



DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2025-0015; Project Identifier AD-2024-00615-E; Amendment 39-23049; AD 2025-11-03]

RIN 2120-AA64

Airworthiness Directives; General Electric Company Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: The FAA is adopting a new airworthiness directive (AD) for certain General Electric Company (GE) Model GEnx-1B64, GEnx-1B64/P1, GEnx-1B64/P2, GEnx-1B67, GEnx-1B67/P1, GEnx-1B67/P2, GEnx-1B70, GEnx-1B70/75/P1, GEnx-1B70/75/P2, GEnx-1B70/P1, GEnx-1B70/P2, GEnx-1B70C/P1, GEnx-1B70C/P2, GEnx-1B74/75/P1, GEnx-1B74/75/P2, GEnx-1B76/P2, GEnx-1B76A/P2, and GEnx-2B67/P engines. This AD was prompted by a manufacturer's investigation that revealed certain high-pressure turbine (HPT) stage 1 and HPT stage 2 disks were manufactured from powder metal material suspected to contain iron inclusion. This AD requires replacement of affected HPT stage 1 and HPT stage 2 disks with parts eligible for installation. 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 certain publications listed in this AD as of [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES:

AD Docket: You may examine the AD docket at [regulations.gov](https://www.regulations.gov) under Docket No. FAA-2025-0015; 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.

Material Incorporated by Reference:

- For GE material identified in this AD, contact GE, 1 Neumann Way, Cincinnati, OH 45215; phone: (513) 552-3272; email: aviation.fleetsupport@ge.com; website: ge.com

- You may view this material 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 (817) 222-5110. It is also available at regulations.gov under Docket No. FAA-2025-0015.

FOR FURTHER INFORMATION CONTACT: Alexei Marqueen, Aviation Safety Engineer, FAA, 2200 South 216th Street, Des Moines, WA 98198; phone: (781) 238-7178; email: alexei.t.marqueen@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 certain GE Model GEnx-1B64, GEnx-1B64/P1, GEnx-1B64/P2, GEnx-1B67, GEnx-1B67/P1, GEnx-1B67/P2, GEnx-1B70, GEnx-1B70/75/P1, GEnx-1B70/75/P2, GEnx-1B70/P1, GEnx-1B70/P2, GEnx-1B70C/P1, GEnx-1B70C/P2, GEnx-1B74/75/P1, GEnx-1B74/75/P2, GEnx-1B76/P2, GEnx-1B76A/P2, and GEnx-2B67/P engines. The NPRM was published in the *Federal Register* on January 31, 2025 (90 FR 8687). The NPRM was prompted by a manufacturer's investigation that revealed the detection of iron inclusion in turbine disks manufactured from the same powder metal material used to manufacture certain HPT stage 1 and HPT stage 2 disks for the above-referenced engines. Further investigation by the manufacturer revealed that the iron inclusion is attributed to deficiencies in the manufacturing process and may cause reduced material properties and a lower fatigue life capability, which may result in premature fracture and uncontained failure. The manufacturer also informed the FAA that additional risk assessments determined that there were no failed events associated with the discovery of this iron inclusion material; however, concluded that

replacement of the affected HPT stage 1 and HPT stage 2 disks is necessary to prevent any future failed events. In the NPRM, the FAA proposed to require replacement of affected HPT stage 1 and HPT stage 2 disks with parts eligible for installation. 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 the Air Line Pilots Association, International (ALPA), The Boeing Company (Boeing), Cathay Pacific Airways, Thai Airways, United Airlines, and an individual commenter. ALPA and Boeing supported the NPRM without change. The following presents the comments received from Cathay Pacific Airways, Thai Airways, United Airlines, and the individual commenter and the FAA's response.

