

[Federal Register: January 14, 2010 (Volume 75, Number 9)]
[Rules and Regulations]
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[DOCID:fr14ja10-5]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2009-0236; Directorate Identifier 2009-NE-06-AD; Amendment 39-16162; AD 2010-01-05]

RIN 2120-AA64

Airworthiness Directives; CFM International, S.A. CFM56-7B Series Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: The FAA is adopting a new airworthiness directive (AD) for CFM International, S.A. CFM56-7B series turbofan engines. This AD requires initial and repetitive eddy current inspections (ECIs) of certain part number (P/N) low-pressure (LP) turbine rear frames. This AD results from a refined life analysis by the engine manufacturer that shows the need to identify an initial and repetitive inspection threshold for inspecting certain LP turbine rear frames. We are issuing this AD to prevent failure of the LP turbine rear frame from low-cycle-fatigue cracks. Failure of the LP turbine rear frame could result in engine separation from the airplane, possibly leading to loss of control of the airplane.

DATES: This AD becomes effective February 18, 2010. The Director of the Federal Register approved the incorporation by reference of certain publications listed in the regulations as of February 18, 2010.

ADDRESSES: You can get the service information identified in this AD from CFM International, Technical Publications Department, 1 Neumann Way, Cincinnati, OH 45215; telephone (513) 552-2800; fax (513) 552-2816.

The Docket Operations office is located at Docket Management Facility, U.S. Department of Transportation, 1200 New Jersey Avenue, SE., West Building Ground Floor, Room W12-140, Washington, DC 20590-0001.

FOR FURTHER INFORMATION CONTACT: Antonio Cancelliere, Aerospace Engineer, Engine Certification Office, FAA, Engine and Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; e-mail: antonio.cancelliere@faa.gov; telephone (781) 238-7751; fax (781) 238-7199.

SUPPLEMENTARY INFORMATION: The FAA proposed to amend 14 CFR part 39 with a proposed AD. The proposed AD applies to CFM International, S.A. CFM56-7B series turbofan engines. We published the proposed AD in the Federal Register on May 11, 2009 (74 FR 21772). That action proposed to require initial and repetitive ECIs of certain P/N LP turbine rear frames.

Examining the AD Docket

You may examine the AD docket on the Internet at <http://www.regulations.gov>; or in person at the Docket Operations office between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this AD, the regulatory evaluation, any comments received, and other information. The street address for the Docket Operations office (telephone (800) 647-5527) is provided in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

Comments

We provided the public the opportunity to participate in the development of this AD. We have considered the comments received.

Request To Supersede or Revise Existing AD 2008-03-09

One commenter, the Air Transport Association (ATA), requests that we should supersede or revise existing AD 2008-03-09 to incorporate the requirements and P/Ns affected by the proposed AD.

We do not agree. Superseding or revising that AD to incorporate these requirements would make the requirements of existing AD 2008-03-09 and this AD confusing. AD 2008-03-09 requires a change to the Airworthiness Limitations Section (ALS) for the introduction of the new LP turbine rear frame life limits, with inspections, while this AD introduces limits for LP turbine rear frame P/Ns that were introduced to the field before the ALS changes occurred. We did not change the AD.

Request To Reference the Latest Service Bulletins (SBs)

ATA and CFM International, S.A. request that we reference the latest version of CFM International, S.A. SB No. CFM56-7B S/B 72-0579, which is Revision 5, dated March 30, 2009. CFM International also requests that we reference the latest version of CFM International, S.A. SB No. CFM56-7B S/B 72-0558, which is Revision 3, dated March 30, 2009.

We agree and changed the SB references in the AD.

Request To Include LP Turbine Rear Frame P/Ns

ATA requests that we include turbine rear frame P/Ns 340-166-251-0; 340-166-252-0; and 340-166-253-0. These P/Ns are included in the effectivity section of CFM International, S.A. SB No. CFM56-7B S/B 72-0579, and Engine Manual 05-21-03. ATA also requests that we include LP turbine rear frame P/Ns 340-027-110-0 and 370-027-120-0. These P/Ns are included in the effectivity section of CFM International, S.A. SB No. CFM56-7B S/B 72-0568.

