[Federal Register, Volume 89 Number 15 (Tuesday, January 23, 2024)]
[Rules and Regulations]
[Pages 4184-4187]
From the Federal Register Online via the Government Publishing Office [www.gpo.gov]
[FR Doc No: 2024-01166]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA–2023–1647; Project Identifier AD–2023–00487–E; Amendment 39–22650; AD 2023–26–07]

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 GE90–90B, GE90–94B, GE90–110B1, and GE90–115B engines. This AD was prompted by a manufacturer investigation that revealed certain high-pressure turbine (HPT) stage 1 disks, HPT stage 2 disks, forward HPT rotor seals, interstage HPT seals, and stages 7–9 compressor rotor spools were manufactured from powder metal material suspected to contain iron inclusion. This AD requires replacement of affected HPT stage 1 disks, HPT stage 2 disks, forward HPT rotor seals, interstage HPT seals, and stages 7–9 compressor rotor spools. The FAA is issuing this AD to address the unsafe condition on these products.

DATES:

This AD is effective February 27, 2024.

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of February 27, 2024.

ADDRESSES:

AD Docket: You may examine the AD docket at *regulations.gov* under Docket No. FAA–2023–1647; 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 service information identified in this final rule, contact General Electric Company, 1 Neumann Way, Cincinnati, OH 45215; phone: (513) 552–3272; email: *aviation.fleetsupport@ge.com;* website: *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 (817) 222–5110. It is also available at *regulations.gov* under Docket No. FAA–2023–1647.

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 GE90–90B, GE90–94B, GE90–110B1, and GE90–115B engines. The NPRM published in the **Federal Register** on September 5, 2023 (88 FR 60603). The NPRM was prompted by the manufacturer's detection of iron inclusion in a turbine disk manufactured from the same powder metal material used to manufacture certain HPT stage 1 disks, HPT stage 2 disks, forward HPT rotor seals, interstage HPT seals, and stages 7–9 compressor rotor spools for GE90–90B, GE90–94B, GE90–110B1, and GE90–115B engines. Further investigation by the manufacturer determined 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 subsequent uncontained failure. The FAA was also informed that GE communicated with affected operators having affected HPT stage 1 and stage 2 disks identified in Table 1 to Paragraph (c) of this AD regarding the corrective action for this unsafe condition. As a result, affected operators are already aware of the corrective action and have already performed the actions required by this AD. Therefore, the FAA has determined that the compliance time to replace these affected HPT stage 1 and stage 2 disks before further flight is appropriate. In the NPRM, the FAA proposed to require replacement of certain HPT stage 1 disks, HPT stage 2 disks, forward HPT rotor seals, interstage HPT seals, and stages 7–9 compressor rotor spools 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 five commenters. Commenters included The Boeing Company (Boeing), Federal Express (FedEx), GE, United Airlines, and an individual commenter. Boeing, United Airlines, and the individual commenter supported the NPRM without change. FedEx and GE requested changes to the proposed AD. The following presents the comments received on the NPRM and the FAA's response to each comment.

Request To Reference Additional Service Information

FedEx and GE requested that the FAA add the following service information to the NPRM in a section designated as Other Related Service Information: GE GE90–100 Service Bulletin (SB) 72–0904 R00, dated May 25, 2022; GE GE90–100 SB 72–0911 R01, dated September 21, 2022; and GE GE90 SB 72–1223, dated January 25, 2023. FedEx and GE both noted that Table 1 to Paragraph (c) of the proposed AD listed affected components that were partially copied from those GE SBs, and not including mention of those GE SBs could cause confusion for operators, even though additional GE SBs would not be incorporated by reference.

The FAA agrees and for the ease of the reader, instead of including these additional GE SBs in a section identified as Other Related Service Information in the preamble, has added Note 1 to paragraph (c) of this AD to include the three additional GE SBs identified by the commenters and to clarify that the affected parts can also be found in these additional GE SBs. These additional GE SBs will not be incorporated by reference in this AD.

Request To Update Affected Part Number

GE requested that the FAA update Table 1 to Paragraph (c) of the proposed AD by changing the part number (P/N) for an affected HPT stage 1 disk having serial number (S/N) GWN10NNW from "1865M13G08" to "2445M04G11." GE noted that the HPT stage 1 disk with S/N GWN10NNW was repaired and re-marked to P/N 2445M04G11.

The FAA agrees and has updated Table 1 to Paragraph (c) of this AD as requested by GE.

Request To Clarify Language in Background Section

GE requested that the FAA add language to the Background section of the NPRM to clarify that GE communicated with affected operators having affected HPT stage 1 and stage 2 disks identified in Table 1 to Paragraph (c) of the proposed AD regarding the proposed corrective action for the identified unsafe condition. GE noted that the current language in the NPRM does not specify that the affected disks are identified in Table 1 to Paragraph (c) of the proposed AD, and additional HPT stage 2 disks are identified in General Electric GE90–100 Service Bulletin 72–0914, dated January 25, 2023, which could cause a misinterpretation of the required actions on HPT stage 2 disks.

The FAA agrees and has revised the language in the Background section of this final rule accordingly.

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 GE90–100 Service Bulletin (SB) 72–0914, dated January 25, 2023 (GE GE90–100 SB 72–0914); which provides the affected part and serial numbers of the HPT stage 2 disks, forward HPT rotor seals, and stages 7–9 compressor rotor spools; and specifies replacement instructions for the HPT stage 2 disks, forward HPT rotor seals, and stages 7–9 compressor rotor spools. 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.