Request to Clarify Reinstallation of Affected Part

Cathay Pacific Airways requested that the FAA clarify whether the affected part may be reinstalled after being removed from an engine if the part has not reached the cyclic removal threshold identified in GE GENx-1B Service Bulletin 72-0542 R00, dated April 15, 2024 (GE GENx-1B SB 72-0542 R00) and GE GENx-2B SB 72-0471 R00, dated April 15, 2024 (GE GENx-2B Service Bulletin 72-0471 R00).

The FAA agrees to clarify. Because the compliance time of this final rule is at a certain number of cycles or at the next piece part exposure after the effective date of the AD, whichever occurs first, the affected part must be removed from service and is not eligible to be re-installed during piece part exposure. The FAA did not change this AD as a result of this comment.

Request to Clarify Affected Engines

Thai Airways noted that GE Model GENx-1b engines with engine serial numbers 958136, 958164, and 958949 are not affected by GE GENx-1B SB 72-0542 R00.

The FAA clarifies that the applicability for this AD is not designated by engine serial number, but it is designated by specific part numbers and serial numbers of affected parts. The FAA did not change this AD as a result of this comment.

Request to Update Proposed AD Requirements

United Airlines requested that the FAA update the language in the “Proposed AD Requirements in This NPRM” paragraph of the proposed AD to the following:

“Depending on the part numbers and serial numbers of the affected HPT stage 1 disks and HPT stage 2 disks, this NPRM proposes to require these actions to be accomplished at the next piece-part exposure after the effective date of this proposed AD or before the affected HPT stage 1 disks and HPT stage 2 disks reach the cyclic removal threshold of up to 10,100 cycles since new, whichever occurs first.”

The FAA agrees with the content in the requested language. However, this section is not included in the final rule. Therefore, the FAA did not change this AD as a result of this comment.

Request for New Part Design Details

An individual commenter requested that the FAA provide information on what material the new HPT stage 1 and HPT stage 2 disks that are eligible for installation will be composed of, how long these parts will take to deteriorate, and how these new parts will be tested to assure they will be more viable than the affected HPT stage 1 and HPT stage 2 disks.

The FAA clarifies that the design of the HPT stage 1 and HPT stage 2 disks is unchanged by this AD. The iron inclusions are a result of a deficiency in the manufacturing process, which has since been addressed by the manufacturer. The FAA did not change this AD as a result of this comment.

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, this AD is adopted as proposed in the NPRM. None of the changes will increase the economic burden on any operator.

Material Incorporated by Reference Under 1 CFR Part 51

The FAA reviewed GE GENx-1B SB 72-0542 R00. The FAA also reviewed GE GENx-2B SB 72-0471 R00. This material specifies the affected part numbers, serial numbers, and cyclic removal thresholds for the HPT stage 1 and HPT stage 2 disks. This

material 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

The FAA estimates that this AD affects one engine installed on an airplane of U.S. registry. The FAA estimates that no engines installed on airplanes of U.S. registry require replacement of the HPT stage 2 disk.

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
Replace HPT stage 1 disk	8 work-hours x \$85 per hour = \$680	\$757,416 (prorated)	\$758,096	\$758,096
Replace HPT stage 2 disk	8 work-hours x \$85 per hour = \$680	\$278,101 (prorated)	\$278,781	\$0

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:

2025-11-03 General Electric Company: Amendment 39-23049; Docket No. FAA-2025-0015; Project Identifier AD-2024-00615-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 General Electric Company Model GENx-1B64, GENx-1B64/P1, GENx-1B64/P2, GENx-1B67, GENx-1B67/P1, GENx-1B67/P2, GENx-1B70, GENx-1B70/75/P1, GENx-1B70/75/P2, GENx-1B70/P1, GENx-1B70/P2, GENx-1B70C/P1, GENx-1B70C/P2, GENx-1B74/75/P1, GENx-1B74/75/P2, GENx-1B76/P2, GENx-1B76A/P2, and GENx-2B67/P engines with at least one of the following installed:

