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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. FAA-2012-1017; Directorate Identifier 2012-NE-30-AD; Amendment 39-17203; AD 2012-19-08]**

**RIN 2120-AA64**

#### **Airworthiness Directives; General Electric Company Turbofan Engines**

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

**ACTION:** Final rule; request for comments.

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**SUMMARY:** We are adopting a new airworthiness directive (AD) for General Electric Company GEnx-1B54, GEnx-1B58, GEnx-1B64, GEnx-1B67, GEnx-1B70, GEnx-1B54/P1, GEnx-1B58/P1, GEnx-1B64/P1, GEnx-1B67/P1, GEnx-1B70/P1, GEnx-1B70/72/P1, GEnx-1B70/75/P1, GEnx-1B74/75/P1, GEnx-1B75/P1, GEnx-2B67, and GEnx-2B67B turbofan engines. This AD requires initial and repetitive ultrasonic inspections (UI) of certain part number (P/N) fan mid shafts (FMS) for cracks. This AD was prompted by a report of an FMS failure and a report of a crack found in another FMS. We are issuing this AD to prevent failure of the FMS resulting in one or more engine failure(s) and possible loss of the airplane.

**DATES:** This AD is effective September 21, 2012.

The Director of the Federal Register approved the incorporation by reference of certain publications listed in the AD as of September 21, 2012.

We must receive comments on this AD by October 22, 2012.

**ADDRESSES:** You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to <http://www.regulations.gov>. Follow the instructions for submitting comments.
- Fax: 202-493-2251.
- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.
- Hand Delivery: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this AD, contact General Electric Company, GE-Aviation, Room 285, 1 Neumann Way, Cincinnati, OH 45215, phone: (513) 552-3272; email: geae.aoc@ge.com. You may view this service information at the FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA. For information on the availability of this material at the FAA, call 781-238-7125.

### **Examining the AD Docket**

You may examine the AD docket on the Internet at <http://www.regulations.gov>; or in person at the Docket Management Facility between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this AD, the regulatory evaluation, any comments received, and other information. The street address for the Docket Office (phone: 800-647-5527) is in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

**FOR FURTHER INFORMATION CONTACT:** James Gray, Aerospace Engineer, Engine Certification Office, FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; phone: 781-238-7742; fax: 781-238-7199; email: james.e.gray@faa.gov.

### **SUPPLEMENTARY INFORMATION:**

#### **Discussion**

On July 28, 2012, we received a report of a GENx-1B engine failure installed on a Boeing 787 (B787) airplane. Boeing was conducting routine ground testing of the B787, before aircraft delivery. During a taxi test, one engine's FMS fractured just aft of the coupling nut. The low-pressure turbine (LPT) rotor shifted axially backwards, resulting in LPT blade and vane clashing. The LPT case contained the failure and debris was released out the tailpipe. There was no engine overspeed as the LPT rotor remained coupled to the fan rotor at the FMS spline. On August 14, 2012, we received a second report concerning the GENx engine, this time about an FMS, installed in a GENx-1B engine, that was found cracked during an on-wing UI. This condition, if not corrected, could result in failure of the FMS resulting in one or more engine failure(s) and possible loss of the airplane.

#### **Relevant Service Information**

We reviewed GE Service Bulletin (SB) No. GENx-1B S/B 72-0107, Revision 2, dated September 14, 2012, and SB No. GENx-2B S/B 72-0091, Revision 1, dated September 14, 2012. The SBs describe procedures for performing UI inspections of FMS P/N 2331M20G02, P/N 2332M81G01, and P/N 2332M33G01.

#### **FAA's Determination**

We are issuing this AD because we evaluated all the relevant information and determined the unsafe condition described previously is likely to exist or develop in other products of the same type design.

#### **AD Requirements**

This AD requires accomplishing the actions specified in the service information described previously, except as discussed under "Differences Between the AD and the Service Information."

## **Differences Between the AD and the Service Information**

The SBs require an initial FMS inspection within 30 days of the SB date. This AD requires an initial FMS inspection before further flight.

## **Interim Action**

We consider this AD interim action. Root cause is still under investigation, but the failure of the FMS is likely due to environmentally assisted cracking; a type of corrosive cracking that is time-dependent.

## **FAA's Justification and Determination of the Effective Date**

An unsafe condition exists that requires the immediate adoption of this AD. The FAA has found that the risk to the flying public justifies waiving notice and comment prior to adoption of this rule based on the reported engine failure, the crack find, and that the root cause is still somewhat unknown. We therefore determined that a repetitive inspection interval needed to be established. The repetitive inspection interval is less than the time it would take to process a proposed AD. Therefore, we find that notice and opportunity for prior public comment 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 send any written data, views, or arguments about this AD. Send your comments to an address listed under the ADDRESSES section. Include the docket number FAA-2012-1017 and Directorate Identifier 2012-NE-30-AD at the beginning of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of this AD. We will consider all comments received by the closing date and may amend this AD because of those comments.

We will post all comments we receive, without change, to <http://www.regulations.gov>, including any personal information you provide. We will also post a report summarizing each substantive verbal contact we receive about this AD.

