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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. FAA-2021-0791; Project Identifier AD-2021-00716-E; Amendment 39-21881; AD 2021-26-22]**

**RIN 2120-AA64**

### **Airworthiness Directives; General Electric Company Turbofan Engines**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final rule.

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**SUMMARY:** The FAA is superseding Airworthiness Directive (AD) 2020-20-13 for certain General Electric Company (GE) CF6-80A and CF6-80C model turbofan engines. AD 2020-20-13 required ultrasonic inspection (UI) of high-pressure turbine (HPT) stage 1 and stage 2 disks and replacement of any HPT stage 1 or stage 2 disk that fails the inspection. This AD was prompted by an uncontained failure of an HPT stage 2 disk and the manufacturer's subsequent determination to expand the population of affected HPT disks requiring UI inspection. This AD requires UI of HPT stage 1 and stage 2 disks and replacement of any HPT stage 1 or stage 2 disk that fails the inspection. This AD also expands the applicability to include an additional population of affected HPT stage 1 and 2 disks requiring UI inspection. The FAA is issuing this AD to address the unsafe condition on these products.

**DATES:** This AD is effective March 14, 2022.

The Director of the Federal Register approved the incorporation by reference of certain publications listed in this AD as of March 14, 2022.

**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@ge.com; website: www.ge.com. You may view this service information at the Airworthiness Products Section, Operational Safety Branch, FAA, 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 <https://www.regulations.gov> by searching for and locating Docket No. FAA-2021-0791.

## **Examining the AD Docket**

You may examine the AD docket at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2021-0791; 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:** Sungmo Cho, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7241; fax: (781) 238-7199; email: Sungmo.D.Cho@faa.gov.

## **SUPPLEMENTARY INFORMATION:**

### **Background**

The FAA issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to supersede AD 2020-20-13, Amendment 39-21269 (85 FR 63193, October 7, 2020), (AD 2020-20-13). AD 2020-20-13 applied to certain GE CF6-80A, CF6-80A1, CF6-80A2, CF6-80A3, CF6-80C2A1, CF6-80C2A2, CF6-80C2A3, CF6-80C2A5, CF6-80C2A5F, CF6-80C2A8, CF6-80C2B1, CF6-80C2B1F, CF6-80C2B2, CF6-80C2B2F, CF6-80C2B4, CF6-80C2B4F, CF6-80C2B5F, CF6-80C2B6, CF6-80C2B6F, CF6-80C2B6FA, CF6-80C2B7F, CF6-80C2D1F, CF6-80C2L1F, and CF6-80C2K1F model turbofan engines. The NPRM published in the Federal Register on October 6, 2021 (86 FR 55545). The NPRM was prompted by an uncontained failure of an HPT stage 2 disk and the manufacturer's determination to expand the population of affected HPT disks requiring UI inspection. After the FAA issued AD 2020-20-13, the manufacturer discovered an error in the service information and determined that the requirement to perform UI of affected HPT stage 1 and 2 disks should be expanded to include an additional population of HPT stage 1 and stage 2 disks. GE, therefore, revised its service information to include the additional affected HPT stage 1 and stage 2 disks. In the NPRM, the FAA proposed to continue to require UI of HPT stage 1 and stage 2 disks and replacement of any HPT stage 1 or stage 2 disk that fails the inspection. In the NPRM, the FAA also proposed to expand the applicability to include an additional population of affected HPT stage 1 and 2 disks.

### **Discussion of Final Airworthiness Directive**

#### **Comments**

The FAA received comments from two commenters. Commenters included the Air Line Pilots Association, International and FedEx Express. All commenters supported the NPRM without change.

#### **Conclusion**

The FAA reviewed the relevant data, considered the comments received, and determined that air safety requires adopting the 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.

## Related Service Information Under 1 CFR Part 51

The FAA reviewed GE CF6-80C Service Bulletin (SB) 72-1562 R05, dated March 19, 2021. This SB specifies procedures for UI of CF6-80C2 turbofan engine HPT stage 1 and 2 disks. The FAA also reviewed GE CF6-80A SB 72-0869 R03, dated March 19, 2021. This SB specifies procedures for UI of CF6-80A turbofan engine HPT stage 2 disks. These documents are distinct since they apply to different engine models. 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.

