

[4910-13-U]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39 [66 FR 33166 6/21/2001]

[Docket No. 2000-NE-30-AD; Amendment 39-12276; AD 2001-12-20]

RIN 2120-AA64

Airworthiness Directives; General Electric Company (GE) CF6-50 Turbofan Engines.

AGENCY: Federal Aviation Administration, DOT.

ACTION: Final rule.

SUMMARY: This amendment adopts a new airworthiness directive (AD) that is applicable to General Electric Company (GE) CF6-50 turbofan engines. This amendment requires removal of old high pressure compressor (HPC) air ducts and mating hardware and replacement with newly designed air ducts and reworked mating hardware. This amendment also requires the repetitive inspection of certain reworked mating hardware. This amendment is prompted by reports of an uncontained low pressure turbine (LPT) disk failure that resulted from an air duct failure that caused a fan mid shaft (FMS) separation. The actions specified by this AD are intended to prevent HPC air duct failures that could result in FMS failures, that in turn could result in rejected takeoffs or uncontained LPT events, and to prevent HPC rear shaft failures that could result in uncontained engine failures.

DATES: Effective date July 26, 2001. The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of July 26, 2001.

ADDRESSES: The service information referenced in this AD may be obtained from General Electric Company via Lockheed Martin Technology Services, 10525 Chester Road, Suite C, Cincinnati, Ohio 45215, telephone: (513) 672-8400; fax: (513) 672-8422. You may examine the AD docket (including any comments and service information) at the FAA, New England Region, Office of the Regional Counsel, 12 New England Executive Park, Burlington, MA between 8:00 a.m. and 4:30 p.m., Monday through Friday, except Federal holidays. You may also examine the service information at the Office of the Federal Register, 800 North Capitol Street, NW, suite 700, Washington, DC.

FOR FURTHER INFORMATION CONTACT: Karen Curtis, Aerospace Engineer, Engine Certification Office, FAA, Engine and Propeller Directorate, 12 New England Executive Park, Burlington MA 01803-5299; telephone: (781) 238-7192; fax: (781) 238-7199.

SUPPLEMENTARY INFORMATION: A proposal to amend part 39 of the Federal Aviation Regulations (14 CFR part 39) to include an AD that is applicable to GE CF6-50 turbofan engines was published in the Federal Register on November 24, 2000 (65 FR 70533). That action proposed to require removal of old high pressure compressor (HPC) air ducts and mating hardware and replacement with newly designed air ducts and reworked mating hardware in accordance with GE Aircraft Engines (GEAE) Service Bulletin (SB) CF6-50 72-1200, dated May 8, 2000; GEAE Alert Service Bulletin (ASB) CF6-50 72-A1200, Revision 1, dated July 20, 2000; or GEAE ASB CF6-50 72-A1200, Revision 2, dated November 2, 2000.

Those bulletins describe procedures for removal of the HPC air duct assembly, part numbers (P/N's): 9128M36G03 / G04 / G05 / G06 / G08 / G20 / G21 or 1644M16G03 and mating hardware (rear shaft or stage 11-14 spool shaft) and replacement with the new design air duct and reworked mating hardware.

Comments

Interested persons have been afforded an opportunity to participate in the making of this amendment. Due consideration has been given to the comments received.

Typographical Error

One commenter notes that there is a typographical error in paragraph (a) of the proposed rule. The error is in the P/N for the air duct assembly. There is no P/N 99128M36G03. The FAA agrees, and has changed the P/N reference from 99128M36G03 to 9128M36G03.

Cost of 3-9 Spool Inspections

One commenter requests that the cost of the stage 3-9 spool inspections required by other AD's be included in the cost analysis for this rule as well. The FAA does not agree. The costs of the stage 3-9 spool inspections required by other AD's were accounted for in the rule making process for those rules. This AD does not require additional stage 3-9 spool inspections.

Shop Visit Definition

Two commenters request that the definition of shop visit for this rule be modified or clarified because they believe that the shop visit definition in the proposed rule will force incorporation of newly designed air ducts and modification of the mating hardware sooner than intended. The FAA agrees. The definition in the proposed rule would have required incorporation of the redesigned air duct at any time the HPC stage 2 disk flange was disassembled or the HPC stage 1 disk was removed, for any reason. As the commenters note, this occurs during routine maintenance and tying the replacement of the HPC air duct to that triggering event would have an unintended acceleration of the HPC air duct replacement program. Therefore, the FAA has changed the definition of HPC rotor exposure. The requirements of this AD are triggered on removal of the stage 3-9 spool from the HPC rotor structure, regardless of whether any blades, locking lugs, bolts or balance weights remain assembled to the spool. This change will achieve the intended rate of compliance for the redesigned air duct incorporation while maintaining an acceptable level of safety.