(1) High Pressure Turbine (HPT) stage 1 disk having part number (P/N) 2383M83G03 and a serial number (S/N) listed in Table 1 of GE GEnx-1B Service Bulletin 72-0542 R00, dated April 15, 2024 (GE GEnx-1B SB 72-0542 R00);

(2) HPT stage 2 disk having P/N 2300M84P02 and a S/N listed in Table 2 of GE GEnx-1B SB 72-0542 R00;

(3) HPT stage 1 disk having P/N 2383M83G03 and a S/N listed in Table 1 of GE GEnx-2B Service Bulletin 72-0471 R00, dated April 15, 2024 (GE GEnx-2B SB 72-0471 R00); or

(4) HPT stage 2 disk having P/N 2300M84P02 and a S/N listed in Table 2 of GE GEnx-2B SB 72-0471 R00.

(d) Subject

Joint Aircraft System Component (JASC) Code 7250, Turbine Section.

(e) Unsafe Condition

This AD was prompted by a manufacturer investigation that revealed certain HPT stage 1 disks and HPT stage 2 disks were manufactured from powder metal material suspected to contain iron inclusion. The FAA is issuing this AD to prevent premature fracture and uncontained failure. The unsafe condition, if not addressed, could result in uncontained debris 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

At the applicable time specified in paragraphs (g)(1) through (4) of this AD, remove each affected HPT stage 1 disk and HPT stage 2 disk from service and replace with a part eligible for installation.

(1) For engines identified in paragraph (c)(1) of this AD, at the next piece-part exposure after the effective date of this AD or before the affected HPT stage 1 disk exceeds the cyclic removal threshold listed in Table 1 of GE GEnx-1B SB 72-0542 R00, whichever occurs first.

(2) For engines identified in paragraph (c)(2) of this AD, at the next piece-part exposure after the effective date of this AD or before the affected HPT stage 2 disk

exceeds the cyclic removal threshold listed in Table 2 of GE GENx-1B SB 72-0542 R00, whichever occurs first.

(3) For engines identified in paragraph (c)(3) of this AD, at the next piece-part exposure after the effective date of this AD or before the affected HPT stage 1 disk exceeds the cyclic removal threshold listed in Table 1 of GE GENx-2B SB 72-0471 R00, whichever occurs first.

(4) For engines identified in paragraph (c)(4) of this AD, at the next piece-part exposure after the effective date of this AD or before the affected HPT stage 2 disk exceeds the cyclic removal threshold listed in Table 2 of GE GENx-2B SB 72-0471 R00, whichever occurs first.

(h) Definitions

For the purpose of this AD:

(1) A “part eligible for installation” is any HPT stage 1 disk or HPT stage 2 disk with a P/N and S/N that is not listed in Table 1 or Table 2 of either GENx-1B SB 72-0542 R00 or GENx-2B SB 72-0471 R00.

(2) A “piece-part exposure” is when the affected HPT stage 1 disk or HPT stage 2 disk is removed from the engine.

(i) Alternative Methods of Compliance (AMOCs)

(1) The Manager, AIR-520 Continued Operational Safety 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 AIR-520 Continued Operational Safety Branch, send it to the attention of the person identified in paragraph (j) of this AD and email to:

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) Additional Information

For more information about this AD, contact Alexei Marqueen, Aviation Safety Engineer, FAA, 2200 South 216th Street, Des Moines, WA 98198; phone: (781) 238-7178; email: alexei.t.marqueen@faa.gov.

(k) Material Incorporated by Reference

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

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

(i) GE GENx-1B Service Bulletin (SB) 72-0542 R00, dated April 15, 2024.

(ii) GE GENx-2B SB 72-0471 R00, dated April 15, 2024.

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

(4) You may view this material 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 (817) 222-5110.

(5) You may view this material at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, visit www.archives.gov/federal-register/cfr/ibr-locations or email fr.inspection@nara.gov.

Issued on May 21, 2025.

Peter A. White,
Deputy Director, Integrated Certificate Management Division,
Aircraft Certification Service.

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