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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

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

**[Docket No. FAA-2022-0877; Project Identifier AD-2022-00506-E; Amendment 39-22123; AD 2022-15-04]**

**RIN 2120-AA64**

#### **Airworthiness Directives; CFM International, S.A. Turbofan Engines**

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

**ACTION:** Final rule; request for comments.

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**SUMMARY:** The FAA is adopting a new airworthiness directive (AD) for certain CFM International, S.A. (CFM) LEAP-1A model turbofan engines. This AD was prompted by reports of non-synchronous vibrations resulting in more open clearances and potential hot gas ingestion into the high-pressure turbine (HPT) rotor cavity, which may result in thermal degradation of the HPT rotor interstage seal and HPT rotor stage 2 disk. This AD requires inspection of the stage 2 HPT nozzle assembly honeycomb and HPT stator stationary seal honeycomb. Depending on the results of the inspection, this AD requires replacement of the stage 2 HPT nozzle assembly honeycomb, HPT stator stationary seal, HPT rotor interstage seal, and HPT rotor stage 2 disk. The FAA is issuing this AD to address the unsafe condition on these products.

**DATES:** This AD is effective August 4, 2022.

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of August 4, 2022.

The FAA must receive comments on this AD by September 6, 2022.

**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 final rule, contact CFM International, S.A., Aviation Operations Center, 1 Neumann Way, M/D Room 285, Cincinnati, OH 45125; phone: (877) 432-3272; email: aviation.fleetsupport@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 <https://www.regulations.gov> by searching for and locating Docket No. FAA-2022-0877.

### **Examining the AD Docket**

You may examine the AD docket at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2022-0877; 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 street address for the Docket Operations is listed above.

**FOR FURTHER INFORMATION CONTACT:** Mehdi Lamnyi, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7743; email: Mehdi.Lamnyi@faa.gov.

### **SUPPLEMENTARY INFORMATION:**

#### **Background**

On January 26, 2020, an Airbus Model A319NEO airplane, powered by CFM LEAP-1A model turbofan engines, experienced high vibrations. A subsequent engine disassembly by the manufacturer revealed three areas of missing material on the HPT rotor interstage seal and multiple radial and circumferential cracks on the forward arm. The manufacturer's investigation determined that the degraded HPT rotor interstage seal failure locations were initiated by creep rupture, related to hot gas ingestion due to reduced effectiveness of the stage 2 HPT nozzle honeycomb seals, a condition that could impact the HPT rotor stage 2 disk low-cycle fatigue life. This condition, if not addressed, could result in an uncontained release of the HPT rotor interstage seal and HPT rotor stage 2 disk, damage to the engine, and damage to the airplane. The FAA is issuing this AD to address the unsafe condition on these products.

#### **FAA's Determination**

The FAA is issuing this AD because the agency has 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 CFM Service Bulletin (SB) LEAP-1A-72-00-0460-01A-930A-D, Issue 002-00, dated June 10, 2022. This service information specifies procedures for inspecting the stage 2 HPT nozzle assembly honeycomb and HPT stator stationary seal honeycomb. This service information also specifies procedures for replacing the stage 2 HPT nozzle assembly honeycomb, HPT stator stationary seal, HPT rotor interstage seal, and HPT rotor stage 2 disk. 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.

#### **AD Requirements**

This AD requires inspection of the stage 2 HPT nozzle assembly honeycomb and HPT stator stationary seal honeycomb. Depending on the results of the inspection, this AD requires replacement

of the stage 2 HPT nozzle assembly honeycomb, HPT stator stationary seal, HPT rotor interstage seal, and HPT rotor stage 2 disk.

### **Justification for Immediate Adoption and Determination of the Effective Date**

Section 553(b)(3)(B) of the Administrative Procedure Act (APA) (5 U.S.C. 551 et seq.) authorizes agencies to dispense with notice and comment procedures for rules when the agency, for “good cause,” finds that those procedures are “impracticable, unnecessary, or contrary to the public interest.” Under this section, an agency, upon finding good cause, may issue a final rule without providing notice and seeking comment prior to issuance. Further, section 553(d) of the APA authorizes agencies to make rules effective in less than thirty days, upon a finding of good cause.

The FAA has found the risk to the flying public justifies waiving notice and comment prior to adoption of this rule because no domestic operators use this product. It is unlikely that the FAA will receive any adverse comments or useful information about this AD from any U.S. operator. Accordingly, notice and opportunity for prior public comment are unnecessary, pursuant to 5 U.S.C. 553(b)(3)(B). In addition, for the foregoing reason, the FAA finds that good cause exists pursuant to 5 U.S.C. 553(d) for making this amendment effective in less than 30 days.

### **Comments Invited**

The FAA invites you to send any written data, views, or arguments about this final rule. Send your comments to an address listed under ADDRESSES. Include “Docket No. FAA-2022-0877 and Project Identifier AD-2022-00506-E” at the beginning of your comments. The most helpful comments reference a specific portion of the final rule, 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 final rule 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 final rule.

### **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 AD 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 AD, 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 AD. Submissions containing CBI should be sent to Mehdi Lamnyi, 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.

### **Regulatory Flexibility Act**

The requirements of the Regulatory Flexibility Act (RFA) do not apply when an agency finds good cause pursuant to 5 U.S.C. 553 to adopt a rule without prior notice and comment. Because FAA has determined that it has good cause to adopt this rule without prior notice and comment, RFA analysis is not required.

