



DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2024-2668; Project Identifier AD-2024-00561-E; Amendment 39-23061; AD 2025-12-03]

RIN 2120-AA64

Airworthiness Directives; CFM International, S.A. Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: The FAA is superseding Airworthiness Directive (AD) 2023-09-06, which applied to all CFM International, S.A. Model (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, and LEAP-1A35A (LEAP-1A) engines. AD 2023-09-06 required replacement of certain high-pressure turbine (HPT) rotor stage 1 disks (HPT stage 1 disks), forward outer seals, and compressor rotor stages 6-10 spools. AD 2023-09-06 also prohibited installation of an HPT stage 1 disk, forward outer seal, or compressor rotor stages 6-10 spool that has a part number and serial number identified in the service information onto any engine. Since the FAA issued AD 2023-09-06, the manufacturer identified additional affected parts that were manufactured from material suspected to have reduced material properties due to iron inclusion, which prompted this AD. This AD retains the requirements to replace certain HPT stage 1 disks, forward outer seals, and compressor rotor stages 6-10 spools and expands the applicability to include additional affected parts manufactured from the same material suspected to have reduced material properties due to iron inclusion. The FAA is issuing this AD to address the unsafe condition on these products.

DATES: This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of certain other publications listed in this AD as of June 23, 2023 (88 FR 32092, May 19, 2023).

ADDRESSES:

AD Docket: You may examine the AD docket at regulations.gov under Docket No. FAA-2024-2668; 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 CFM material identified in AD, contact CFM, GE Aviation Fleet Support, 1 Neumann Way, M/D Room 285, Cincinnati, OH 45215; phone: (877) 432-3272; email: aviation.fleetsupport@ge.com.

- You may view this material 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-2024-2668.

FOR FURTHER INFORMATION CONTACT: Mehdi Lamnyi, Aviation Safety Engineer, FAA, 2200 South 216th Street, Des Moines, WA 98198; phone: (781) 238-7743; email: mehdi.lamnyi@faa.gov.

SUPPLEMENTARY INFORMATION:

Background

The FAA issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to supersede AD 2023-09-06, Amendment 39-22429 (88 FR 32092, May 19, 2023), (AD 2023-09-06). AD 2023-09-06 applied to all CFM Model LEAP-1A engines. The NPRM was published in the *Federal Register* on December 23, 2024 (89 FR 104462).

The NPRM was prompted by further analysis by the manufacturer which identified additional affected parts that were manufactured from material suspected to have reduced material properties due to iron inclusion. In the NPRM, the FAA proposed to require replacement of certain HPT stage 1 disks, forward outer seals, and compressor rotor stages 6-10 spools. In the NPRM, the FAA also proposed to prohibit installation of an HPT stage 1 disk, forward outer seal, or compressor rotor stages 6-10 spool that has a part number and serial number identified in the material incorporated by reference onto any engine. 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 three commenters. Commenters included the Air Line Pilots Association, International (ALPA), CFM international, and StandardAero. ALPA supported the NPRM without change. The following presents the comments received on the NPRM and the FAA's response to each comment.

Request to Update Service Material to Latest Revision

CFM requested that the FAA update the proposed AD to refer to the latest revision of CFM Service Bulletin (SB) LEAP-1A-72-00-0507-01A-930A-D. CFM noted that CFM SB LEAP-1A-72-00-0507-01A-930A-D, Issue 001, dated January 24, 2024 (CFM SB LEAP-1A-72-00-0507-01A-930A-D, Issue 001) is being updated to include additional affected HPT stage 1 disk serial numbers in Tables 1 through 2.

The FAA agrees and has updated paragraph (g)(4) of this AD to reference CFM SB LEAP-1A-72-00-0507-01A-930A-D, Issue 002, dated April 24, 2025 (CFM SB LEAP-1A-72-00-0507-01A-930A-D, Issue 002). The FAA has also updated the language in paragraph (g)(4) of this AD to refer to "Tables 1 through 3" of CFM SB LEAP-1A-72-00-0507-01A-930A-D, Issue 002 because Issue 002 includes an additional table with affected parts. The FAA also added a Credit for Previous Actions paragraph to this AD, allowing operators to take credit for required actions if accomplished prior to the effective date of this AD using CFM SB LEAP-1A-72-00-0507-01A-930A-D, Issue 001. None of the HPT stage 1 disk serial numbers referenced in CFM SB LEAP-1A-72-00-

0507-01A-930A-D, Issue 002 are included in any engine installed on airplanes of U.S. Registry. Therefore, this change imposes no additional burden on operators who are required to comply with this AD.

Request to Include Thrust Ratings

StandardAero requested that the FAA revise the proposed AD to include XLR thrust ratings and reference CFM SB LEAP-1A-72-00-0529-01A-930A-D. StandardAero noted that CFM recently released CFM SB LEAP-1A-72-00-0529-01A-930A-D, which prohibits the installation of affected parts into any XLR rated LEAP-1A engine. StandardAero also mentioned that it may be beneficial to expand the scope of the NPRM to ensure affected parts are not installed into these engines at future shop visits.

