[4910-13-P]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2018-0406; Product Identifier 2013-NE-30-AD; Amendment 39-19457; AD 2018-20-23]

RIN 2120-AA64

Airworthiness Directives; General Electric Company Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: We are superseding Airworthiness Directive (AD) 2017-07-04 for General Electric Company (GE) GE90-110B1 and GE90-115B turbofan engines with certain high-pressure compressor (HPC) rotor stage 2-5 spools installed. AD 2017-07-04 required removing certain HPC rotor stage 2-5 spools from service at times determined by a drawdown plan. This AD requires removing certain HPC rotor stage 2-5 spools from service before reaching the new reduced life limit and replacing them with parts eligible for installation. This AD was prompted by the publication of a GE service bulletin (SB) that increases the number of affected HPC rotor stage 2-5 spools and includes HPC rotor stage 2-5 spools that were inadvertently omitted from the applicability of AD 2017-07-04. We are issuing this AD to address the unsafe condition on these products.

DATES: This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of certain publications listed in this AD as of [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of a certain other publication listed in this AD as of April 21, 2017 (82 FR 16728, April 6, 2017).

ADDRESSES: For service information identified in this final rule, contact General Electric Company, 1 Neumann Way, Room 285, Cincinnati, OH, 45215; phone: 513-552-3272; email: geae.aoc@ge.com. You may view this service information at the FAA, Engine and Propeller Standards Branch, 1200 District Avenue, Burlington, MA, 01803. For information on the availability of this material at the FAA, call 781-238-7759. It is also available on the internet at http://www.regulations.gov by searching for and locating Docket No. FAA-2018-0406.

Examining the AD Docket

You may examine the AD docket on the Internet at http://www.regulations.gov by searching for and locating Docket No. FAA-2018-0406; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this final rule, the regulatory evaluation, any comments received, and other information. The address for Docket Operations (phone: 800-647-5527) is 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: David Bethka, Aerospace Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA, 01803; phone: 781-238-7129; fax: 781-238-7199; email: david.bethka@faa.gov.

SUPPLEMENTARY INFORMATION:

Discussion

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to supersede AD 2017-07-04, Amendment 39-18842 (82 FR 16728, April 6, 2017), (“AD

2017-07-04"). AD 2017-07-04 applied to GE GE90-110B1 and GE90-115B turbofan engines with certain HPC rotor stage 2-5 spools installed. The NPRM published in the Federal Register on June 25, 2018 (83 FR 29474). The NPRM was prompted by the publication of a GE SB that increases the number of affected HPC rotor stage 2-5 spools and includes HPC rotor stage 2-5 spools that were inadvertently omitted from the applicability of AD 2017-07-04. The NPRM proposed to require removing certain HPC rotor stage 2-5 spools from service before reaching the new reduced life limit and replacing them with parts eligible for installation. We are issuing this AD to address the unsafe condition on these products.

Comments

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

Request to List Additional Service Information in Required Actions

All Nippon Airways (ANA), Azur Aviation, and Lufthansa Technik AG (Lufthansa) questioned why HPC rotor stage 2-5 spools listed in paragraph (c) of this AD, identified in GE SB GE90-100 SB 72-0499 R01, dated February 5, 2014, are not required to be replaced in paragraph (g) of this AD. Lufthansa reasoned that GE SB GE90-100 SB 72-0499 R01, dated February 5, 2014, requires replacement of affected spools, but this AD does not.

We disagree. Based on information provided by GE, and to the best of our knowledge, all HPC rotor stage 2-5 spools listed in paragraph 1.A. of GE SB GE90-100 SB 72-0499 R01, dated February 5, 2014, have been removed from service. Because these HPC rotor stage 2-5 spools have been removed from service, we did not require their removal under paragraph (g) of this AD. This AD, however, includes an installation

prohibition under paragraph (h) to prevent installation of these HPC rotor stage 2-5 spools. We did not change this AD.

Request to Consider a Threshold Rework Option

FedEx Express (FedEx) requested that certain HPC rotor stage 2-5 spools be considered for a potential GE rework option to extend their life beyond allowances of this AD, before removal from service. FedEx reasoned that GE intends to provide a rework option that will extend the life of HPC rotor stage 2-5 spools that are removed before reaching 4,500 cycles. This rework option could extend the on-wing times for some engines.

We disagree. While GE intends to provide a rework option to extend the life of certain HPC rotor stage 2-5 spools, we do not require compliance based on information that has not yet been published. We based the compliance on the most recently published service information. This AD and the associated GE service information do not allow credit for rework or life extensions. We did not change this AD.

