



[4910-13-P]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2020-0850; Project Identifier AD-2020-00288-E]

RIN 2120-AA64

Airworthiness Directives; General Electric Company Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: The FAA proposes to adopt a new airworthiness directive (AD) for certain 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, -1B76A/P2, -2B67, -2B67/P, and -2B67B model turbofan engines. This proposed AD was prompted by a finding during an inspection by the manufacturer that two stages 6-10 compressor rotor spools in the high-pressure compressor (HPC) assembly were damaged at similar locations. Additionally, the manufacturer reported that certain stages 6-10 compressor rotor spool webs did not undergo a required fluorescent penetrant inspection (FPI) during production. This proposed AD would require inspection of the stages 6-10 compressor rotor spool and, depending on the result of the inspection, replacement of the stages 6-10 compressor rotor spool with a part eligible for installation. The FAA is proposing this AD to address the unsafe condition on these products.

DATES: The FAA must receive comments on this proposed AD by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to <https://www.regulations.gov>. Follow the instructions for submitting comments.

- Fax: 202-493-2251.
- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.
- Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this NPRM, 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.

Examining the AD Docket

You may examine the AD docket on the internet at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2020-0850; 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 NPRM, any comments received, and other information. The street address for Docket Operations is listed above.

FOR FURTHER INFORMATION CONTACT: Mehdi Lamnyi, Aerospace 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:

Comments Invited

The FAA invites you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under the ADDRESSES section. Include “Docket No. FAA-2020-0850; Project Identifier AD-2020-00288-E” at the

beginning of your comments. The most helpful comments reference a specific portion of the proposal, explain the reason for any recommended change, and include supporting data. The FAA will consider all comments received by the closing date and may amend this NPRM because of those comments.

Except for Confidential Business Information (CBI) as described in the following paragraph, and other information as described in 14 CFR 11.35, the FAA will post all comments received, without change, to <https://www.regulations.gov>, including any personal information you provide. The FAA will also post a report summarizing each substantive verbal contact received about this proposed AD.

Confidential Business Information

Confidential Business Information (CBI) is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to this NPRM contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to this NPRM, it is important that you clearly designate the submitted comments as CBI. Please mark each page of your submission containing CBI as “PROPIN.” The FAA will treat such marked submissions as confidential under the FOIA, and they will not be placed in the public docket of this NPRM. Submissions containing CBI should be sent to Mehdi Lamnyi, Aerospace Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803. Any commentary that the FAA receives which is not specifically designated as CBI will be placed in the public docket for this rulemaking.

Background

The FAA received a report from the manufacturer that an inspection had found two stages 6-10 compressor rotor spools in the HPC assembly damaged at similar

locations on the webs. The subsequent investigation determined that tool marks were created during the manufacturing process. In addition, the manufacturer also reported that certain stages 6-10 compressor rotor spool webs did not undergo a required FPI during production. This condition, if not addressed, could result in failure of the compressor rotor spool, uncontained release of debris, damage to the engine, and damage to the airplane.

FAA's Determination

The FAA is proposing this AD because the agency evaluated all the relevant information and determined the unsafe condition described previously is likely to exist or develop in other products of the same type design.

Related Service Information under 1 CFR part 51

The FAA reviewed GE GENx-1B Service Bulletin (SB) 72-0472 R01, dated July 24, 2020 ("GENx-1B SB 72-0472") and GE GENx-2B SB 72-0415 R01, dated July 24, 2020 ("GENx-2B SB 72-0415").

GENx-1B SB 72-0472 describes procedures for performing a borescope inspection (BSI) or an eddy current inspection (ECI) of stage 6, stage 7, and stage 8 webs, web transitions, and bore faces of the stages 6-10 compressor rotor spool for GENx-1B model turbofan engines. GENx-1B SB 72-0472 also provides the affected part and serial numbers of the stages 6-10 compressor rotor spools installed on GENx-1B model turbofan engines.

GENx-2B SB 72-0415 describes procedures for performing a BSI or an ECI of stage 6, stage 7, and stage 8 webs, web transitions, and bore faces of the stages 6-10 compressor rotor spool for GENx-2B model turbofan engines. GENx-2B SB 72-0415 also provides the affected part and serial numbers of the stages 6-10 compressor rotor spools installed on GENx-2B model turbofan engines.

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.

Other Related Service Information

The FAA also reviewed Subtask 72-31-45-160-002 of TASK 72-31-45-200-807 in GE GENx-1B Engine Manual 05-21-00, Life Limits 001 Mandatory Inspections, Rev. 31 dated, January 31, 2020; and Subtask 72-31-45-160-002 of TASK 72-31-45-200-801 in GE GENx-2B Engine Manual 05-21-00, Life Limits 001 Mandatory Inspections, Rev. 24 dated, January 31, 2020. The Subtasks provide guidance on performing the ECI on the stages 6-10 compressor rotor spool on GE GENx-1B and GENx-2B model turbofan engines.