The FAA disagrees with the request because the airworthiness limitations section of the engine shop manual does not allow for any of the affected part serial numbers listed in CFM SB LEAP-1A-72-00-0529-01A-93 0A-D to be installed onto an XLR engine. The FAA did not change this AD as a result of this comment.

Conclusion

The FAA reviewed the relevant data, considered any 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, 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.

Material Incorporated by Reference Under 1 CFR Part 51

The FAA reviewed CFM SB LEAP-1A-72-00-0507-01A-930A-D, Issue 002, dated April 24, 2025, which identifies the part numbers and serial numbers of HPT stage 1 disks, forward outer seals, and compressor rotor stages 6-10 spools with potentially reduced material properties and specifies procedures for replacement of these parts.

This AD also requires the following material, which the Director of the Federal Register approved for incorporation by reference as of June 23, 2023 (88 FR 32092, May 19, 2023):

- CFM Service Bulletin LEAP-1A-72-00-0470-01A-930A-D, Issue 003, dated March 3, 2023.

- CFM Service Bulletin LEAP-1A-72-00-0493-01A-930A-D, Issue 002, dated November 17, 2022.

- CFM Service Bulletin LEAP-1A-72-00-0496-01A-930A-D, Issue 001, dated March 7, 2023.

This material 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.

Costs of Compliance

The FAA estimates that this AD affects 42 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 |
|--|--------------------------------------|-----------------------|-------------------------|-------------------------------|
| Replace HPT stage 1 disk (42 affected parts) | 8 work-hours x \$85 per hour = \$680 | \$215,635 (pro-rated) | \$216,315 | \$9,085,230 |
| Replace forward outer seal (24 affected parts) | 8 work-hours x \$85 per hour = \$680 | \$47,500 (pro-rated) | \$48,180 | \$1,156,320 |
| Replace compressor rotor stages 6-10 spool (15 affected parts) | 8 work-hours x \$85 per hour = \$680 | \$37,660 (pro-rated) | \$38,340 | \$575,100 |

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:

- a. Removing Airworthiness Directive AD 2023-09-06, Amendment 39-22429 (88 FR 32092, May 19, 2023); and

- b. Adding the following new airworthiness directive:

2025-12-03 CFM International, S.A.: Amendment 39-23061; Docket No. FAA-2024-2668; Project Identifier AD-2024-00561-E.

(a) Effective Date

This airworthiness directive (AD) is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

This AD replaces AD 2023-09-06, Amendment 39-22429 (88 FR 32092, May 19, 2023) (AD 2023-09-06).

(c) Applicability

This AD applies to CFM International, S.A. Model (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, and LEAP-1A35A engines.

(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 that certain high-pressure turbine (HPT) rotor stage 1 disks (HPT stage 1 disks), forward outer seals, and compressor rotor stages 6-10 spools were manufactured from material suspected to have reduced material properties due to iron inclusion. The FAA is issuing this AD to prevent fracture and consequent uncontained failure of certain HPT stage 1 disks, forward outer seals, and compressor rotor stages 6-10 spools. 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

(1) For engines with an installed HPT stage 1 disk, forward outer seal, or compressor rotor stages 6-10 spool having a part number (P/N) and serial number (S/N) identified in Compliance, paragraph 3.E., Tables 1 through 9, of CFM Service Bulletin (SB) LEAP-1A-72-00-0496-01A-930A-D, Issue 001, dated March 7, 2023 (CFM SB

LEAP-1A-72-00-0496-01A-930A-D, Issue 001): At the next piece-part exposure of the HPT stage 1 disk, forward outer seal, or compressor rotor stages 6-10 spool, as applicable, or before exceeding the applicable cycles since new (CSN) threshold identified in Compliance, paragraph 3.E., Tables 1 through 9, of CFM SB LEAP-1A-72-00-0496-01A-930A-D, Issue 1, whichever occurs first after June 23, 2023 (the effective date of AD 2023-09-06); or if the applicable CSN threshold has been exceeded as of June 23, 2023 (the effective date of AD 2023-09-06), within 50 flight cycles (FCs) from June 23, 2023 (the effective date of AD 2023-09-06); remove the HPT stage 1 disk, forward outer seal, or compressor rotor stages 6-10 spool, as applicable, from service and replace with a part eligible for installation.