Interim Action

The FAA considers this AD to be an interim action. This unsafe condition is still under investigation by the manufacturer and, depending on the results of that investigation, the FAA may consider further rulemaking action.

Costs of Compliance

The FAA estimates that this AD affects 9 engines installed on airplanes of U.S. registry. The FAA estimates that 0 engines installed on airplanes of U.S. registry require replacement of the interstage HPT seal.

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 2 disk	8 work-hours × $85 per hour = $680	$531,578	$532,258	$532,258
Replace stages 7–9 compressor rotor spool	8 work-hours × $85.per hour = $680	493,588	494,268	1,977,072
Replace forward HPT rotor seal	8 work-hours × $85 per hour = $680	25,093	25,773	51,546
Replace interstage HPT seal	8 work-hours × $85 per hour = $680	108,256	108,936	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:

2023–26–07 General Electric Company: Amendment 39–22650; Docket No. FAA–2023–1647; Project Identifier AD–2023–00487–E.

(a) Effective Date

This airworthiness directive (AD) is effective February 27, 2024.

(b) Affected ADs

None.

(c) Applicability

This AD applies to General Electric Company (GE) Model GE90–90B and GE90–94B engines with interstage HPT seals listed in Table 1 to Paragraph (c) of this AD and GE90–110B1 and GE90–115B engines with an installed high-pressure turbine (HPT) stage 1 disk, HPT stage 2 disk, forward HPT rotor seal, or stages 7–9 compressor rotor spool part number (P/N) and serial number (S/N) identified in Table 1 to Paragraph (c) of this AD, or identified in Paragraph 4. APPENDIX—A, Tables 1, 2, or 3, of GE GE90–100 Service Bulletin (SB) 72–0914, dated January 25, 2023 (GE90–100 SB 72–0914).

Table 1 to Paragraph (c)—Affected HPT Stage 1 and Stage 2 Disks, and Interstage HPT Seals

Part Name	P/N	S/N
HPT stage 1 disk	1865M13G08	GWN11657 GWN117GN GWN10PGW GWN10T0A GWN10T0C GWN10THW GWN10TJ0
HPT stage 1 disk	2445M04G11	GWN10NNW
HPT stage 2 disk	1865M14P04	TMT4RN06 TMT4RN26
Interstage HPT seal	2453M60P01	NCU61528 NCU61686 NCU56200 NCU61527 NCU61687

Note 1 to paragraph (c): Part numbers and serial numbers for affected HPT stage 1 disks, HPT stage 2 disks, and interstage HPT seals are also listed in GE GE90–100 Service Bulletin (SB) 72–0904 R00, dated May 25, 2022; GE GE90–100 SB 72–0911 R01, dated September 21, 2022; and GE GE90 SB 72–1223, dated January 25, 2023.

(d) Subject

Joint Aircraft System Component (JASC) Code 7230, Turbine Engine Compressor Section; 7250, Turbine Section.

(e) Unsafe Condition

This AD was prompted by a manufacturer investigation that revealed certain HPT stage 1 disks, HPT stage 2 disks, forward HPT rotor seals, interstage HPT seals, and stages 7–9 compressor rotor spools were manufactured from powder metal material suspected to contain iron inclusion. The FAA is issuing this AD to prevent premature fracture and subsequent 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 times specified in paragraphs (g)(1) through (6) of this AD, remove each affected HPT stage 1 disk, HPT stage 2 disk, forward HPT rotor seal, interstage HPT seal, and stages 7–9 compressor rotor spool from service and replace with a part eligible for installation.

(1) For HPT stage 1 disks, before further flight.

(2) For HPT stage 2 disks with a part number and serial number identified in Paragraph 4. APPENDIX —A, Table 1 of GE90–100 SB 72–0914, at the next piece part exposure or before exceeding 3,500 cycles since new (CSN), whichever occurs first.

(3) For HPT stage 2 disks with a part number and serial number identified in Table 1 to paragraph (c) of this AD, before further flight.

(4) For forward HPT rotor seals with a part number and serial number identified in Paragraph 4. APPENDIX—A, Table 3 of GE90–100 SB 72–0914, at the next piece part exposure or before exceeding 14,200 CSN, whichever occurs first.

(5) For interstage HPT seals, at the next piece part exposure or before exceeding 12,600 CSN, whichever occurs first.

(6) For stages 7–9 compressor rotor spools, at the next piece part exposure or before exceeding the cyclic removal thresholds identified in Paragraph 4. APPENDIX—A, Table 2 of GE90–100 SB 72–0914, whichever occurs first.

(h) Definition

For the purpose of this AD, a “part eligible for installation” is any HPT stage 1 disk, HPT stage 2 disk, stages 7–9 compressor rotor spool, forward HPT rotor seal, or interstage HPT seal with a part number and serial number that is not identified in paragraph (c) of this AD.

(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: *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) 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 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 GE90–100 Service Bulletin 72–0914, dated January 25, 2023.

(ii) [Reserved]

(3) For service information 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 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 (817) 222–5110.

(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, visit: *www.archives.gov/federal-register/cfr/ibr-locations* or email: *fr.inspection@nara.gov*.

Issued on January 2, 2024.

Caitlin Locke,

Director, Compliance & Airworthiness Division, Aircraft Certification Service.

[FR Doc. 2024–01166 Filed 1–22–24; 8:45 am]

BILLING CODE 4910–13–P