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**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 39**

**[Docket No. FAA-2010-1024; Directorate Identifier 2010-NE-34-AD; Amendment 39-16753; AD 2011-15-06]**

**RIN 2120-AA64**

# Airworthiness Directives; General Electric Company GE90-76B; GE90-77B; GE90-85B; GE90-90B; and GE90-94B Turbofan Engines

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

**ACTION:** Final rule.

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**SUMMARY:** We are adopting a new airworthiness directive (AD) for the products listed above. This AD requires initial and repetitive fluorescent penetrant inspections (FPIs) and eddy current inspections (ECIs) of the high-pressure compressor rotor (HPCR) 8-10 stage spool, part numbers (P/Ns) 1844M90G01 and 1844M90G02, for cracks between the 9-10 stages at each piece-part exposure. This AD was prompted by cracks discovered on one HPCR 8-10 spool between the 9-10 stages in the weld joint. We are issuing this AD to prevent failure of the HPCR 8-10 stage spool, uncontained engine failure, and damage to the airplane.

**DATES:** This AD is effective August 18, 2011.

**ADDRESSES:** For service information identified in this AD, contact GE-Aviation M/D Rm. 285, One Neumann Way, Cincinnati, OH 45215, phone: 513-552-3272; e-mail: geae.aoc@ge.com. You may review copies of the referenced 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 address for the Docket Office (phone: 800-647-5527) is Document Management Facility, U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.

**FOR FURTHER INFORMATION CONTACT:** Jason Yang, Aerospace Engineer, Engine Certification Office, FAA, 12 New England Executive Park, Burlington, MA 01803; phone: 781-238-7747; fax: 781-238-7199; e-mail: jason.yang@faa.gov.

**SUPPLEMENTARY INFORMATION:**

**Discussion**

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to include an airworthiness directive (AD) that would apply to the specified products. That NPRM published in the Federal Register on December 22, 2010 (75 FR 80370). That NPRM proposed to require initial and repetitive FPIs and ECIs of the HPCR 8-10 stage spool, P/Ns 1844M90G01 and 1844M90G02, for cracks between the 9-10 stages, at each piece-part exposure.

**Comments**

We gave the public the opportunity to participate in developing this AD. The following presents the comments received on the proposal and the FAA's response to each comment.

**Request**

Two commenters, General Electric Company and The Boeing Company, requested that we remove the "Unsafe Condition" paragraph from the AD, and reword the Summary section to resemble the Summary section of AD 2002-04-11. The commenters stated that, by their analyses, cracks in the weld joint would not develop into an uncontained failure. The commenters stated that HPCR 8-10 stage spools, P/Ns 1844M90G01 and 1844M90G02, be inspected by an enhanced inspection, similar to those parts covered in AD 2002-04-11.

**Answer**

We do not agree. AD 2002-04-11 was issued because of additional focused inspection procedures that had been developed by the manufacturer. Because cracks were discovered on one HPCR 8-10 spool between the 9-10 stages in the weld joint, this unsafe condition is likely to exist or develop in other products of the same type design. The unsafe condition could result in failure of the HPCR 8-10 stage spool, uncontained engine failure, and damage to the airplane. We determined that this unsafe condition requires mandatory repetitive inspections for cracks. We did not change the AD.

**Request**

China Southern Airlines requested that we specify any terminating actions to the repetitive inspections of the affected part numbers of HPCR 8-10 spools.

**Answer**

We disagree. Unless the part is replaced with a part not subject to this AD, no terminating actions to the repetitive inspections exist.

**Question**

China Southern Airlines asked if the initial and repetitive FPIs and ECIs of the HPCR 8-10 stage spool at each piece-part exposure in the shop effectively prevent failure during normal engine

operation, since the high-pressure module overhaul interval is 48,000 hours or 6,000 cycles when the spool can have piece-part exposure per current GE90 Workscope Planning Guide.

**Answer**

Yes, the FAA has determined that the actions required by the AD will effectively prevent failure of the HPCR 8-10 stage spool by removing cracked parts from service.

**Conclusion**

We reviewed the relevant data, considered the comments received, and determined that air safety and the public interest require adopting the AD as proposed.

**Costs of Compliance**

We estimate that this AD will affect 33 GE90-76B; GE90-77B; GE90-85B; GE90-90B; and GE90-94B engines, installed on airplanes of U.S. registry. We also estimate that it will take about 2 work-hours per engine to perform the inspection, and that the average labor rate is $85 per work-hour. Based on these figures, we estimate the total cost of the AD to U.S. operators to be $5,610 for one inspection cycle.

**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):

**2011-15-06 General Electric Company:** Amendment 39-16753; Docket No. FAA-2010-1024; Directorate Identifier 2010-NE-34-AD.

**Effective Date**

(a) This AD is effective August 18, 2011.

**Affected ADs**

(b) None.

**Applicability**

(c) This AD applies to General Electric Company GE90-76B; GE90-77B; GE90-85B; GE90-90B; and GE90-94B turbofan engines with a high-pressure compressor rotor (HPCR) 8-10 stage spool, part number (P/N) 1844M90G01 or 1844M90G02, installed.

**Unsafe Condition**

(d) This AD was prompted by cracks discovered on one HPCR 8-10 spool between the 9-10 stages in the weld joint. We are issuing this AD to prevent failure of the HPCR 8-10 stage spool, uncontained engine failure, and damage to the airplane.

**Compliance**

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

**Inspections of the HPCR 8-10 Stage Spool**

(f)(1) At the next piece-part exposure of the HPCR 8-10 stage spool after the effective date of this AD, perform a fluorescent penetrant inspection (FPI) and eddy current inspection (ECI) of the weld joint between the 9-10 stages of the HPCR 8-10 stage spool for cracks.

(2) Thereafter, perform repetitive FPIs and ECIs of the weld joint between the 9-10 stages of the HPCR 8-10 stage spool for cracks at every piece-part exposure of the HPCR 8-10 stage spool.

(3) Remove from service any HPCR 8-10 stage spool found cracked.

(4) Guidance on performing the FPI can be found in GE90 (GEK100700) Engine Manual, Chapter 72-31-08, Inspection 001.

(5) Guidance on performing the ECI can be found in GE90 (GEK100700) Engine Manual, Chapter 72-31-08, Special Procedures 001.

**Definition**

(g) For the purpose of this AD, piece-part exposure is when the HPCR stage 8-10 spool is removed from the engine and completely disassembled.

**Alternative Methods of Compliance (AMOCs)**

(h) The Manager, Engine Certification Office, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19.

**Related Information**

(i)(1) For more information about this AD, contact Jason Yang, Aerospace Engineer, Engine Certification Office, FAA, 12 New England Executive Park, Burlington, MA 01803; phone: 781-238-7747; fax: 781-238-7199; e-mail: jason.yang@faa.gov.

(2) 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; fax: 513-552-3329; e-mail: geae.aoc@ge.com. For information on the availability of this material at the FAA, call 781-238-7125.

**Material Incorporated by Reference**

(j) None.

Issued in Burlington, Massachusetts, on July 7, 2011.
Peter A. White,
Acting Manager, Engine & Propeller Directorate,
Aircraft Certification Service.