**[4910-13-P]**

**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 39**

**[Docket No. FAA-2019-0568; Product Identifier 2019-NE-20-AD]**

**RIN 2120-AA64**

**Airworthiness Directives; CFM International S.A. 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 CFM International, S.A. (CFM) CFM56-5B and CFM56-7B model turbofan engines with a certain high-pressure turbine (HPT) inner stationary seal installed. This proposed AD was prompted by cracks found in the rotating air HPT front seal. This proposed AD would require removal, inspection, and replacement of the affected HPT inner stationary seal, and depending on the findings, removal and replacement of the rotating air HPT front seal. 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 http://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 CFM International Inc., Aviation Operations Center, 1 Neumann Way, M/D Room 285, Cincinnati, OH, 45125; phone: 877-432-3272; fax: 877-432-3329; email: aviation.fleetsupport@ge.com. You may view this service information at the FAA, Engine and Propeller Standards 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 http://www.regulations.gov by searching for and locating Docket No. FAA-2019-0568; 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, the regulatory evaluation, any comments received, and other information. The street address for Docket Operations is listed above. Comments will be available in the AD docket shortly after receipt.

**FOR FURTHER INFORMATION CONTACT:** Christopher McGuire, Aerospace Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA, 01803; phone: 781-238-7120; fax: 781-238-7199; email: chris.mcguire@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-2019-0568; Product Identifier 2019-NE-20-AD” at the beginning of your comments. The FAA specifically invites comments on the overall regulatory, economic, environmental, and energy aspects of this NPRM. The FAA will

consider all comments received by the closing date and may amend this NPRM because of those comments.

The FAA will post all comments received, without change, to http://www.regulations.gov, including any personal information you provide. The FAA will also post a report summarizing each substantive verbal contact received about this NPRM.

**Discussion**

The FAA received a report that two cracks were discovered on a CFM CFM56-5B model turbofan engine rotating air HPT front seal during a routine engine shop visit. After investigation, CFM determined that the HPT inner stationary seal, part number 1808M56G01, may not have received the correct braze heat treat cycle at the time of the honeycomb replacement. As a result, the affected HPT inner stationary seal could lead to a localized separation of the replaced honeycomb, which may affect the life of the rotating air HPT front seal. This condition, if not addressed, could result in an uncontained release of the rotating air HPT front seal, damage to the engine, and damage to the airplane.

**Related Service Information under 1 CFR part 51**

The FAA reviewed CFM Service Bulletin (SB) CFM56-5B S/B 72-0952, dated April 23, 2019, and CFM SB CFM56-7B S/B 72-1054, dated April 23, 2019. CFM SB CFM56-5B S/B 72-0952, dated April 23, 2019, describes procedures for repairing the CFM56-5B turbofan engine HPT inner stationary seal honeycomb. CFM SB CFM56-7B S/B 72-1054, dated April 23, 2019, describes procedures for repairing the CFM56-7B turbofan engine HPT inner stationary seal honeycomb. 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.

**FAA's Determination**

The FAA is proposing this AD because it 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.

**Proposed AD Requirements**

This proposed AD would require removal, inspection, and replacement of the affected HPT inner stationary seal and, depending on the findings, removal and replacement of the rotating air HPT front seal with a part eligible for installation.

**Costs of Compliance**

The FAA estimates that this proposed AD affects 210 engines installed on airplanes of U.S. registry. Operators have the option to replace or repair the affected HPT inner stationary seal. The part cost is for replacement with a repaired HPT inner stationary seal.

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 |
|---|---|---|---|---|
| Replace HPT inner stationary seal | 1 work-hour X $85 per hour = $85 | $7,910 | $7,995 | $1,678,950 |
| Inspect HPT inner stationary seal | 1 work-hour X $85 per hour = $85 | $0 | $85 | $17,850 |

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 engines that might need these replacements:

**On-condition costs**

| Action | Labor cost | Parts cost | Cost per product |
|---|---|---|---|
| Replace rotating air HPT front seal | 1 work-hours X $85 per hour = $85 | $344,600 | $344,685 |
| Inspect HPT rotor blade internal cavities | 1 work-hour X $85 per hour = $85 | $0 | $85 |
| Replace HPT rotor blade (pair) | 1 work-hour X $85 per hour = $85 | $31,000 | $31,085 |
| Replace No. 3 ball bearing | 1 work-hour X $85 per hour = $85 | $30,000 | $30,085 |

**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.

This AD is issued in accordance with authority delegated by the Executive Director, Aircraft Certification Service, as authorized by FAA Order 8000.51C. In accordance with that order, issuance of ADs is normally a function of the Compliance and Airworthiness Division, but during this transition period, the Executive Director has delegated the authority to issue ADs applicable to engines, propellers, and associated

appliances to the Manager, Engine and Propeller Standards Branch, Policy and Innovation Division.

**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) 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 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):