Request to Verify Applicability and Purpose

ANA requested clarification regarding whether the proposed AD intends to require removing the following three (3) HPC rotor stage 2-5 spool configurations from service at a time determined by this AD:

(1) HPC rotor stage 2-5 spools that use the original seal teeth coating. (Known as Population-1);

(2) HPC rotor stage 2-5 spools that use the modified seal teeth coating. (Known as Population-2); and

(3) HPC rotor stage 2-5 spools that use the modified seal teeth coating without inner-teeth coating. (Known as Population-3).

We interpret ANA's comment as request to verify if this AD requires removal of the HPC rotor stage 2-5 spools identified in GE SB GE90-100 SB 72-0499 R01, dated

February 5, 2014; GE SB GE90-100 SB 72-0659 R01, dated February 18, 2016; and GE SB GE90-100 S/B 72-0714, Revision 01, dated February 16, 2018. ANA commented that requirements and actions in this AD are difficult to understand.

The purpose of this AD is to remove the HPC rotor stage 2-5 spools identified in GE SB GE90-100 SB 72-0659 R01, dated February 18, 2016, and GE SB GE90-100 S/B 72-0714, Revision 01, dated February 16, 2018, from service, and to prohibit the installation of those HPC rotor stage 2-5 spools and the HPC rotor stage 2-5 spools identified in GE SB GE90-100 SB 72-0499 R01, dated February 5, 2014. Paragraphs (c) and (g) of this AD list the affected part numbers and serial numbers. We did not change this AD.

Support for the AD

The Air Line Pilots Association, Boeing Company, and American Airlines expressed support for the NPRM as written.

Conclusion

We reviewed the relevant data, considered the comments received, and determined that air safety and the public interest require adopting this AD as proposed except for minor editorial changes. We have determined that these minor changes:

- Are consistent with the intent that was proposed in the NPRM for addressing the unsafe condition; and
- Do not add any additional burden upon the public than was already proposed in the NPRM.

Related Service Information under 1 CFR part 51

We reviewed GE SB GE90-100 SB 72-0499 R01, dated February 5, 2014; GE SB GE90-100 SB 72-0659 R01, dated February 18, 2016; and GE SB GE90-100 S/B 72-0714, Revision 01, dated February 16, 2018.

GE SB GE90-100 SB 72-0499 R01 describes procedures for identification and removal from service of HPC rotor stage 2-5 spools that use the original seal tooth coating process. GE SB GE90-100 SB 72-0659 R01 describes procedures for identification and removal from service of HPC rotor stage 2-5 spools that use a modified seal tooth coating process. GE SB GE90-100 S/B 72-0714, Revision 01 describes procedures for identification and removal from service of HPC rotor stage 2-5 spools that use the modified seal tooth coating process, without coating between the seal teeth.

This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in the ADDRESSES section.

Costs of Compliance

We estimate that this AD affects 85 engines installed on airplanes of U.S. registry.

We estimate the following costs to comply with this AD:

Estimated costs

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Paragraph (g)(1) Spools Replacement	0 work-hours X $85 per hour = $0	$229,737	$229,737	$5,054,214
Paragraph (g)(2) Spools Replacement	0 work-hours X $85 per hour = $0	$39,048	$39,048	$2,460,024

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.

This AD is issued in accordance with authority delegated by the Executive Director, Aircraft Certification Service, as authorized by FAA Order 8000.51C. In accordance with that order, issuance of ADs is normally a function of the Compliance and Airworthiness Division, but during this transition period, the Executive Director has delegated the authority to issue ADs applicable to engines, propellers, and associated appliances to the Manager, Engine and Propeller Standards Branch, Policy and Innovation Division.

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 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 removing Airworthiness Directive (AD) 2017-07-04, Amendment 39-18842 (82 FR 16728, April 6, 2017), and adding the following new AD:

2018-20-23 **General Electric Company**: Amendment 39-19457; Docket No. FAA-2018-0406; Product Identifier 2013-NE-30-AD.

(a) Effective Date

This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

This AD replaces AD 2017-07-04, Amendment 39-18842 (82 FR 16728, April 6, 2017).

(c) Applicability

This AD applies to General Electric Company (GE) GE90-110B1 and GE90-115B turbofan engines with HPC rotor stage 2-5 spools, with:

(1) A serial number (S/N) listed in either, paragraph 4, Appendix A of GE Service Bulletin (SB) No. GE90-100 SB 72-0499 R01, dated February 5, 2014; in paragraph 4, Appendix A of GE SB GE90-100 SB 72-0659 R01, dated February 18, 2016; or in

paragraph 4, Appendix A, of GE SB GE90-100 S/B 72-0714, Revision 01, dated February 16, 2018.