## **Costs of Compliance**

We estimate that this AD will affect 11 GE GENx turbofan engines installed on airplanes of U.S. registry. We also estimate that it will take about 9 work-hours per engine to perform the UI of the FMS, and that the average labor rate is \$85 per work-hour. The estimated cost of one set of inspection tooling is \$105,000. Based on these figures, we estimate the total cost of this AD to U.S. operators to be \$113,415.

## **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**

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 this AD:

- (1) Is not a "significant regulatory action" under Executive Order 12866,
- (2) Is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979),
- (3) Will not affect intrastate aviation in Alaska, and
- (4) 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.

### **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 FAA amends 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 (AD):



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**2012-19-08 General Electric Company:** Amendment 39-17203; Docket No. FAA-2012-1017; Directorate Identifier 2012-NE-30-AD.

**(a) Effective Date**

This AD is effective September 21, 2012.

**(b) Affected ADs**

None.

**(c) Applicability**

This AD applies to:

- (1) General Electric Company (GE) GEnx-1B54, GEnx-1B58, GEnx-1B64, GEnx-1B67, GEnx-1B70, GEnx-1B54/P1, GEnx-1B58/P1, GEnx-1B64/P1, GEnx-1B67/P1, GEnx-1B70/P1, GEnx-1B70/72/P1, GEnx-1B70/75/P1, GEnx-1B74/75/P1, and GEnx-1B75/P1 turbofan engines with fan mid shaft (FMS) part number (P/N) 2331M20G02 or P/N 2332M81G01, installed; and
- (2) GE GEnx-2B67 and GEnx-2B67B turbofan engines with FMS P/N 2332M33G01, installed.

**(d) Unsafe Condition**

This AD was prompted by a report of an FMS failure and a report of a crack found in another FMS. We are issuing this AD to prevent failure of the FMS resulting in one or more engine failure(s) and possible loss of the airplane.

**(e) Compliance**

Comply with this AD within the compliance times specified, unless already done.

**(f) Ultrasonic Inspections (UIs)**

- (1) Perform an initial UI for cracks in the FMS before further flight.
- (2) Thereafter, perform repetitive UIs for cracks in the FMS within every 90 days since-last-inspection.
- (3) Remove any cracked FMS from service before further flight.
- (4) For engines listed in paragraph (c)(1) of this AD, use paragraphs 3.A and 3.B.(1) through 3.B.(9) of the Accomplishment Instructions of GE Service Bulletin (SB) No. GEnx-1B S/B 72-0107, Revision 2, dated September 14, 2012, to do the inspections.
- (5) For engines listed in paragraph (c)(2) of this AD, use paragraphs 3.A and 3.B.(1) through 3.B.(9) of the Accomplishment Instructions of GEnx-2B S/B 72-0091, Revision 1, dated September 14, 2012, to do the inspections.

**(g) Alternative Methods of Compliance (AMOCs)**

The Manager, Engine Certification Office, FAA, may approve AMOCs to this AD. Use the procedures found in 14 CFR 39.19 to make your request.

**(h) Credit for Actions Accomplished in Accordance With Previous Service Information**

(1) For engines listed in paragraph (c)(1) of this AD, if you performed the initial inspection before the effective date of this AD using GE SB No. GENx-1B S/B 72-0107, dated August 17, 2012, or Revision 1, dated August 24, 2012, you met the requirement of paragraph (f)(1) of this AD.

(2) For engines listed in paragraph (c)(2) of this AD, if you performed the initial inspection before the effective date of this AD using GE SB No. GENx-2B S/B 72-0091, dated August 22, 2012, you met the requirement of paragraph (f)(1) of this AD.

(3) For engines listed in paragraphs (c)(1) or (c)(2) of this AD, if an initial inspection was performed before the effective date of this AD using GE Field Engineering Instruction (FEI) GENx-1B No. 2012-014 Fan Mid Shaft Inspection, or FEI GENx-2B No. 2012-017 Fan Mid Shaft Inspection, you met the requirement of paragraph (f)(1) of this AD.

**(i) Related Information**

For more information about this AD, contact James Gray, Aerospace Engineer, Engine Certification Office, FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; phone: 781-238-7742; fax: 781-238-7199; email: james.e.gray@faa.gov.

**(j) Material Incorporated by Reference**

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless the AD specifies otherwise.

(i) General Electric Company Service Bulletin No. GENx-1B S/B 72-0107, Revision 2, dated September 14, 2012.

(ii) General Electric Company Service Bulletin No. GENx-2B S/B 72-0091, Revision 1, dated September 14, 2012.

(3) For General Electric Company service information identified in this AD, contact General Electric Company, GE-Aviation, Room 285, 1 Neumann Way, Cincinnati, OH 45215, phone: (513) 552-3272; email: geae.aoc@ge.com.

(4) You may view this service information at the FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA. For information on the availability of this material at the FAA, call 781-238-7125.

(5) You may view this service information 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/cfr/ibr-locations.html>.

Issued in Burlington, Massachusetts, on September 17, 2012.

Diane M. Cook,  
Acting Manager, Engine & Propeller Directorate,  
Aircraft Certification Service.