We do not agree. This AD addresses LP turbine rear frame P/Ns introduced in the field by CFM International, S.A. through SB No. CFM56-7B S/B 72-0527, before the ALS could be modified to include the LP turbine rear frame P/Ns affected by this AD. The LP turbine rear frame P/Ns listed by ATA are already listed in the ALS. We did not change the AD.

Question Regarding Inclusion of LP Turbine Rear Frame P/Ns

Japan Airlines (JAL) questions whether the LP turbine rear frame P/Ns 340-166-251-0; 340-166-252-0; and 340-166-253-0 should be listed in this AD.

The LP turbine rear frame P/Ns referred to by JAL are already listed in the ALS. We did not change the AD.

Request To Remove Engine Models

ATA requests that we remove engine models CFM56-7B26/B2; CFM56-7B26/3B2; and CFM56-7B26/3B2F from the proposed AD, as they are not affected.

We agree and removed those models from the AD. We also advised CFM International, S.A., to remove those models from the effectivity list of SB No. CFM56-7B S/B 72-0579.

Request To Remove Repeated P/Ns

ATA requests that we remove the repeated listings of LP turbine rear frame P/N 340-166-254-0 from the AD.

We agree and removed the repeated P/N listings from the AD.

Request To Review and Correct an Engine Model

ATA and CFM International, S.A. request that we review the engine model -7B27/3 in the proposed AD, as it appears to be incorrect. ATA states also that engine model -7B27/B3 is missing from the proposed AD.

We agree. We corrected the -7B27/3 engine model in paragraph (g) to read “-7B27/B3”. We also corrected the typographical error in paragraph (c)(1) so that engine model -7B27/3 is not duplicated. We changed the duplicate model to read “-7B27/B3”.

Request To Remove an Engine Model

ATA requests that we remove engine model -7B27A from paragraph (f) of the proposed AD, as it is not affected by the AD action.

We agree and removed that engine model from the AD.

Previous Credit Paragraphs Added

Since we issued the proposed AD, we became aware that we need to allow previous credit for initial inspections done before the effective date of the AD, using earlier versions of the applicable SBs. We added two previous credit paragraphs to the compliance section of the AD.

Conclusion

We have carefully reviewed the available data, including the comments received, and determined that air safety and the public interest require adopting the AD with the changes described previously. We have determined that these changes will neither increase the economic burden on any operator nor increase the scope of the AD.

Costs of Compliance

We estimate that this AD will affect 1,228 CFM56-7B series turbofan engines installed on airplanes of U.S. registry. We estimate that it will take about 3 work-hours to perform an eddy

current inspection of an LP turbine rear frame. The average labor rate is \$80 per work-hour. A new replacement LP turbine rear frame costs about \$275,000. We estimate that all but the first of the recurrent inspections would occur during normally scheduled maintenance. Therefore, the cost of only the first inspection is included as directly attributable to this AD and we included that cost in the first year. Also, while we estimate that all 1,228 LP turbine rear frames will need replacement at some point in their 30-year useful life, only the unused cost of the part is attributable to this AD. Therefore, based on the service history of the LP turbine rear frame, we estimate the total cost of the AD to U.S. operators to be less than \$11,266,490 annually based on a 30-year fleet life expectation.

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.

We are 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

We have 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) Is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); 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.

We prepared a summary of the costs to comply with this AD and placed it in the AD Docket. You may get a copy of this summary at the address listed under ADDRESSES.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

Adoption of the Amendment

Accordingly, under the authority delegated to me by the Administrator, the Federal Aviation Administration 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:



2010-01-05 CFM International, S.A: Amendment 39-16162. Docket No. FAA-2009-0236; Directorate Identifier 2009-NE-06-AD.

Effective Date

(a) This airworthiness directive (AD) becomes effective February 18, 2010.

Affected ADs

(b) None.