(2) A part number (P/N) 351-103-109-0, P/N 351-103-110-0, P/N 351-103-147-0 or P/N 351-103-152-0, with any S/N.

(d) Subject

Joint Aircraft System Component (JASC) Code 7230, Turbine Engine Compressor Section.

(e) Unsafe Condition

This AD was prompted by reports of cracks in HPC rotor stage 2-5 spool aft spacer arms. We are issuing this AD to prevent failure of the HPC rotor stage 2-5 spools. The unsafe condition, if not addressed, could result in uncontained spool release, damage to the engine, and damage to the airplane.

(f) Compliance

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

(g) Required Actions

(1) Remove from service HPC rotor stage 2-5 spools with S/Ns listed in paragraph 4, Appendix A, of GE SB GE90-100 SB 72-0659 R01, dated February 18, 2016, as follows, or before further flight, whichever occurs later:

(i) For spools with fewer than 4,500 flight cycles since new (CSN) as of April 21, 2017, remove before exceeding 5,000 CSN.

(ii) For spools with 4,500 CSN or more but fewer than 5,200 CSN as of April 21, 2017, remove within 500 CIS but not to exceed 5,500 CSN.

(iii) For spools with 5,200 CSN or more but fewer than 5,600 CSN as of April 21, 2017, remove within 300 CIS but not to exceed 5,800 CSN.

(iv) For spools with 5,600 CSN or more but fewer than 5,800 CSN as of April 21, 2017, remove within 200 CIS but not to exceed 5,850 CSN.

(v) For spools with 5,800 CSN or more but fewer than 6,000 CSN as of April 21, 2017, remove within 50 CIS but not to exceed 6,000 CSN.

(vi) For spools with 6,000 CSN or more as of April 21, 2017, remove before the next flight.

(2) Remove from service HPC rotor stage 2-5 spools listed in paragraph (c)(2) of this AD and HPC rotor stage 2-5 spools with S/Ns listed in paragraph 4, Appendix A, of GE SB GE90-100 S/B 72-0714, Revision 01, dated February 16, 2018, before exceeding 8,200 CSN, or before further flight, whichever occurs later.

(h) Installation Prohibition

(1) After the effective date of this AD, do not install or reinstall onto any engine, any HPC rotor stage 2-5 spool with an S/N listed in paragraph 4, Appendix A, of GE SB No. GE90-100 SB 72-0499 R01, dated February 5, 2014, or paragraph 4, Appendix A, of GE SB GE90-100 SB72-0659 R01, dated February 18, 2016, that exceeds 5,000 CSN.

(2) After the effective date of this AD, do not install or reinstall onto any engine, any HPC rotor stage 2-5 spool listed in paragraph (c)(2) of this AD, or HPC rotor stage 2-5 spool with an S/N listed in paragraph 4, Appendix A, of GE SB GE90-100 S/B 72-0714, Revision 01, dated February 16, 2018, that exceeds 8,200 CSN.

(i) Alternative Methods of Compliance (AMOCs)

(1) The Manager, ECO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the certification office, send it to the attention of the person identified in paragraph (j) of this AD. You may email your request to: ANE-AD-AMOC@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(j) Related Information

For more information about this AD, contact David Bethka, Aerospace Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA, 01803; phone: 781-238-7129; fax: 781-238-7199; email: david.bethka@faa.gov.

(k) 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.

(3) The following service information was approved for IBR on [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(i) General Electric Company (GE) Service Bulletin (SB) GE90-100 SB 72-0499 R01, dated February 5, 2014.

(ii) GE SB GE90-100 S/B 72-0714, Revision 01, dated February 16, 2018.

(4) The following service information was approved for IBR on April 21, 2017 (82 FR 16728, April 6, 2017).

(i) GE SB GE90-100 SB 72-0659 R01, dated February 18, 2016.

(ii) [Reserved.]

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

(6) You may view this service information at FAA, Engine and Propeller Standards Branch, 1200 District Avenue, Burlington, MA, 01803. For information on the availability of this material at the FAA, call 781-238-7759.

(7) You may view this service information that is incorporated by reference 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 October 17, 2018.

Karen M. Grant,
Acting Manager, Engine and Propeller Standards Branch,
Aircraft Certification Service.
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