(2) For engines with an installed forward outer seal having a P/N and S/N identified in Compliance, paragraph 3.E., Tables 1 through 2, of CFM SB LEAP-1A-72-00-0470-01A-930A-D, Issue 003, dated March 3, 2023 (CFM SB LEAP-1A-72-00-0470-01A-930A-D, Issue 003): At the next piece-part exposure of the forward outer seal, or before exceeding the applicable CSN threshold identified in Compliance, paragraph 3.E., Tables 1 through 2, of CFM SB LEAP-1A-72-00-0470-01A-930A-D, Issue 003, whichever occurs first after June 23, 2023 (the effective date of AD 2023-09-06); or if the applicable CSN threshold has been exceeded as of June 23, 2023 (the effective date of AD 2023-09-06), within 50 FCs from June 23, 2023 (the effective date of AD 2023-09-06); remove the forward outer seal from service and replace with a part eligible for installation.

(3) For engines with an installed HPT stage 1 disk having a P/N and S/N identified in Compliance, paragraph 3.E., Tables 1 through 2, of CFM SB LEAP-1A-72-00-0493-01A-930A-D, Issue 002, dated November 17, 2022 (CFM SB LEAP-1A-72-00-0493-01A-930A-D, Issue 002): At the next piece-part exposure of the HPT stage 1 disk, or before exceeding the applicable CSN threshold identified in Compliance, paragraph 3.E., Tables 1 through 2, of CFM SB LEAP-1A-72-00-0493-01A-930A-D, Issue 002, whichever occurs first after June 23, 2023 (the effective date of AD 2023-09-06); or if the applicable CSN threshold has been exceeded as of June 23, 2023 (the effective date of AD 2023-09-06), within 50 FCs from June 23, 2023 (the effective date of AD 2023-09-

06), remove the HPT stage 1 disk from service and replace with a part eligible for installation.

(4) For engines with an installed HPT stage 1 disk having a P/N and S/N identified in Compliance, paragraph 3.E., Tables 1 through 3, of CFM SB LEAP-1A-72-00-0507-01A-930A-D, Issue 002, dated April 24, 2025 (CFM SB LEAP-1A-72-00-0507-01A-930A-D, Issue 002): At the next piece-part exposure of the HPT stage 1 disk, or before exceeding the applicable CSN threshold identified in Compliance, paragraph 3.E., Tables 1 through 3, of CFM SB LEAP-1A-72-00-0507-01A-930A-D, Issue 002, whichever occurs first after the effective date of this AD; or if the applicable CSN threshold has been exceeded as of the effective date of this AD, within 50 FCs from the effective date of this AD; remove the HPT stage 1 disk from service and replace with a part eligible for installation.

(h) Definition

For the purpose of this AD, a “part eligible for installation” is an HPT stage 1 disk, forward outer seal, or compressor rotor stages 6-10 spool that does not have a P/N and S/N identified in the service information listed in paragraphs (g)(1) through (4) of this AD.

(i) Installation Prohibition

After the effective date of this AD, do not install an HPT stage 1 disk, forward outer seal, or compressor rotor stages 6-10 spool that has a P/N and S/N identified in the service information listed in paragraphs (g)(1) through (4) of this AD on any engine.

(j) Credit for Previous Actions

You may take credit for the actions required by paragraph (g)(4) of this AD if you performed those actions before the effective date of this AD using CFM SB LEAP-1A-72-00-0507-01A-930A-D, Issue 001, dated January 24, 2024.

(k) 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 (l)(1) of this AD and email to:

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.

(l) Additional Information

(1) For more information about this AD, contact Mehdi Lamnyi, Aviation Safety Engineer, FAA, 2200 South 216th Street, Des Moines, WA 98198; phone: (781) 238-7743; email: mehdi.lamnyi@faa.gov.

(2) CFM material that is not incorporated by reference is available at the address specified in paragraph (m)(5) of this AD.

(m) Material Incorporated by Reference

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the material listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this material as applicable to do the actions required by this AD, unless the AD specifies otherwise.

(3) The following material was approved for IBR on [DATE 35 DAYS AFTER PUBLICATION OF THE FINAL RULE].

(i) CFM Service Bulletin LEAP-1A-72-00-0507-01A-930A-D, Issue 002, dated April 24, 2025.

(ii) [Reserved]

(4) The following material was approved for IBR on June 23, 2023 (88 FR 32092, May 19, 2023).

(i) CFM Service Bulletin LEAP-1A-72-00-0470-01A-930A-D, Issue 003, dated March 3, 2023.

(ii) CFM Service Bulletin LEAP-1A-72-00-0493-01A-930A-D, Issue 002, dated November 17, 2022.

(iii) CFM Service Bulletin LEAP-1A-72-00-0496-01A-930A-D, Issue 001, dated March 7, 2023.

(5) For CFM material identified in this AD, contact CFM International, S.A., GE Aviation Fleet Support, 1 Neumann Way, M/D Room 285, Cincinnati, OH 45215; phone: (877) 432-3272; email: aviation.fleetsupport@ge.com.

(6) You may view this material 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.

(7) You may view this material 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 June 10, 2025.

Peter A. White,
Deputy Director, Integrated Certificate Management Division,
Aircraft Certification Service.

[FR Doc. 2025-11340 Filed: 6/18/2025 8:45 am; Publication Date: 6/20/2025]