Revision of Economic Impact

Two commenters believe that the cost analysis of the AD should be revised to reflect a higher cost due to additional maintenance or inspections that will be needed once the HPC is disassembled to piece-part level for the rework and installation of the new air duct. The FAA does not agree. The costs cited in the proposal reflect the costs for complying with this AD. Other potential costs that may be incurred for other reasons (i.e. normal maintenance or other AD required inspections) are not included in the cost analysis for the actions required by this AD.

Inspection of Certain Reworked Rear Shafts

In addition, a comment was received to Docket No. 90-ANE-25-AD in response to a Notice of Proposed Rulemaking (NPRM) published on October 12, 2000 (65 FR 60597) that proposed to revise AD 91-10-03 R1. That proposed revision was to add reworked rear shaft part numbers to the list of affected parts in AD 91-10-03 R1 to ensure that the necessary inspections were continued following rework and reidentification of the parts. The rework is required in order to use these rear shafts with the redesigned air duct, and does not address the bolt hole condition that prompted the inspection requirements of 91-10-03 R1. The commenter believed that the new effective date of the proposed revision to AD 91-10-03 R1 could be misconstrued and result in parts continuing in service without the required inspections for longer than intended by AD 91-10-03 R1.

The FAA agrees that the new effectivity date of the proposed revision to AD 91-10-03 R1 could reduce the intended level of safety. Therefore, the NPRM Docket No. 90-ANE-25-AD is being withdrawn, and the requirement to inspect the reworked shafts that was proposed by that proposed rule has instead been incorporated into this final rule. Incorporation of the air duct required by this rule also requires that the

existing rear shafts be reworked and reidentified in order to be used with the new air duct design. The rework procedure requires that the rear shaft be inspected at the time of the rework, regardless of any prior inspection history. Part of that inspection includes the same fluorescent penetrant inspection required by AD 91-10-03 R1. If the part has not already received an initial inspection in accordance with AD 91-10-03 R1, it will receive the necessary inspection as part of the rework procedure. Therefore, the repetitive inspection interval of 6,000 CSLI will be added to this AD for reworked and reidentified rear shafts. The additional cost for this inspection has been added to the cost analysis for this AD.

Finally, the applicability for this AD now also reflects the reidentified rear shafts. The total number of engines affected by this AD, however, remains the same because the incorporation of the new air duct also requires modification of the rear shaft.

Service Bulletin update

The FAA has added to paragraph (a) a reference to GE Aircraft Engines Alert Service Bulletin CF6-50 72-A1200, Revision 3, dated May 30, 2001, as an option by which to perform the required air duct replacement and rework of the mating hardware.

After careful review of the available data, including the comments noted above, the FAA has determined that air safety and the public interest require the adoption of the rule with the changes described previously. The FAA has determined that these changes will neither increase the economic burden on any operator nor increase the scope of the AD.

Economic Impact

There are about 1,730 engines of the affected design in the worldwide fleet. The FAA estimates that 469 engines installed on aircraft of U.S. registry would be affected by this AD, that it would take about 70 work hours per engine to disassemble and reassemble the HPC module, that it would take 19 hours to rework the mating hardware, that the repetitive inspection of each reworked rear shaft would take two hours, and that the average labor rate is \$60 per work hour. Each new air duct assembly will cost \$32,985. Based on these figures, the total AD cost impact on U.S. operators is estimated to be \$18,030,705.

Regulatory Impact

This final rule does not have federalism implications, as defined in Executive Order 13132, because it 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. Accordingly, the FAA has not consulted with state authorities prior to publication of this final rule.

For the reasons discussed above, I certify that this action (1) is not a "significant regulatory action" under Executive Order 12866; (2) is not a "significant rule" under the DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); and (3) if promulgated, 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. A final evaluation has been prepared for this action and it is contained in the Rules Docket. A copy of it may be obtained by contacting the Rules Docket at the location provided under the caption "ADDRESSES."

List of Subjects in 14 CFR Part 39

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

Adoption of the Amendment

Accordingly, pursuant to the authority delegated to me by the Administrator, the Federal Aviation Administration amends part 39 of the Federal Aviation Regulations (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. Section 39.13 is amended by adding a new airworthiness directive to read as follows:

AIRWORTHINESS DIRECTIVE



Aircraft Certification Service
Washington, DC

U.S. Department
of Transportation
**Federal Aviation
Administration**

We post ADs on the internet at "av-info.faa.gov"

The following Airworthiness Directive issued by the Federal Aviation Administration in accordance with the provisions of Title 14 of the Code of Federal Regulations (14 CFR) part 39, applies to an aircraft model of which our records indicate you may be the registered owner. Airworthiness Directives affect aviation safety and are regulations which require immediate attention. You are cautioned that no person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of the Airworthiness Directive (reference 14 CFR part 39, subpart 39.3).

