

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2013-0186; Directorate Identifier 2013-NE-11-AD; Amendment 39-17571; AD 2013-17-07]

RIN 2120-AA64

Airworthiness Directives; General Electric Company Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: We are adopting a new airworthiness directive (AD) for certain General Electric Company (GE) GE90-76B, -85B, -90B, -94B, -110B1, and -115B turbofan engines. This AD was prompted by multiple reports of distress of certain stage 1 high-pressure turbine (HPT) stator shrouds due to accelerated corrosion and oxidation, including one engine in-flight shutdown (IFSD) caused by failure of the HPT stator shrouds. This AD requires initial and repetitive on-wing 360-degree borescope inspections (BSIs) for corrosion and oxidation of stage 1 HPT stator shrouds. If a shroud is found to be distressed, this AD requires reinspection at a reduced interval or removal from service before further flight. We are issuing this AD to prevent failure of stage 1 HPT stator shrouds, resulting in an IFSD of one or more engines, loss of thrust control, and damage to the airplane.

DATES: This AD is effective October 18, 2013.

The Director of the Federal Register approved the incorporation by reference of certain publications listed in the AD as of October 18, 2013.

ADDRESSES: For service information identified in this AD, contact General Electric Company, One Neumann Way, MD Y-75, Cincinnati, OH; phone: 513-552-2913; email: geae.aoc@ge.com; Web site: www.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 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; email: jason.yang@faa.gov.

SUPPLEMENTARY INFORMATION:

Discussion

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to include an AD that would apply to the specified products. The NPRM published in the Federal Register on April 2, 2013 (78 FR 19628). The NPRM proposed to require initial and repetitive on-wing 360-degree BSIs for corrosion and oxidation of stage 1 HPT stator shrouds. If a shroud failed the inspection, the NPRM proposed to require removal from service before further flight. We are issuing this AD to prevent failure of stage 1 HPT stator shrouds, resulting in an IFSD of one or more engines, loss of thrust control, and damage to the airplane.

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 To Clarify the Inspection Threshold for Compliance

Austrian Airlines requested that we specify a compliance threshold of 2,000 cycles to be in agreement with GE Service Bulletin (SB) No. GE90-100 SB 72-0528, dated November 15, 2012, rather than the 2,100 cycles specified in the NPRM (78 FR 19628, April 2, 2013).

We disagree. GE SB No. GE90-100 SB 72-0528, dated November 15, 2012, requires a BSI within 2 months after an engine reaches 2,000 cycles. We estimate that 2 months of utilization is about 100 cycles, which we added to the initial compliance threshold to strengthen enforceability and to lessen the impact on operators with engines having less than 2,000 cycles. We did not change this AD.

Request for Clarification on Affected Part Numbers

American Airlines (AAL) commented that since stage 1 HPT stator shroud, part number (P/N) 1847M52P16, is included in the NPRM (78 FR 19628, April 2, 2013), that stage 1 HPT stator shroud, P/N 1847M52P10, should also be included.

We disagree. Our risk analysis determined that corrective actions are required for stage 1 HPT stator shroud, P/N 1847M52P16. Although stage 1 HPT stator shroud, P/N 1847M52P10, also experienced distress in service, the distress was due to a different root cause. We did not identify a safety issue associated with the distress associated with stage 1 HPT stator shroud, P/N 1847M52P10. We did not change this AD.

Request To Reduce Requirements Due to Service Bulletin Category

AAL commented that we should not mandate corrective actions in an AD since GE did not designate the operable service bulletins as alert service bulletins, and therefore GE did not identify stage 1 HPT stator shroud distress as a safety issue.

We disagree. The corrective actions mandated in this AD are based on the results of a risk analysis of relevant engine operational safety issues. The category of service bulletin issued by GE was not a factor in our decision to issue this AD. We did not change this AD.

Request To Change Applicability

AAL requested that we add GE90 engines that do not have GE SB No. GE90-100 SB 72-0348, which introduces a new stage 1 HPT stator shroud and new shroud hanger, incorporated, to the applicability of this AD. AAL believes that an engine that has GE SB No. GE90-100 SB 72-0348, incorporated, does not require repetitive BSIs.

We disagree. After an engine has GE SB No. GE90-100 SB 72-0348 incorporated, using shrouds with a new P/N, the engine is not affected by this AD. A stage 1 HPT stator shroud P/N not listed in the Applicability of this AD is not affected by this AD. We did not change this AD.

