



DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2020-1179; Project Identifier AD-2020-00818-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 all 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, CF6-80C2B1F1, CF6-80C2B1F2, CF6-80C2B2, CF6-80C2B2F, CF6-80C2B3F, CF6-80C2B4, CF6-80C2B4F, CF6-80C2B5F, CF6-80C2B6, CF6-80C2B6F, CF6-80C2B6FA, CF6-80C2B7F, CF6-80C2B8F, CF6-80C2D1F, CF6-80C2K1F and CF6-80C2L1F model turbofan engines. This proposed AD was prompted by an inspection by the manufacturer that revealed cracking of the high-pressure turbine (HPT) rotor stage 1 disk. This proposed AD would require visual inspection and fluorescent penetrant inspection (FPI) of the HPT thermal shield and, if cracking is detected, removal from service of the HPT thermal shield, HPT rotor stage 1 disk and HPT rotor stage 2 disk. 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 at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2020-1179; 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: Kevin M. Clark, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7088; fax: (781) 238-7199; email: Kevin.M.Clark@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 ADDRESSES. Include “Docket No. FAA-2020-1179; Project Identifier AD-2020-00818-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 proposal 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 agency will also post a report summarizing each substantive verbal contact received about this NPRM.

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 Kevin M. Clark, Aviation Safety 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 was notified by the manufacturer that a crack on the HPT rotor stage 1 disk was found during an inspection. Subsequent investigation by the manufacturer determined that the crack on the HPT rotor stage 1 disk was caused by increased stress on the HPT rotor stage 1 disk as a result of flange-to-flange cracking on the HPT thermal shield. This condition, if not addressed, could result in failure of the HPT rotor stage 1 disk, failure of the HPT rotor stage 2 disk, uncontained release of the HPT rotor stage 1 and stage 2 disks, damage to the engine, and damage to the airplane.

FAA's Determination

The FAA is issuing this NPRM after determining that the unsafe condition described previously is likely to exist or develop on other products of the same type design.

Related Service Information

The FAA reviewed ESM 72-53-00 High Pressure Turbine Rotor Assembly – Disassembly (ESM 72-53-00) from the GE CF6-80A Engine Manual GEK72501 - Rev 89, dated February 15, 2020. ESM 72-53-00 describes procedures for the removal of the HPT thermal shield, the HPT rotor stage 1 disk, and the HPT rotor stage 2 disk.

Proposed AD Requirements in this NPRM

This proposed AD would require repetitive visual inspection and FPI of the HPT thermal shield at every piece part opportunity of the HPT rotor stage 1 disk, HPT rotor stage 2 disk, or the HPT thermal shield. Depending on the results of the inspections, this proposed AD requires the removal from service of the HPT thermal shield, HPT rotor stage 1 disk, and the HPT rotor stage 2 disk.

Costs of Compliance

The FAA estimates that this AD, if adopted as proposed, would affect 1,084 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
Perform FPI and visual inspection of HPT thermal shield	2 work-hours x \$85 per hour = \$170	\$0	\$170	\$184,280

The FAA estimates the following costs to do any necessary replacements that would be required based on the results of the proposed 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 HPT thermal shield	2 work-hours x \$85 per hour = \$170	\$209,600	\$209,770
Replace HPT rotor stage 1 disk	2 work-hours x \$85 per hour = \$170	\$799,700	\$799,870
Replace HPT rotor stage 2 disk	2 work-hours x \$85 per hour = \$170	\$364,600	\$364,770

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 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:

General Electric Company: Docket No. FAA-2020-1179; Project Identifier AD-2020-00818-E.

(a) Comments Due Date

The FAA must receive comments on this airworthiness directive (AD) by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

None.

(c) Applicability

This AD applies to all 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, CF6-80C2B1F1, CF6-80C2B1F2, CF6-80C2B2, CF6-80C2B2F, CF6-80C2B3F, CF6-80C2B4, CF6-80C2B4F, CF6-80C2B5F, CF6-80C2B6, CF6-80C2B6F, CF6-80C2B6FA, CF6-80C2B7F, CF6-80C2B8F, CF6-80C2D1F, CF6-80C2K1F and CF6-80C2L1F model turbofan engines.

(d) Subject

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

(e) Unsafe Condition

This AD was prompted by an inspection by the manufacturer that revealed cracking of the high-pressure turbine (HPT) rotor stage 1 disk, caused by initial flange-to-flange cracking on the HPT thermal shield between the HPT rotor stage 1 disk and the HPT rotor stage 2 disk. The FAA is issuing this AD to prevent failure of the HPT rotor stage 1 disk and the HPT rotor stage 2 disk. The unsafe condition, if not addressed, could result in uncontained release of the HPT rotor stage 1 and stage 2 disks, 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) After the effective date of this AD, at every piece-part exposure of the HPT rotor stage 1 disk, HPT rotor stage 2 disk, or the HPT thermal shield, perform a visual inspection and a fluorescent penetrant inspection (FPI) of the HPT thermal shield.

(2) During any inspection required by paragraph (g)(1) of this AD, if a crack extending through either the forward or aft flange of the HPT thermal shield is detected, remove the HPT thermal shield, the HPT rotor stage 1 disk, and the HPT rotor stage 2 disk from service.

(h) Installation Prohibition

Do not install onto any engine an HPT rotor stage 1 disk or HPT rotor stage 2 disk that was removed from service due to the requirements of paragraph (g)(2) of this AD.

(i) Definition

For the purpose of this AD, “piece-part exposure” is when the HPT rotor stage 1 disk, HPT rotor stage 2 disk, or HPT thermal shield is separated from their mating rotor parts within the HPT rotor module.

(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 ECO Branch, 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

(1) For more information about this AD, contact Kevin M. Clark, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7088; fax: (781) 238-7199; email: Kevin.M.Clark@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 January 20, 2021.

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

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