



DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2020-0653; Project Identifier AD-2020-00631-E; Amendment 39-21390; AD 2021-02-07]

RIN 2120-AA64

Airworthiness Directives; General Electric Company Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: The FAA is adopting a new airworthiness directive (AD) for all General Electric Company (GE) GENx-1B64, -1B64/P1, -1B64/P2, -1B67, -1B67/P1, -1B67/P2, -1B70, -1B70/75/P1, -1B70/75/P2, -1B70/P1, -1B70/P2, -1B70C/P1, -1B70C/P2, -1B74/75/P1, -1B74/75/P2, -1B76/P2, and -1B76A/P2 model turbofan engines. This AD was prompted by a report of a crack in the outer fuel manifold causing fuel leakage. This AD requires initial and repetitive visual inspections of the cushioned loop clamp (p-clamp) and, depending on the results of the inspection, a spot fluorescent penetrant inspection (FPI) of the outer fuel manifold. Depending on the results of the FPI, this AD may require replacement of the outer fuel manifold. This AD also requires initial and repetitive replacements of the p-clamp. The FAA is 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 a certain publication listed in this AD as of [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: For service information identified in this final rule, contact General Electric Company, 1 Neumann Way, Cincinnati, OH 45215; phone: (513) 552-3272; email: aviation.fleetsupport@ae.ge.com; website: www.ge.com. You may view this service information at the FAA, Airworthiness Products Section, Operational Safety

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 at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2020-0653.

Examining the AD Docket

You may examine the AD docket at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2020-0653; 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, any comments received, and other information. The address for Docket Operations 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: Mehdi Lamnyi, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7743; fax: (781) 238-7199; email: Mehdi.Lamnyi@faa.gov.

SUPPLEMENTARY INFORMATION:

Background

The FAA issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 by adding an AD that would apply to all GE GEnx-1B64, -1B64/P1, -1B64/P2, -1B67, -1B67/P1, -1B67/P2, -1B70, -1B70/75/P1, -1B70/75/P2, -1B70/P1, -1B70/P2, -1B70C/P1, -1B70C/P2, -1B74/75/P1, -1B74/75/P2, -1B76/P2, and -1B76A/P2 model turbofan engines. The NPRM published in the *Federal Register* on July 20, 2020 (85 FR 43752). The NPRM was prompted by a report of a crack in the outer fuel manifold causing fuel leakage. In the NPRM, the FAA proposed to require initial and repetitive visual inspections of the p-clamp and, depending on the results of the inspection, a spot FPI of the outer fuel manifold. Depending on the results of the FPI, the NPRM proposed to require replacement of the outer fuel manifold. The NPRM also proposed to require initial and repetitive replacements of the p-clamp. The FAA is issuing this AD to address the unsafe condition on these products.

Discussion of Final Airworthiness Directive

Comments

The FAA received comments from six commenters. The commenters were Air Lines Pilots Association, International (ALPA); American Airlines (AAL); Boeing Commercial Airplanes (Boeing); GE Aviation (GE); Ethiopian Airlines; and United Airlines (UAL). One commenter requested changes to paragraph (g), Required Actions, of this AD and to On-Condition Costs. Two commenters requested a change to compliance that was not implemented. Two commenters requested clarification of the AD requirements. Four of the six commenters expressed support for the AD. The following presents the comments received on the NPRM and the FAA's response to each comment.

Request to Add Affected P-Clamp Significant Item Number (SIN)

GE requested that the FAA update paragraph (g), Required Actions, of this AD to include the affected p-clamp SIN when the p-clamp is referenced. GE recognized that the p-clamp SIN is defined in paragraph (h), Definition, of this AD. However, GE reasoned that as there are multiple p-clamps to be inspected per GENx-1B Engine Manual, 05-21-00, MANDATORY INSPECTION, listing the p-clamp SIN in paragraph (g) of this AD avoids confusion.

The FAA agrees to include the p-clamp SIN in paragraph (g) of this AD.

Request to Update On-Condition Cost

GE requested that the FAA revise the replacement of the outer fuel manifold in On-Condition Costs from 250 work hours to 2 work hours. GE reasoned that GE GENx-1B Service Bulletin (SB) 73-0080 R01, dated August 29, 2019, references GE GENx-1B SB 73-0053 for instructions to replace the outer fuel manifold. GE noted that GE GENx-1B SB 73-0053 estimates that two hours are needed to replace the outer fuel manifold. GE stated that the discrepancy between the NPRM and service information could cause confusion or lead operators to opt to remove the engine to perform the outer fuel manifold replacement.