Applicability

(c) This AD applies to:

(1) CFM International, S.A. CFM56-7B20; -7B22; -7B24; -7B26; -7B27; -7B22/B1; -7B24/B1; -7B27/B1; -7B26/B1; -7B20/3; -7B22/3; -7B24/3; -7B26/3; -7B27/3; -7B22/3B1; -7B24/3B1; -7B27/3B1; -7B26/3B1; -7B26/3F; -7B27/3B3; and -7B27/3B1F; and -7B27/3B3 turbofan engines assembled with a low-pressure (LP) turbine rear frame, part number (P/N) 340-166-254-0; 340-166-255-0; 340-166-256-0; 340-166-257-0; 340-166-258-0; or 340-166-259-0; and

(2) CFM International, S.A. CFM56-7B20/2; -7B22/2; -7B24/2; -7B26/2; and -7B27/2 turbofan engines assembled with a dual annular combustor and an LP turbine rear frame, P/N 340-177-551-0; 340-177-552-0; 340-177-553-0; 340-177-554-0; 340-177-555-0; or 340-177-556-0.

(3) These engines are installed on, but not limited to, Boeing 737-600, 737-700, 737-800, and 737-900 series airplanes.

Unsafe Condition

(d) This AD results from a refined life analysis by the engine manufacturer that shows the need to identify an initial and repetitive inspection threshold for inspecting certain LP turbine rear frames. We are issuing this AD to prevent failure of the LP turbine rear frame from low-cycle-fatigue cracks. Failure of the LP turbine rear frame could result in engine separation from the airplane, possibly leading to loss of control of the airplane.

Compliance

(e) You are responsible for having the actions required by this AD performed within the compliance times specified unless the actions have already been done.

Inspections of LP Turbine Rear Frames

(f) For CFM International, S.A. CFM56-7B20; -7B22; -7B24; -7B26; -7B27; -7B22/B1; -7B24/B1; -7B27/B1; -7B20/3; -7B22/3; -7B24/3; -7B26/3; -7B27/3; -7B22/3B1; -7B24/3B1; -7B27/3B1; -7B26/3F; -7B27/3F; and -7B27/3B1F turbofan engines with an LP turbine rear frame, P/N 340-166-254-0; 340-166-255-0; 340-166-256-0; 340-166-257-0; 340-166-258-0; or 340-166-259-0, do the following:

(1) Perform an initial eddy current inspection (ECI) of the LP turbine rear frame within 25,000 cycles-since-new (CSN) on the LP turbine rear frame.

(2) For engines with unknown LP turbine rear frame CSN, perform an initial ECI within 300 cycles from the effective date of this AD.

(3) Perform repetitive ECIs of the LP turbine rear frame, using the inspection intervals in paragraph 3.A. (8) of the Accomplishment Instructions of CFM International, S.A. SB No. CFM56-7B S/B 72-0579, Revision 5, dated March 30, 2009.

(4) Use paragraphs 3.A. through 3.A. (7)(d) of the Accomplishment Instructions of CFM International, S.A. Service Bulletin (SB) No. CFM56-7B S/B 72-0579, Revision 5, dated March 30, 2009, to do the ECIs.

(5) Remove LP turbine rear frames from service that have a total cumulated crack length at any location, of 0.79 inch (20 mm) or longer.

(g) For CFM International, S.A. CFM56-7B26/B1; -7B27/B3; -7B26/3B1; and -7B27/3B3 turbofan engines with an LP turbine rear frame, P/N 340-166-254-0; 340-166-255-0; 340-166-256-0; 340-166-257-0; 340-166-258-0; or 340-166-259-0, do the following:

(1) Perform an initial ECI of the LP turbine rear frame within 19,000 CSN on the LP turbine rear frame.

(2) For engines with unknown LP turbine rear frame CSN, perform an initial ECI within 300 cycles from the effective date of this AD.

