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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. 2004-NE-06-AD; Amendment 39-14033; AD 2005-07-09]

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 superseding an existing airworthiness directive (AD) for General Electric Company (GE) CF34-8E series turbofan engines with certain serial number (SN) master variable geometry (VG) actuators installed. That AD currently requires initial and repetitive reviews of the airplane computer systems for master VG actuator fault messages. That AD also requires replacement of actuators reported faulty by the Full Authority Digital Engine Control (FADEC). This AD requires the same reviews. This AD also prohibits installation of affected master VG actuators onto any CF34-8E series turbofan engine after the effective date of the AD. This AD results from the need to add to the list of affected parts, master VG actuators made by a parts manufacturing approval (PMA) holder. We are issuing this AD to prevent dual-channel electrical signal faults in the master VG actuator which will cause an uncommanded reduction of thrust to idle with a subsequent loss of the ability to advance thrust above idle, and will result in a multiengine loss of thrust if dual-channel faults occur on more than one engine simultaneously.

DATES: Effective April 20, 2005. The Director of the Federal Register approved the incorporation by reference of certain publications listed in the regulations as of April 20, 2005.

We must receive any comments on this AD by June 6, 2005.

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

- By mail: 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 at the FAA, New England Region, Office of the Regional Counsel, 12 New England Executive Park, Burlington, MA. You may examine the service information, at the FAA, New England Region, Office of the Regional Counsel, 12 New England Executive Park, Burlington, MA.

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: On February 13, 2004, the FAA issued AD 2004-04-04, Amendment 39-13485 (69 FR 8098, February 23, 2004). That AD requires initial and repetitive reviews of the airplane computer systems for master VG actuator fault messages of certain SN master VG actuators. That AD also requires replacement of actuators reported faulty by the FADEC. The background for that AD is as follows:

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, four master VG actuators, installed on CF34-8E engines, with LVDTs produced by the new supplier have been reported with single-channel electrical signal faults. The CF34-8E engines use the same part number VG master actuator as the CF34-8C series engines, which have experienced 54 LVDT faults in service, to date. 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 investigation revealed LVDT coil wire deformation and breakage, caused by thermal expansion of potting material. That condition, if not corrected, could result in dual channel electrical signal faults in the master VG actuator, which will cause an uncommanded reduction of thrust to idle with a subsequent loss of the ability to advance thrust above idle, and result in multiengine loss of thrust if dual-channel faults occur on more than one engine simultaneously, and possible loss of the airplane.

Actions Since AD 2004-04-04 Was Issued

Since AD 2004-04-04 was issued, we learned that PMA holder, Arkwin Industries, Inc., has master VG actuators in service with affected LVDTs installed. The same unsafe condition described previously for master VG actuators, SN APM238AE, and SNs APM242AE and up, is likely to exist or develop on these PMA master VG actuators. The PMA actuators are identified by P/N 1211508-002, SN 238AE, and SNs 241AE and up. These actuators also have GE P/N 4120T02P02 marked on them.

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 3, dated February 14, 2005, 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 dual-channel electrical signal faults in the master VG actuator, which will cause an uncommanded reduction of thrust to idle with a subsequent loss of the ability to advance thrust above idle, and will result in a multiengine loss of thrust if dual-channel faults occur on more than one engine simultaneously.

This AD prohibits installation of any master VG actuator specified in this AD, onto any CF34-8E series turbofan engine after the effective date of the AD. This AD also 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. Also, this AD requires the same repetitive reviews, 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.

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.

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.

Authority for This Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, Section 106, describes the authority of the FAA Administrator. Subtitle VII, Aviation Programs, describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701, "General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

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 removing Amendment 39-13485 (69 FR 8098, February 23, 2004), and by adding a new airworthiness directive, Amendment 39-14033, to read as follows:

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).

2005-07-09 General Electric Company: Amendment 39-14033. Docket No. 2004-NE-06-AD.

Effective Date

(a) This airworthiness directive (AD) becomes effective April 20, 2005.

Affected ADs

(b) This AD supersedes AD 2004-04-04, Amendment 39-13485.

Applicability

(c) This AD applies to General Electric Company (GE) CF34-8E series turbofan engines with the master variable geometry (VG) actuators, GE part number (P/N) 4120T02P02, serial number (SN) APM238AE, and SNs APM242AE and up; and Arkwin Industries, Inc. Parts Manufacturer Approval (PMA) P/N 1211508-002, SN 238AE, and SNs 242AE and up installed. The Arkwin PMA parts are also marked with P/N 4120T02P02. These engines are installed on, but not limited to, Embraer 170 series airplanes.

Unsafe Condition

(d) This AD results from the need to add to the list of affected parts, master VG actuators made by PMA holder, Arkwin Industries, Inc. We are issuing this AD to prevent dual-channel electrical signal faults in the VG master actuator, which will cause an uncommanded reduction of thrust to idle with a subsequent loss of the ability to advance thrust above idle, and which will result in a multiengine 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) After the effective date of this AD, do not install master VG actuators specified in this AD onto any engine.

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 full-authority digital electronic control (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 3, dated February 14, 2005. The specific review instructions depend 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 3, dated February 14, 2005. The specific review instructions depend on the version of FADEC software installed at the time of the review, as detailed in the ASB.

Optional Terminating Action

(i) As an optional terminating action to the repetitive reviews specified in this AD, replace the master VG actuator with a master VG actuator not specified in this AD.

Previous Credit

(j) Previous credit is allowed for reviews and replacements of master VG actuators performed before the effective date of this AD, using paragraph 3 of GE ASB No. CF34-8E-AL S/B 75-A0001 Revision 1, dated February 10, 2004, or Revision 2, dated December 15, 2004, or Revision 3, dated February 14, 2005.

Alternative Methods of Compliance

(k) 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

(l) 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 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

(m) You must use GE Alert Service Bulletin No. CF34-8E-AL S/B 75-A0001, Revision 3, dated February 14, 2005, to perform the reviews and actuator dispositions required by this AD. 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 FAA, New England Region, Office of the Regional Counsel, 12 New England Executive Park, Burlington, MA; or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html*.

Related Information

(n) None.

Issued in Burlington, Massachusetts, on March 25, 2005.
Jay J. Pardee,
Manager, Engine and Propeller Directorate, Aircraft Certification Service.
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