**CFM International, S.A.**: Docket No. FAA-2019-0568; Product Identifier 2019-NE-20-AD.

**(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**

(1) This AD applies to all CFM International, S.A. (CFM) CFM56-5B1, -5B1/2P, -5B1/3, -5B1/P, -5B2, -5B2/2P, -5B2/3, -5B2/P, -5B3/2P, -5B3/2P1, -5B3/3, -5B3/3B1, -5B3/P, -5B3/P1, -5B4, -5B4/2P, -5B4/2P1, -5B4/3, -5B4/3B1, -5B4/P, -5B4/P1, -5B5, -5B5/3, -5B5/P, -5B6, -5B6/2P, -5B6/3, -5B6/P, -5B7, -5B7/3, -5B7/P, -5B8/3, -5B8/P, -5B9/2P, -5B9/3, -5B9/P, CFM56-7B20, -7B20/2, -7B20/3, -7B20E, -7B22, -7B22/2, -7B22/3, -7B22/3B1, -7B22/B1, -7B22E, -7B22E/B1, -7B24, -7B24/2, -7B24/3, -7B24/3B1, -7B24/B1, -7B24E, -7B24E/B1, -7B26, -7B26/2, -7B26/3, -7B26/3B1, -7B26/3B2, -7B26/3B2F, -7B26/3F, -7B26/B1, -7B26/B2, -7B26E, -7B26E/B1, -7B26E/B2, -7B26E/B2F, -7B26E/F, -7B27, -7B27/2, -7B27/3, -7B27/3B1, -7B27/3B1F, -7B27/3B3, -7B27/3F, -7B27/B1, -7B27/B3, -7B27A, -7B27A/3, -7B27AE, -7B27E, -7B27E/B1, -7B27E/B1F, -7B27E/B3, and -7B27E/F model turbofan engines with a high-pressure turbine (HPT) inner stationary seal, part number (P/N) 1808M56G01 installed that has a serial number (S/N) listed in Planning Information, Paragraph 1.A., Table 1, of CFM Service Bulletin (SB) CFM56-5B S/B 72-0952, dated April 23, 2019, or in Planning Information, Paragraph 1.A., Table 1, CFM SB CFM56-7B S/B 72-1054, dated April 23, 2019, installed.

(2) This AD does not apply to affected CFM CFM56-5B and CFM56-7B model turbofan engines with the affected HPT inner stationary seal installed if the seal has been repaired as specified in CFM56-5B Engine Shop Manual (ESM), 72-41-03, REPAIR 003, or CFM56-7B ESM, 72-41-03, REPAIR 003, after the year listed in Paragraph 1.A.,

Table 1, of CFM SB CFM56-5B S/B 72-0952 dated April 23, 2019, or Paragraph 1.A., Table 1, CFM SB CFM56-7B S/B 72-1054, dated April 23, 2019.

**(d) Subject**

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

**(e) Unsafe Condition**

This AD was prompted by cracks found in the rotating air HPT front seal. The FAA is issuing this AD to prevent failure of the HPT inner stationary seal and the rotating air HPT front seal. The unsafe condition, if not addressed, could result in uncontained release of the rotating air HPT front seal, 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) At the next engine shop visit after the effective date of this AD, remove the affected HPT inner stationary seal from service and replace with a HPT inner stationary seal (that is not listed in Planning Information, Paragraph 1.A., Table 1, of CFM SB CFM56-5B S/B 72-0952, dated April 23, 2019, or in Planning Information, Paragraph 1.A., Table 1, CFM SB CFM56-7B S/B 72-1054, dated April 23, 2019) or a repaired HPT inner stationary seal that is eligible for installation per the definition in paragraph (h)(2) of this AD.

(2) After removing the affected HPT inner stationary seal required by paragraph (g)(1), inspect the removed HPT inner stationary seal for honeycomb separation, as defined in the Accomplishment Instructions, paragraph 3.C.(1), in CFM SB CFM56-5B S/B 72-0952, dated April 23, 2019, or in CFM SB CFM56-7B S/B 72-1054, dated April 23, 2019.

(3) If honeycomb separation is found during the inspection required by paragraph (g)(2) of this AD, before further flight:

(i) Remove the rotating air HPT front seal from service and replace with a part eligible for installation.

(ii) Inspect the HPT rotor blade internal cavities for honeycomb metal debris per the Accomplishment Instructions, paragraph 3.C.(1)(a)(4), of CFM SB CFM56-5B S/B 72-0952, dated April 23, 2019, or CFM SB CFM56-7B S/B 72-1054, dated April 23, 2019. If honeycomb metal debris is found, remove the HPT rotor blade from service and replace with a part eligible for installation.

(iii) Remove the No. 3 ball bearing from service and replace with a part eligible for installation.

**(h) Definition**

(1) 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 case flanges, except that the separation of engine flanges solely for the purposes of transportation without subsequent maintenance does not constitute an engine shop visit.

(2) For the purpose of this AD, a repaired HPT inner stationary seal that is eligible for installation is any HPT inner stationary seal, P/N 1808M56G01 and with a S/N listed in Paragraph 1.A., Table 1, of CFM SB CFM56-5B S/B 72-0952, dated April 23, 2019, or Paragraph 1.A., Table 1, CFM SB CFM56-7B S/B 72-1054, dated April 23, 2019 that has been repaired per CFM56-5B ESM, 72-41-03, REPAIR 003, or CFM56-7B ESM, 72-41-03, REPAIR 003, after the year listed in Paragraph 1.A., Table 1, of CFM SB CFM56-5B S/B 72-0952, dated April 23, 2019, or Paragraph 1.A., Table 1, CFM SB CFM56-7B S/B 72-1054, dated April 23, 2019.

**(i) No Reporting Requirement**

The reporting requirements contained within the SBs referenced in paragraph (g) of this AD are not required by this AD.

**(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 Christopher McGuire, Aerospace Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA, 01803; phone: 781-238-7120; fax: 781-238-7199; email: chris.mcguire@faa.gov.

(2) For service information identified in this AD, contact CFM International Inc., Aviation Operations Center, 1 Neumann Way, M/D Room 285, Cincinnati, OH, 45125; phone: 877-432-3272; fax: 877-432-3329; email: aviation.fleetsupport@ge.com. You may view this referenced service information at the FAA, Engine & Propeller Standards Branch, 1200 District Avenue, Burlington, MA, 01803. For information on the availability of this material at the FAA, call 781-238-7759.

Issued in Burlington, Massachusetts, on September 11, 2019.

Robert J. Ganley,
Manager, Engine and Propeller Standards Branch,
Aircraft Certification Service.
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