The FAA agrees. The FAA changed the estimated labor hours for replacing the outer fuel manifold in the On-Condition Costs section of this AD from 250 work hours to 2 work hours. The FAA also changed the estimated cost per product for replacing the

outer fuel manifold in the On-Condition Costs section of this AD from \$39,650 to \$18,570, which reflects the reduction in labor hours.

Request to Allow Use of Later Revisions of Service Information

AAL and UAL requested that the FAA add the phrase “or later” when referencing the service information in this AD. AAL stated that the manufacturer indicated that the service information is intended only to be a containment measure. Specifying “or later” could prevent numerous requests for Alternative Methods of Compliance if the manufacturer revises the service information. UAL stated that the manufacturer is developing a terminating action and, as a result, a revision to the service information is expected.

The FAA disagrees with adding language that allows the use of later revisions of the service information when performing the required actions of this AD. Later revisions of the service information have not been published by the manufacturer or reviewed by the FAA.

Request to Clarify Sending the Outer Fuel Manifold for Repair

AAL requested that the FAA clarify if the removed outer fuel manifold needs to be sent for repair. AAL cited references within paragraph 3.B.(4)(b) of GE GENx-1B SB 73-0080 R01, dated August 29, 2019, that instructs operators to send removed outer fuel manifolds for repair.

The FAA agrees that sending a removed outer fuel manifold for repair, as stated in paragraph 3.B.(4)(b) of GE GENx-1B SB 73-0080 R01, dated August 29, 2019, is not mandated by this AD. This AD addresses the unsafe condition by requiring the removal of an outer fuel manifold if a crack or a sign of leakage is found and replacing it with a part eligible for installation. This AD does not require sending an outer fuel manifold removed in accordance with paragraph (g)(2)(i) of this AD for repair. The FAA clarified this by adding paragraph (i), No Repair Requirement, to this AD.

Request to Clarify if Need to Comply Again

Ethiopian Airlines asked if operators who inspected and replaced the affected p-clamp using GE GENx-1B SB 73-0080 R01, dated August 29, 2019, before the effective date of this AD, need to comply again.

If operators performed the initial visual inspection and replacement of the p-clamp as required by paragraphs (g)(1) and (3) of this AD before the effective date of this AD, then these actions meet the initial visual inspection and replacement requirements of this AD. Paragraph (f), Compliance, of this AD requires compliance with this AD within the times specified, unless already done. If the initial visual inspection and replacement of the p-clamp was already performed prior to the effective date of this AD, operators must perform the repetitive inspections, follow-on-actions, and replacements of the p-clamp required by paragraphs (g)(1)(i), (2), and (3) of this AD using the stated compliance intervals.

Support for the AD

AAL, ALPA, Boeing, and UAL expressed support for the AD.

Conclusion

The FAA reviewed the relevant data, considered any comments received, and determined that air safety requires adopting this AD as proposed. Accordingly, the FAA is issuing this AD to address the unsafe condition on these products. Except for minor editorial changes and any other changes described previously, this AD is adopted as proposed in the NPRM. None of the changes will increase the economic burden on any operator.

Related Service Information under 1 CFR Part 51

The FAA reviewed GE GENx-1B SB 73-0080 R01, dated August 29, 2019. This SB describes procedures for replacing the p-clamp located at the signal fuel tube hose, SIN 34200, and instructions for removing the signal fuel tube hose when a p-clamp is found damaged or missing. 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 ADDRESSES.

Interim Action

The FAA considers this AD interim action. The manufacturer is still reviewing this unsafe condition and may develop a terminating action.

Costs of Compliance

The FAA estimates that this AD affects 190 engines installed on airplanes of U.S. registry.

The FAA estimates the following costs to comply with this AD:

Estimated costs

Action	Labor Cost	Parts Cost	Cost per product	Cost on U.S. operators
Visually inspect the p-clamp	0.25 work-hours x \$85 per hour = \$21.25	\$0	\$21.25	\$4,037.50
Replace the p-clamp	0.25 work-hours x \$85 = \$21.25	\$102	\$123.25	\$23,417.50

The FAA estimates the following costs to do any necessary FPIs and replacements that are required based on the results of the visual inspection. The agency has no way of determining the number of aircraft that require FPI or replacement:

On-condition costs

Action	Labor Cost	Parts Cost	Cost per product
FPI the outer fuel manifold	2.5 work-hours x \$85 per hour = \$212.50	\$0	\$212.50
Replace the outer fuel manifold	2 work-hours x \$85 per hour = \$170	\$18,400	\$18,570

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.