Request To Use Revised GE SB for Compliance Actions

AAL requested that paragraph (f)(4)(i) of the AD also reference GE SB No. SB 72-0528 R01, Revision 1, dated April 1, 2013, in addition to the initial issue of that GE SB.

We agree. We changed paragraphs (f)(4)(i) and (f)(4)(ii) of this AD by adding a reference to GE SB No. SB 72-0528 R01, Revision 1, dated April 1, 2013.

Request To Revise Inspection Instructions

AAL noted that paragraph 3.A. of the Accomplishment Instructions of GE SB No. GE90-100 SB 72-0528, dated November 15, 2012, which we refer to in the compliance paragraphs of this AD, contain elements that do not pertain to this AD, especially elements regarding assembly and disassembly. AAL requested that we revise paragraphs (f)(3)(i) and (f)(4)(i) of this AD by removing accomplishment elements not related to this AD.

We partially agree. We agree that paragraph 3.A. of the Accomplishment Instructions of GE SB No. GE90-100 SB 72-0528, dated November 15, 2012, contains some instructions not directly related to this AD. We do not agree that they are unrelated service information for inspecting and removing a distressed shroud. We changed paragraphs (f)(3)(i) and (f)(4)(i) of this AD to refer to paragraph 3.A. of the Accomplishment Instructions of the GE SB for guidance on how to perform a BSI to detect and remove a distressed shroud.

Request To Detail the Scope of Work for the BSI

AAL requested that we revise paragraph (f)(4)(ii) of this AD to include the scope of work for the BSI.

We partially agree. We do not agree with including the scope of work for the BSI in this AD. We agree to include a reference to the paragraphs of the GE SB that detail the scope of work for the BSI to be performed for this AD, including how to determine if the shrouds are distressed. We changed paragraphs (f)(4)(ii) and (f)(4)(iii) of this AD and also paragraphs (f)(3)(ii) and (f)(3)(iii) of this AD accordingly.

Request To Add a Paragraph Summarizing Credit for Previous Actions

One commenter requested that we add a paragraph granting credit for engines previously inspected in accordance with the GE SBs.

We disagree. Paragraph (e) of this AD already grants credit for previous inspections with the statement, "Comply with this AD within the compliance times specified, unless already done." We did not change this AD.

Request To Clarify Whether Alternate Method of Compliance (AMOC) Is Needed

All Nippon Airways Co., Ltd (ANA) requested clarification as to whether use of a locally manufactured BSI guide tube would require an AMOC request. ANA noted that using a BSI guide tube facilitates insertion of the borescope and does not otherwise affect the procedures described in GE SBs.

We agree that use of a BSI guide tube facilitates insertion of the borescope and does not affect the procedure required by this AD. An AMOC is not required to use a BSI guide tube. We did not change this AD.

Request To Revise Summary and Unsafe Condition Language

GE requested that we change the word "failure" to "distress" in the Summary and in paragraph (d) of this AD. GE commented that while there have been several reports of distress to the stage 1 HPT stator shrouds, there has been only one failure.

We partially agree. We agree with revising the wording to more accurately describe the service history. We disagree with removing the word "failure" from the Summary paragraph and from paragraph (d) of this AD because there has been an IFSD caused by failure of the stage 1 HPT stator shroud.

We changed the Summary paragraph and paragraph (d) of this AD to include "distress."

Request To Change the Proposed AD Requirements Paragraph

GE requested that we change the Summary and Proposed AD Requirements paragraphs by adding the words "reduced interval inspection or . . ." to more accurately coincide with the intent of GE SB No. GE90-100 SB 72-0528.

We agree. We changed the Summary paragraph of this AD by adding the words "reinspection at a reduced interval or . . .". The sentence now reads, "If a shroud is found to be distressed, this AD requires reinspection at a reduced interval or removal from service before further flight."

Conclusion

We reviewed the relevant data, considered the comments received, and determined that air safety and the public interest require adopting the AD with the changes described previously. We have determined that these minor changes:

- Are consistent with the intent that was proposed in the NPRM (78 FR 19628, dated April 2, 2013) for correcting the unsafe condition; and
- Do not add any additional burden upon the public than was already proposed in the NPRM (78 FR 19628, dated April 2, 2013).

We also determined that these changes will not increase the economic burden on any operator or increase the scope of the AD.