2001-12-20 General Electric Company (GE) CF6-50 turbofan engines: Amendment 39-12276.
Docket 2000-NE-30-AD.

Applicability

This airworthiness directive (AD) is applicable to General Electric Company (GE) CF6-50 turbofan engines with high pressure compressor (HPC) rotor air duct assemblies, part numbers (P/N's): 9128M36G03 / G04 / G05 / G06 / G08 / G20 / G21, or 1644M16G03 installed. This AD is also applicable to CF6-50 turbofan engines with HPC rear shaft P/N's: 1999M25P01 / P02 / P03 / P04 / P05 / P06 / or P07 installed. These engines are installed on but not limited to Boeing 747, Airbus A300, and McDonnell Douglas DC10 airplanes.

Note 1: This AD applies to each engine identified in the preceding applicability provision, regardless of whether it has been modified, altered, or repaired in the area subject to the requirements of this AD. For engines that have been modified, altered, or repaired so that the performance of the requirements of this AD is affected, the owner/operator must request approval for an alternative method of compliance in accordance with paragraph (d) of this AD. The request should include an assessment of the effect of the modification, alteration, or repair on the unsafe condition addressed by this AD; and, if the unsafe condition has not been eliminated, the request should include specific proposed actions to address it.

Compliance

Compliance with the requirements of this AD is required as indicated, unless already done.

To prevent HPC air duct failures that could result in fan mid shaft (FMS) failures and uncontained low pressure turbine (LPT) events, and to prevent HPC rear shaft failures that could result in uncontained engine failures, do the following:

(a) At next HPC rotor exposure, remove the HPC air duct assembly P/N's: 9128M36G03 / G04 / G05 / G06 / G08 / G20 / G21 or 1644M16G03 and mating hardware (rear shaft or stage 11-14 spool shaft) and replace with the new design air duct and reworked mating hardware in accordance with the accomplishment instructions of GE Aircraft Engines (GEAE) Service Bulletin (SB) CF6-50 72-1200, dated May 8, 2000; GEAE Alert Service Bulletin (ASB) CF6-50 72-A1200, Revision 1, dated July 20, 2000; GEAE ASB CF6-50 72-A1200, Revision 2, dated November 2, 2000; or GEAE ASB CF6-50 72-A1200, Revision 3, dated May 30, 2001.

(b) Inspect rear shaft P/N's: 1999M25P01 / P02 / P03 / P04 / P05 / P06 / or P07 in accordance with the Accomplishment Instructions of GEAE ASB CF6-50 72-A0958, Revision 3, dated May 25, 2001, at intervals not to exceed 6,000 cycles since last inspection.

(c) For the purposes of this AD, HPC rotor exposure is defined as disassembly and removal of the stage 3-9 spool from the HPC rotor structure, regardless of whether any blades, locking lugs, bolts or balance weights remain assembled to the spool.

Alternative Methods of Compliance

(d) An alternative method of compliance or adjustment of the compliance time that provides an acceptable level of safety may be used if approved by the Manager, Engine Certification Office (ECO). Operators shall submit their request through an appropriate Federal Aviation Administration (FAA) Principal Maintenance Inspector, who may add comments and then send it to the Manager, ECO.

Note 2: Information concerning the existence of approved alternative methods of compliance with this airworthiness directive, if any, may be obtained from the ECO.

Documents That Have Been Incorporated By Reference

(e) The actions shall be done in accordance with the following GE Aircraft Engines service bulletin (SB) and alert service bulletins (ASB's):

Document No.	Pages	Revision	Date
SB CF6-50 72-1200	All	Original	May 8, 2000
Total pages: 17			
ASB CF6-50 72-A1200	All	1	July 20, 2000
Total pages: 18			
ASB CF6-50 72-A1200	All	2	November 2, 2000
Total pages: 19			
ASB CF6-50 72-A1200	All	3	May 30, 2001
Total pages: 21			
ASB CF6-50 72-A0958	All	3	May 25, 2001
Total pages: 6			

This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from General Electric Company via Lockheed Martin Technology Services, 10525 Chester Road, Suite C, Cincinnati, Ohio 45215, telephone: (513) 672-8400; fax: (513) 672-8422. Copies may be inspected at the FAA, New England Region, Office of the Regional Counsel, 12 New England Executive Park, Burlington, MA; or at the Office of the Federal Register, 800 North Capitol Street, NW, suite 700, Washington, DC.

Effective Date

(f) This amendment becomes effective on July 26, 2001.

Issued in Burlington, Massachusetts, on June 13, 2001.

Wayne E. Gaulzetti, Acting Manager, Engine and Propeller Directorate, Aircraft Certification Service.