AD will 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.

For the reasons discussed above, I certify that the 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. 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.

We prepared a summary of the costs to comply with this AD and placed it in the AD Docket. You may get a copy of this summary by sending a request to us at the address listed under ADDRESSES. Include "AD Docket No. 2004-NE-06-AD" in your request.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

Adoption of the Amendment

Accordingly, under the authority delegated to me by the Administrator, the Federal Aviation Administration amends 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. The FAA amends § 39.13 by adding the following new airworthiness directive:

AIRWORTHINESS DIRECTIVE

Aircraft Certification Service
Washington, DC

U.S. Department
of Transportation
Federal Aviation
Administration

We post ADs on the internet at "www.faa.gov"

The following Airworthiness Directive issued by the Federal Aviation Administration in accordance with the provisions of Title 14 of the Code of Federal Regulations (14 CFR) part 39, applies to an aircraft model of which our records indicate you may be the registered owner. Airworthiness Directives affect aviation safety and are regulations which require immediate attention. You are cautioned that no person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of the Airworthiness Directive (reference 14 CFR part 39, subpart 39.3).

2004-04-04 General Electric Company: Amendment 39-13485. Docket No. 2004-NE-06-AD.

Effective Date

(a) This airworthiness directive (AD) becomes effective March 9, 2004.

Affected ADs

(b) None.

Applicability

(c) This AD applies to General Electric Company (GE) CF34-8E series turbofan engines, with master variable geometry (VG) actuators, part number (P/N) 4120T02P02, serial number (SN) APM238AE, and SNs APM242AE and up. These engines are installed on, but not limited to, Embraer 170 series airplanes.

Unsafe Condition

(d) This AD results from nine reports of CF34-8C master VG actuator electrical signal faults, one report of which was a dual-channel fault, resulting in the Full Authority Digital Engine Control (FADEC) commanding the engine power to idle. We are issuing this AD to prevent VG master actuator dual-channel electrical signal faults:

(1) Which will cause an uncommanded reduction of thrust to idle with a subsequent loss of the ability to advance thrust above idle; and

(2) Which could result in a multi-engine loss of thrust if dual-channel faults occur on more than one engine simultaneously.

Compliance

(e) You are responsible for having the actions required by this AD performed within the compliance times specified unless the actions have already been done.

(f) Before installation of a replacement VG actuator, P/N 4120T02P02 with SNs APM238AE, APM242AE and up, confirm that the actuator is new, or if used, confirm that records show that the linear variable differential transformer (LVDT), installed on the master VG actuator, has been replaced since last actuator use.

Initial Review

(g) Within 10 days after the effective date of this AD, initially review the airplane computer systems for fault messages, and replace actuators with faults reported by the FADEC. Follow the review and replacement requirements of paragraph 3 of the Accomplishment Instructions of GE Alert Service Bulletin (ASB) No. CF34-8E-AL S/B 75-A0001, Revision 1, dated February 10, 2004. The specific review instructions are dependent on the version of FADEC software installed at the time of the review, as detailed in the ASB.

Repetitive Review

(h) At intervals not to exceed 10 days, repetitively review the computer systems for fault messages, and replace actuators with faults reported by the FADEC. Follow the review and replacement requirements of paragraph 3 of the Accomplishment Instructions of GE ASB No. CF34-8E-AL S/B 75-A0001, Revision 1, dated February 10, 2004. The specific review instructions are dependent on the version of FADEC software installed at the time of the review, as detailed in the ASB.

Alternative Methods of Compliance

(i) The Manager, Engine Certification Office, has the authority to approve alternative methods of compliance for this AD if requested using the procedures found in 14 CFR 39.19.

Special Flight Permits

(j) Under 39.23, the FAA imposes the following conditions and limitations on the issuance and use of Special Flight Permits for this AD:

(1) If both engines report FADEC status messages, with dispatch classification the same as an actuator LVDT fault, at the same time, whether intermittent or continuous, at least one engine must be cleared of faults before the further flight, even if none of the faults are VG actuator-related.

(2) If both engines report FADEC status messages with dispatch classification the same as an actuator LVDT fault, at the same time, whether intermittent or continuous, the airplane computer systems must be reviewed for master VG actuator faults before further flight. If actuator faults are present for both engines, then at least one master VG actuator must be replaced before further flight.

(3) If intermittent status messages are posted for both engines, with the same dispatch classification as LVDT faults, and the cause cannot be found, one of the actuators must be replaced before further flight.

(4) If a master VG actuator with a single channel fault switches channels, the actuator must be replaced before further flight.

Material Incorporated by Reference

(k) You must use GE Alert Service Bulletin No. CF34-8E-AL S/B 75-A0001, Revision 1, dated February 10, 2004, to perform the reviews and actuator dispositions required by this AD. The Director of the Federal Register approved the incorporation by reference of this service bulletin in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. You can get a copy from General Electric Company via Lockheed Martin Technology Services, 10525 Chester Road, Suite C, Cincinnati, Ohio 45215, telephone (513) 672-8400, fax (513) 672-8422. You may review copies at the Federal Aviation Administration (FAA), New England Region, Office of the Regional Counsel, 12 New England Executive Park, Burlington, MA 01803-5299; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

Related Information

(l) AD 2003-26-05 also addresses the same unsafe condition, but for GE CF34-8C1 series and CF34-8C5 series turbofan engines.

Issued in Burlington, Massachusetts, on February 13, 2004.
Peter A. White,
Acting Manager, Engine and Propeller Directorate, Aircraft Certification Service.
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