The FAA also reviewed the following GE SBs: GENx-1B SB 72-0448 R00, dated July 29, 2019 (“GENx-1B SB 72-0448”); GENx-1B SB 72-0460 R00, dated October 30, 2019 (“GENx-1B SB 72-0460”); GENx-2B SB 72-0385 R02, dated July 29, 2019 (“GENx-2B SB 72-0385”); and GENx-2B SB 72-0398 R00, dated October 30, 2019 (“GENx-2B SB 72-0398”).

GENx-1B SB 72-0448 describes procedures for performing a BSI or an ECI of the stage 8 aft web of the HPC stages 6-10 rotor spool for GENx-1B model turbofan engines. GENx-1B SB 72-0460 describes procedures for performing a BSI or an ECI of the stage 6 and stage 7 aft web of the HPC stages 6-10 rotor spool for GENx-1B model turbofan engines.

GENx-2B SB 72-0385 describes procedures for performing a BSI or an ECI of the stage 8 aft web of the HPC stages 6-10 spool for GENx-2B model turbofan engines. GENx-2B SB 72-0398 describes procedures for performing a BSI or an ECI of the stage 6 and stage 7 aft web of the HPC stages 6-10 rotor spool for GENx-2B model turbofan engines.

Proposed AD Requirements in this NPRM

This proposed AD would require inspection of the stages 6-10 compressor rotor spool. Certain affected GENx-1B or GENx-2B model turbofan engines, identified in paragraphs (g)(1)(i) and (g)(1)(ii) of this proposed AD, have already completed acceptable inspections of the aft web of stage 6, stage 7, and stage 8 of the stages 6-10 compressor rotor spool. This proposed AD would require those affected engines to complete the inspection of the stages 6-10 compressor rotor spool by the next engine shop visit. All other affected GENx-1B or GENx-2B model turbofan engines would be required to complete inspection of the stages 6-10 compressor rotor spool before exceeding the compliance times in Table 1 to paragraph (g)(1) of this AD. Depending on the results of the inspection, this AD would require replacement of the stages 6-10 compressor rotor spool with a part eligible for installation.

Costs of Compliance

The FAA estimates that this AD, as proposed, would affect 268 engines installed on airplanes of U.S. registry.

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

Estimated costs

Action	Labor Cost	Parts Cost	Cost per product	Cost on U.S. operators
BSI of GENx-1B stage 6, stage 7, and stage 8 aft webs, web transitions and bore faces of the stages 6-10 compressor rotor spool	6 work-hours x \$85 per hour = \$510	\$0	\$510	\$89,760
BSI of GENx-2B stage 6, stage 7, and stage 8 aft webs, web transitions and	6 work-hours x \$85 per hour = \$510	\$0	\$510	\$46,920

bore faces of the stages 6-10 compressor rotor spool				
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The FAA estimates the following costs to do any necessary replacements that would be required based on the results of the proposed inspection. The FAA has no way of determining the number of aircraft that might need these replacements:

On-condition costs

Action	Labor Cost	Parts Cost	Cost per product
Replace the stages 6-10 compressor rotor spool	64 work-hours x \$85 per hour = \$5,440	\$1,018,600	\$1,024,040

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 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

The FAA determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would 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 this proposed regulation:

(1) Is not a “significant regulatory action” under Executive Order 12866,

(2) Would not affect intrastate aviation in Alaska, and

(3) Would 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 Proposed Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 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):

General Electric Company: Docket No. FAA-2020-0850; Project Identifier AD-2020-00288-E.

(a) Comments Due Date

The FAA must receive comments by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE Federal Register].

(b) Affected ADs

None.

(c) Applicability

This AD applies to:

(1) General Electric Company (GE) 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 model turbofan engines with stages 6-10 compressor rotor spools in the high-pressure compressor (HPC) assembly with the following part numbers (P/N) installed:

(i) P/N 2357M30G01, P/N 2357M30G02, P/N 2439M35G01, P/N 2439M35G02, or P/N 2445M40G02, all serial numbers (S/Ns);

(ii) P/N 2610M90G01 with the S/Ns listed in paragraph 4., APPENDIX - A, Table 1 of the GE GEnx-1B Service Bulletin (SB) 72-0472 R01, dated July 24, 2020 (“SB 72-0472”); and

(iii) P/N 2628M56G01 with the S/Ns listed in paragraph 4., APPENDIX - A, Table 2 or Table 3 of SB 72-0472.

(2) GEnx-2B67, GEnx-2B67/P, GEnx-2B67B model turbofan engines with the following stages 6-10 compressor rotor spools P/Ns installed:

(i) P/N 2357M30G02, P/N 2439M35G02, or P/N 2445M40G02, all S/Ns;

(ii) P/N 2340M36G01 with S/Ns listed in paragraph 4., APPENDIX - A, Table 1 of GE GEnx-2B SB 72-0415 R01, dated July 24, 2020 (“SB 72-0415”); and

(iii) P/N 2628M56G01 with S/Ns listed in paragraph 4., APPENDIX - A, Table 2 or Table 3 of SB 72-0415.