Costs of Compliance

We estimate that this AD will affect about 100 GE90 engines installed on airplanes of U.S. registry. We also estimate that it will take about four hours per engine to perform one inspection. The average labor rate is \$85 per hour. Based on these figures, we estimate the total cost of this AD on U.S. operators for one inspection to be \$34,000.

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 to the extent that it justifies making a regulatory distinction, 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):



2013-17-07 General Electric Company: Amendment 39-17571; Docket No. FAA-2013-0186; Directorate Identifier 2013-NE-11-AD.

(a) Effective Date

This AD is effective October 18, 2013.

(b) Affected ADs

None.

(c) Applicability

This AD applies to General Electric Company (GE):

- (1) GE90-76B, -85B, -90B, and -94B turbofan engines with stage 1 high-pressure turbine (HPT) stator shrouds, part number (P/N) 1847M52P14, installed.
- (2) GE90-110B1 and -115B turbofan engines with stage 1 HPT stator shrouds, P/N 1847M52P16, installed.

(d) Unsafe Condition

This AD was prompted by multiple reports of distress of certain stage 1 HPT stator shrouds due to accelerated corrosion and oxidation, including one engine in-flight shutdown (IFSD) caused by failure of the HPT stator shrouds. We are issuing this AD to prevent failure of stage 1 HPT stator shrouds, resulting in an IFSD of one or more engines, loss of thrust control, and damage to the airplane.

(e) Compliance

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

(f) Borescope Inspections of the Stage 1 HPT Stator Shrouds

- (1) Perform an initial on-wing borescope inspection (BSI) of the stage 1 HPT stator shrouds for corrosion and oxidation before accumulating 2,100 cycles since new, or within 100 cycles in service after the effective date of this AD, whichever occurs later.
- (2) Thereafter, repeat the BSI of the stage 1 HPT stator shrouds every 250 cycles since last inspection or fewer, depending on the results of the inspection.
- (3) For engines listed in paragraph (c)(1) of this AD:
 - (i) Perform a 360-degree BSI of the stage 1 HPT stator shrouds for corrosion and oxidation. Guidance for performing the BSI can be found in paragraph 3.A of the Accomplishment Instructions of GE Service Bulletin (SB) No. GE90 S/B 72-1076, dated November 19, 2012.
 - (ii) Refer to Figure 2 of GE SB No. GE90 S/B 72-1076, dated November 19, 2012, to determine the degree of shroud corrosion and oxidation.

(iii) Use paragraph 3.B. of the Accomplishment Instructions of GE SB No. GE90 S/B 72-1076, dated November 19, 2012, to determine the next inspection interval.

(4) For engines listed in paragraph (c)(2) of this AD:

(i) Perform a 360-degree BSI of the stage 1 HPT stator shrouds for corrosion and oxidation.

Guidance for performing the BSI can be found in paragraph 3.A of the Accomplishment Instructions of GE SB No. SB 72-0528 R01, Revision 1, dated April 1, 2013, or GE GE90-100 SB No. SB 72-0528, dated November 15, 2012.

(ii) Refer to Figure 2 of GE SB No. SB 72-0528 R01, Revision 1, dated April 1, 2013, or GE GE90-100 SB No. SB 72-0528, dated November 15, 2012, to determine the degree of shroud corrosion and oxidation.

(iii) Use paragraph 3.B. of the Accomplishment Instructions of GE SB No. SB 72-0528 R01, Revision 1, dated April 1, 2013, or GE GE90-100 SB No. SB 72-0528, dated November 15, 2012, to determine the next inspection interval.

(5) Remove from service before further flight, any stage 1 HPT stator shroud found with any hole further than 0.35-inch from the shroud leading edge, and more than 0.25-inch in diameter, and that is more than 0.049 square inch in area.

(g) Alternative Methods of Compliance (AMOCs)

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

(h) Related Information

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; email: jason.yang@faa.gov.

(i) 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 (GE) Service Bulletin (SB) No. SB 72-0528 R01, Revision 1, dated April 1, 2013.

(ii) GE SB No. GE90-100 SB 72-0528, dated November 15, 2012.

(iii) GE SB No. GE90 S/B 72-1076, dated November 19, 2012.

(3) For GE service information identified in this AD, contact General Electric Company, One Neumann Way, MD Y-75, Cincinnati, OH; phone: 513-552-2913; email: geae.aoc@ge.com; Web site: www.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 August 22, 2013.
Dorenda D. Baker,
Director,
Aircraft Certification Service.