The FAA is 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) Will not affect intrastate aviation in Alaska, 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.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

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:

2021-02-07 General Electric Company: Amendment 39-21390; Docket No. FAA-2020-0653; Project Identifier AD-2020-00631-E.

(a) Effective Date

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

(b) Affected ADs

None.

(c) Applicability

This AD applies to all General Electric Company (GE) GEnx-1B64, -1B64/P1, -1B64/P2, -1B67, -1B67/P1, -1B67/P2, -1B70, -1B70/75/P1, -1B70/75/P2, -1B70/P1, -1B70/P2, -1B70C/P1, -1B70C/P2, -1B74/75/P1, -1B74/75/P2, -1B76/P2, and -1B76A/P2 model turbofan engines.

(d) Subject

Joint Aircraft System Component (JASC) Code 7310, Engine Fuel Distribution.

(e) Unsafe Condition

This AD was prompted by a report of a crack in the outer fuel manifold causing fuel leakage. The FAA is issuing this AD to prevent failure of the outer fuel manifold. The unsafe condition, if not addressed, could result in engine fire and damage to the airplane.

(f) Compliance

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

(g) Required Actions

(1) Within 500 flight cycles (FCs) after the effective date of this AD, perform a visual inspection of the cushioned loop clamp (p-clamp), significant item number (SIN) 34282, to verify the p-clamp is undamaged and installed.

(i) Thereafter, perform the visual inspection required by (g)(1) of this AD at intervals not to exceed 500 FCs since the last inspection.

(ii) [Reserved]

(2) If, during any visual inspection required by paragraphs (g)(1) or (g)(1)(i) of this AD, the p-clamp (SIN 34282) is outside of the limits in paragraph 3.B.(4) of GE GEnx-1B Service Bulletin (SB) 73-0080 R01, dated August 29, 2019, or if the p-clamp (SIN 34282) is missing, perform a spot fluorescent penetrant inspection of the outer fuel manifold, part number (P/N) 2403M46G01, SIN 34302, using Accomplishment Instructions, paragraph 3.B.(4)(b), of GE GEnx-1B SB 73-0080 R01, dated August 29, 2019.

(i) If a crack or a sign of fuel leakage is found, before further flight, remove the outer fuel manifold, P/N 2403M46G01, SIN 34302, from service and replace with a part eligible for installation.

(ii) [Reserved]

(3) Within 500 FCs after the effective date of this AD, and thereafter at intervals not to exceed 500 FCs from the last p-clamp replacement, replace the p-clamp (SIN 34282) with a new p-clamp (SIN 34282). Complete this required action after performing the visual inspections required by paragraphs (g)(1) and (g)(1)(i) of this AD.

(h) Definition

For the purpose of this AD, a p-clamp is a clamp, P/N J1432P12, with SIN 34282, located at the signal fuel tube hose, SIN 34200, as shown in Accomplishment Instructions, paragraph 3, Figure 1, “Outer Fuel Manifold and Clamp Location,” of GE GENx-1B SB 73-0080 R01, dated August 29, 2019.

(i) No Repair Requirement

Sending a removed outer fuel manifold for repair, as set forth in the Accomplishment Instructions, paragraph 3.B.(4)(b), of GE GENx-1B SB 73-0080 R01, dated August 29, 2019, is not required by this AD.

(j) 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 Related Information. 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.

(k) Related Information

For more information about this AD, contact Mehdi Lamnyi, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7743; fax: (781) 238-7199; email: Mehdi.Lamnyi@faa.gov.

(l) 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) GENx-1B Service Bulletin 73-0080 R01, dated August 29, 2019.

(ii) [Reserved]

(3) For GE service information identified in this AD, contact General Electric Company, 1 Neumann Way, Cincinnati, OH 45215; phone: (513) 552-3272; email: aviation.fleetsupport@ae.ge.com; website: www.ge.com.

(4) You may view this service information at FAA, Airworthiness Products Section, Operational Safety Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call (781) 238-7759.

(5) 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, email: fedreg.legal@nara.gov, or go to: <https://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued on January 8, 2021.

Lance T. Gant, Director,
Compliance & Airworthiness Division,
Aircraft Certification Service.