(d) Subject

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

(e) Unsafe Condition

This AD was prompted by a finding during an inspection that two stages 6-10 compressor rotor spools were damaged at similar locations. In addition, the manufacturer reported that certain stages 6-10 compressor rotor spool webs did not undergo a required fluorescent penetrant inspection (FPI) during production. The FAA is issuing this AD to prevent failure of the compressor rotor spool. The unsafe condition, if not addressed, could result in uncontained release of debris, 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) For all affected GENx-1B and GENx-2B model turbofan engines, before exceeding the compliance time in Table 1 to paragraph (g)(1) of this AD, perform a borescope inspection (BSI) or eddy current inspection (ECI) of the stage 6, stage 7, and stage 8 webs, web transitions, and bore faces of the stages 6-10 compressor rotor spool in accordance with the Accomplishment Instructions, paragraph 3, of SB 72-0472 (for GENx-1B models) or the Accomplishment Instructions, paragraph 3, of SB 72-0415 (for GENx-2B models).

Table 1 to Paragraph (g)(1)

Cycles Since New (CSN) Accumulated on the stages 6-10 compressor rotor spool	Compliance Time
Less than 6,500 CSN	Next engine shop visit or before the stages 6-10 compressor rotor spool accumulates 6,500 CSN, whichever occurs first after the effective date of this AD
6,500 CSN or greater	Before further flight

(i) For GENx-1B model turbofan engines, except those identified in paragraph 4, APPENDIX – A, Table 3 of SB 72-0472, if the engines have previously undergone inspections of the aft web of stage 6, stage 7, and stage 8 of the stages 6-10 compressor

rotor spool using both GE GENx-1B SB 72-0448 R00, dated July 29, 2019, and GE GENx-1B SB 72-0460 R00, dated October 30, 2019, regardless of the CSN accumulated on the stages 6-10 compressor rotor spool, perform the inspection required by paragraph (g)(1) of this AD no later than the next engine shop visit after the effective date of this AD.

(ii) For GENx-2B model turbofan engines, except those identified in paragraph 4., APPENDIX – A, Table 3 of SB 72-0415, if the engines have previously undergone inspections of the aft web of stage 6, stage 7, and stage 8 of the stages 6-10 compressor rotor spool using both GE GENx-2B SB 72-385 R02, dated July 29, 2019, and GE GENx-2B SB 72-0398 R00, dated October 30, 2019, regardless of the CSN accumulated on the stages 6-10 compressor rotor spool, perform the inspection required by paragraph (g)(1) of this AD no later than the next engine shop visit after the effective date of this AD.

(2) For all affected GENx-1B and GENx-2B model turbofan engines, during the inspections required by paragraph (g)(1) of this AD, if a rejectable indication is found, before further flight, remove the stages 6-10 compressor rotor spool from service and replace it with a part eligible for installation.

(h) Definition

For the purpose of this AD, an “engine shop visit” is the induction of an engine into the shop for maintenance involving the separation of pairs of major mating engine flanges, except that the separation of engine flanges solely for the purposes of transportation of the engine without subsequent engine maintenance does not constitute an engine shop visit.

(i) Credit for Previous Action

(1) For affected GENx-1B model turbofan engines, you may take credit for the BSI or ECI required by paragraph (g)(1) of this AD, if the stages 6-10 compressor rotor spool webs, web transitions, and bore faces previously received an ECI using Subtask 72-

31-45-160-002 of TASK 72-31-45-200-807 in GE GENx-1B Engine Manual 05-21-00, Life Limits 001 Mandatory Inspections, Rev. 31 dated, January 31, 2020, or earlier, and no rejectable indications were found.

(2) For affected GENx-2B model turbofan engines, you may take credit for the BSI or ECI required by paragraph (g)(1) of this AD, if the stages 6-10 compressor rotor spool webs, web transitions, and bore faces previously received an ECI using Subtask 72-31-45-160-002 of TASK 72-31-45-200-801 in GE GENx-2B Engine Manual 05-21-00, Life Limits 001 Mandatory Inspections, Rev. 24 dated, January 31, 2020, or earlier, and no rejectable indications were found.

(3) For affected GENx-1B and GENx-2B model turbofan engines, you may take credit for the BSI or ECI required by paragraph (g)(1) of this AD, if you performed these inspections using GE GENx-1B Service Bulletin (SB) 72-0472 R00, dated April 24, 2020, or GE GENx-2B SB 72-0415 R00, dated April 24, 2020, respectively, and no rejectable indications were found.

(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 paragraph (k)(1) 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.

(k) Related Information

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

(2) For 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. You may view this referenced 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.

Issued on September 17, 2020.

Gaetano A. Sciortino, Deputy Director for Strategic Initiatives,
Compliance & Airworthiness Division,
Aircraft Certification Service.

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