## Costs of Compliance

The FAA estimates that this AD affects 1,512 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
UI of HPT stage 1 and stage 2 disks	10 work-hours × \$85 per hour = \$850	\$0	\$850	\$1,285,200

The FAA estimates the following costs to do any necessary replacements that would be required based on the results of the inspection. The agency 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 CF6-80C2 HPT stage 1 disk	0.25 work-hours × \$85 per hour = \$21.25	\$799,700	\$799,721.25
Replace CF6-80C2 HPT stage 2 disk	0.25 work-hours × \$85 per hour = \$21.25	364,600	364,621.25
Replace CF6-80A HPT stage 2 disk	0.25 work-hours × \$85 per hour = \$21.25	344,000	344,021.25

## 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**

The FAA has 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) 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:

- a. Removing Airworthiness Directive 2020-20-13, Amendment 39-21269 (85 FR 63193, October 7, 2020); and
- b. Adding the following new airworthiness directive:



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**2021-26-22 General Electric Company:** Amendment 39-21881; Docket No. FAA-2021-0791; Project Identifier AD-2021-00716-E.

**(a) Effective Date**

This airworthiness directive (AD) is effective March 14, 2022.

**(b) Affected ADs**

This AD replaces AD 2020-20-13, Amendment 39-21269 (85 FR 63193, October 7, 2020).

**(c) Applicability**

This AD applies to General Electric Company (GE) CF6-80A, CF6-80A1, CF6-80A2, CF6-80A3, CF6-80C2A1, CF6-80C2A2, CF6-80C2A3, CF6-80C2A5, CF6-80C2A5F, CF6-80C2A8, CF6-80C2B1, CF6-80C2B1F, CF6-80C2B2, CF6-80C2B2F, CF6-80C2B4, CF6-80C2B4F, CF6-80C2B5F, CF6-80C2B6, CF6-80C2B6F, CF6-80C2B6FA, CF6-80C2B7F, CF6-80C2D1F, CF6-80C2L1F, and CF6-80C2K1F model turbofan engines with an installed high-pressure turbine (HPT) disk with a serial number (S/N) listed in Table 1 or 2 of Appendix A, paragraph 4., in GE CF6-80C2 Service Bulletin (SB) 72-1562 R05, dated March 19, 2021 (GE SB 72-1562), and Table 1 of Appendix–A, paragraph 4., in GE CF6-80A SB 72-0869 R03, dated March 19, 2021 (GE SB 72-0869).

**(d) Subject**

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

**(e) Unsafe Condition**

This AD was prompted by an uncontained failure of an HPT stage 2 disk and the manufacturer's determination to expand the population of affected HPT disks requiring ultrasonic inspection (UI). The FAA is issuing this AD to prevent failure of the HPT stage 1 disk (CF6-80C2 engines) and the HPT stage 2 disk (CF6-80C2 and CF6-80A engines). The unsafe condition, if not addressed, could result in an uncontained HPT disk 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) For CF6-80C2 model turbofan engines, at each piece-part exposure after the effective date of this AD, perform a UI of affected HPT stage 1 and stage 2 disks using the Accomplishment Instructions, paragraph 3.A.(2), of GE SB 72-1562.

(2) For CF6-80A model turbofan engines, at each piece-part exposure after the effective date of this AD, perform a UI of affected HPT stage 2 disks using the Accomplishment Instructions, paragraph 3.A.(2), of GE SB 72-0869.

(3) If any disk fails the inspection required by paragraph (g)(1) or (2) of this AD, replace the disk with a part eligible for installation before further flight.

#### **(h) No Reporting Requirements**

The reporting requirements specified in the Accomplishment Instructions, paragraphs 3.A.(2)(c) and 3.A.(2)(f), of GE SB 72-1562, and paragraph 3.A.(3), of GE SB 72-0869, are not required by this AD.

#### **(i) Definitions**

(1) For the purpose of this AD, a “part eligible for installation” is an HPT stage 1 or stage 2 disk:

(i) That has been inspected in accordance with paragraph (g)(1) or (2) of this AD and a rejectable indication was not found; or

(ii) With an S/N not listed in Table 1 or 2 of Appendix A, paragraph 4., in GE SB 72-1562, or Table 1 of Appendix–A, paragraph 4., in GE SB 72-0869.

(2) For the purpose of this AD, “piece-part exposure” of the HPT stage 1 or stage 2 disk is the separation of that HPT disk from its mating rotor parts within the HPT rotor module (thermal shield and HPT stage 1 and stage 2 disk, respectively).

#### **(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) of this AD. Information may be emailed 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 Sungmo Cho, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7241; fax: (781) 238-7199; email: Sungmo.D.Cho@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) GE CF6-80C Service Bulletin (SB) 72-1562 R05, dated March 19, 2021.

(ii) GE CF6-80A SB 72-0869 R03, dated March 19, 2021.

(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@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 (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, email: [fr.inspection@nara.gov](mailto:fr.inspection@nara.gov), or go to: <https://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued on December 16, 2021.

Lance T. Gant,

Director, Compliance & Airworthiness Division, Aircraft Certification Service.

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