(3) Perform repetitive ECIs of the LP turbine rear frame, using the inspection intervals in paragraph 3.A. (9) of the Accomplishment Instructions of CFM International, S.A. SB No. CFM56-7B S/B 72-0579, Revision 5, dated March 30, 2009.

(4) Use paragraphs 3.A. through 3.A. (7)(d) of the Accomplishment Instructions of CFM International, S.A. Service Bulletin (SB) No. CFM56-7B S/B 72-0579, Revision 5, dated March 30, 2009, to do the ECIs.

(5) Remove LP turbine rear frames from service that have a total cumulated crack length at any location, of 0.79 inch (20 mm) or longer.

(h) For CFM International, S.A. CFM56-7B20/2; -7B22/2; -7B24/2; -7B26/2; and -7B27/2 turbofan engines assembled with a dual annular combustor and an LP turbine rear frame, P/N 340-177-551-0; 340-177-552-0; 340-177-553-0; 340-177-554-0; 340-177-555-0; or 340-177-556-0, do the following:

(1) Perform an initial ECI of the LP turbine rear frame within 16,350 CSN on the LP turbine rear frame.

(2) For engines with unknown LP turbine rear frame CSN, perform an initial ECI within 300 cycles from the effective date of this AD.

(3) Perform repetitive ECIs of the LP turbine rear frame, using the inspection intervals in paragraph 3.A. (8) of the Accomplishment Instructions of CFM International, S.A. SB No. CFM56-7B S/B 72-0558, Revision 3, dated March 30, 2009.

(4) Use paragraphs 3.A. through 3.A. (7)(d) of the Accomplishment Instructions of CFM International, S.A. SB No. CFM56-7B S/B 72-0558, Revision 3, dated March 30, 2009, to do the ECIs.

(5) Remove LP turbine rear frames from service that have a total cumulated crack length at any location, of 0.43 inch (11 mm) or longer.

Previous Credit

(i) Initial inspection of LP turbine rear frames before the effective date of this AD performed using the Accomplishment Instructions of CFM International, S.A. SB No. CFM56-7B S/B 72-0579,

original issue, Revision 1, Revision 2, Revision 3, or Revision 4, satisfy the requirements of paragraphs (f)(1), (f)(2), (g)(1), and (g)(2) of this AD.

(j) Initial inspection of LP turbine rear frames before the effective date of this AD performed using the Accomplishment Instructions of CFM International, S.A. SB No. CFM56-7B S/B 72-0558, original issue, Revision 1, or Revision 2, satisfy the requirements of paragraphs (h)(1) and (h)(2) of this AD.

Alternative Methods of Compliance

(k) The Manager, Engine Certification Office, has the authority to approve alternative methods of compliance for this AD if requested using the procedures found in 14 CFR 39.19.

Related Information

(l) European Aviation Safety Agency AD 2009-0009 (corrected), dated January 27, 2009, also addresses the subject of this AD.

(m) Contact Antonio Cancelliere, Aerospace Engineer, Engine Certification Office, FAA, Engine and Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; e-mail: antonio.cancelliere@faa.gov; telephone (781) 238-7751; fax (781) 238-7199, for more information about this AD.

Material Incorporated by Reference

(n) You must use the service information specified in the following Table 1 to perform the inspections required by this AD. The Director of the Federal Register approved the incorporation by reference of the documents listed in the following Table 1 in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Contact CFM International, Technical Publications Department, 1 Neumann Way, Cincinnati, OH 45215; telephone (513) 552-2800; fax (513) 552-2816, for a copy of this service information. You may review copies at the FAA, New England Region, 12 New England Executive Park, Burlington, MA; or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: <http://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Table 1 – Incorporation by Reference

Service Bulletin No.	Page	Revision	Date
CFM56-7B S/B 72-0558	All	3	March 30, 2009
Total Pages: 22			
CFM56-7B S/B 72-0579	All	5	March 30, 2009
Total Pages: 23			

Issued in Burlington, Massachusetts, on December 23, 2009.

Francis A. Favara,
Manager, Engine and Propeller Directorate,
Aircraft Certification Service.