## Costs of Compliance

The FAA estimates that this AD affects 0 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
Inspect stage 2 HPT nozzle assembly honeycomb	3 work-hours × \$85 per hour = \$255	\$0	\$255	\$0
Inspect HPT stator stationary seal honeycomb	3 work-hours × \$85 per hour = \$255	0	255	0

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 HPT rotor interstage seal	8 work-hours × \$85 per hour = \$680	\$168,000	\$168,680
Replace HPT rotor stage 2 disk	8 work-hours × \$85 per hour = \$680	324,400	325,080
Replace stage 2 HPT nozzle assembly honeycomb	24 work-hours × \$85 per hour = \$2,040	951,840	953,880
Replace HPT stator stationary seal	8 work-hours × \$85 per hour = \$680	98,000	98,680

## 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, and
- (2) Will not affect intrastate aviation in Alaska.

### **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:



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**2022-15-04 CFM International, S.A.:** Amendment 39-22123; Docket No. FAA-2022-0877; Project Identifier AD-2022-00506-E.

**(a) Effective Date**

This airworthiness directive (AD) is effective August 4, 2022.

**(b) Affected ADs**

None.

**(c) Applicability**

This AD applies to CFM International, S.A. (CFM) LEAP-1A23, LEAP-1A24, LEAP-1A24E1, LEAP-1A26, LEAP-1A26CJ, LEAP-1A26E1, LEAP-1A29, LEAP-1A29CJ, LEAP-1A30, LEAP-1A32, LEAP-1A33, LEAP-1A33B2, LEAP-1A35A model turbofan engines with engine serial number (ESN) 598-280, 598-283, 598-284, 598-291, 598-300, 598-302, 598-327, 598-572, 598-629, 598-646, 598-648, 598-659, 598-667, 598-812, 598-862, 598-909, and 599-192.

**(d) Subject**

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

**(e) Unsafe Condition**

This AD was prompted by reports of non-synchronous vibrations resulting in more open clearances and potential hot gas ingestion into the high-pressure turbine (HPT) rotor cavity, which may result in thermal degradation of the HPT rotor interstage seal and HPT rotor stage 2 disk. The FAA is issuing this AD to prevent creep rupture and low-cycle fatigue of the HPT rotor interstage seal and HPT rotor stage 2 disk. The unsafe condition, if not addressed, could result in an uncontained release of the HPT rotor interstage seal and HPT rotor stage 2 disk, 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) Before reaching the lowest applicable inspection threshold in Accomplishment Instructions, paragraph 5.A.(1), Table 1 or Table 2 of CFM Service Bulletin LEAP-1A-72-00-0460-01A-930A-D, Issue 002-00, dated June 10, 2022 (the SB), as applicable to each ESN and engine rating, or within 100 cycles after the effective date of this AD, whichever occurs later, perform an inspection of the

stage 2 HPT nozzle assembly honeycomb in accordance with the Accomplishment Instructions, paragraph 5.B.(3)(a) of the SB.

(2) If, during the inspection required by paragraph (g)(1) of this AD, the stage 2 HPT nozzle assembly honeycomb fails to meet the criteria in the Accomplishment Instructions, paragraphs 5.B.(3)(a)1 to 5.B.(3)(a)4 of the SB, perform the following:

(i) Before further flight, remove and replace the stage 2 HPT nozzle assembly honeycomb in accordance with the Accomplishment Instructions, paragraph 5.B.(3)(c)1 of the SB.

(ii) For engines with an installed HPT rotor interstage seal, identified by serial number in Accomplishment Instructions, paragraph 5.A.(1), Table 1 of the SB, before further flight, remove the HPT rotor interstage seal and replace with a part eligible for installation.

(iii) For engines with ESN 598-646 and ESN 598-812, before further flight, remove the HPT rotor stage 2 disk and replace with a part eligible for installation.

(iv) For Group 1 engines, or an engine that has previously operated as a Group 1 engine, before further flight, remove the HPT rotor stage 2 disk and replace with a part eligible for installation.

(3) Before reaching the lowest applicable inspection threshold in Accomplishment Instructions, paragraph 5.A.(1), Table 1 or Table 2 of the SB, as applicable to each ESN and engine rating, or within 100 cycles after the effective date of this AD, whichever occurs later, perform an inspection of the HPT stator stationary seal honeycomb in accordance with the Accomplishment Instructions, paragraph 5.B.(4)(a) of the SB.

(4) If, during the inspection required by paragraph (g)(3) of this AD, the HPT stator stationary seal honeycomb fails to meet the criteria in the Accomplishment Instructions, paragraph 5.B.(4)(a)1 to 5.B.(4)(a)3 of the SB, before further flight, replace the HPT stator stationary seal in accordance with the Accomplishment Instructions, paragraph 5.B.(4)(c)1, of the SB.

#### **(h) Definition**

For the purpose of this AD, Group 1 engines are affected LEAP-1A30, LEAP-1A32, LEAP-1A33, LEAP-1A33B2, and LEAP-1A35A model turbofan engines.

#### **(i) No Reporting Requirement**

The reporting requirements in the Accomplishment Instructions, paragraphs 5.B.(3)(a)5 and 5.B.(4)(a)4, of the SB, 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) 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.

#### **(k) Related Information**

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

## **(I) 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) CFM Service Bulletin LEAP-1A-72-00-0460-01A-930A-D, Issue 002-00, dated June 10, 2022.

(ii) [Reserved]

(3) For CFM service information identified in this AD, contact CFM International, S.A., Aviation Operations Center, 1 Neumann Way, M/D Room 285, Cincinnati, OH 45125; phone: (877) 432-3272; email: fleetsupport@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, or go to: <https://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued on July 8, 2022.

Christina Underwood,

Acting Director, Compliance & Airworthiness Division, Aircraft Certification Service.

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