

DEPARTMENT OF TRANSPORTATION**Federal Aviation Administration****14 CFR Part 39**

[Docket No. 96-ANE-26; Amendment 39-10034; AD 97-11-05]

RIN 2120-AA64

Airworthiness Directives; AlliedSignal Inc. ALF502 and LF507 Series Turbofan Engines

AGENCY: Federal Aviation Administration, DOT.

ACTION: Final rule.

SUMMARY: This amendment adopts a new airworthiness directive (AD), applicable to AlliedSignal Inc. (formerly Textron Lycoming) ALF502 and LF507 series turbofan engines, that requires initial and repetitive on-wing eddy current or in-shop fluorescent penetrant inspections of fuel manifold assemblies for cracks, and replacement, if necessary, with serviceable parts. In addition, this AD presents an optional terminating action to the repetitive inspections by replacing the fuel manifold assembly with an assembly of a new, improved design. This amendment is prompted by reports of cracking of the fuel manifold assembly at the No. 5 scallop location. The actions specified by this AD are intended to prevent cracking of the fuel manifold assembly, which could result in an engine fire.

DATES: Effective July 28, 1997.

The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of July 28, 1997.

ADDRESSES: The service information referenced in this AD may be obtained from AlliedSignal Aerospace, Attn: Data Distribution, M/S 64-3/2101-201, P.O. Box 29003, Phoenix, AZ 85038-9003; telephone (602) 365-2493, fax (602) 365-5577. This information may be examined at the Federal Aviation Administration (FAA), New England Region, Office of the Assistant Chief 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.

FOR FURTHER INFORMATION CONTACT: Raymond Vakili, Aerospace Engineer, Los Angeles Aircraft Certification Office, FAA, Transport Airplane Directorate, 3960 Paramount Blvd., Lakewood, CA 90712-4137; telephone (310) 627-5262; fax (310) 627-5210.

SUPPLEMENTARY INFORMATION: A proposal to amend part 39 of the Federal

Aviation Regulations (14 CFR part 39) to include an airworthiness directive (AD) that is applicable to AlliedSignal Inc. (formerly Textron Lycoming) ALF502 and LF507 series turbofan engines was published in the **Federal Register** on November 6, 1996 (61 FR 57342). That action proposed to require initial and repetitive on-wing eddy current inspection (ECI) and in-shop fluorescent penetrant inspection (FPI) of fuel manifold assemblies for cracks, and replacement, if necessary, with serviceable parts. In addition, that action proposed an optional terminating action to the repetitive inspections by replacing the fuel manifold assembly with an assembly of a new, improved design, Part Number (P/N) 2-163-620-37 or -38.

Interested persons have been afforded an opportunity to participate in the making of this amendment. Due consideration has been given to the comments received from a single commenter (the manufacturer).

The commenter states that inspection records reveal that cracks have been detected in fuel manifold assembly No. 5 scallop location only, and not, additionally, in No. 6, as stated in the NPRM. The FAA concurs and has deleted reference to the No. 6 location in this final rule.

The commenter states that the applicability section listing of aircraft installations should be revised to more accurately describe the population of affected engines. The FAA concurs and has revised this final rule by including in the applicability section a reference to the list of affected fuel manifold P/Ns found in the manufacturer's service bulletin (SB).

The commenter states that there should be separate inspection intervals for the ALF502R and LF507 series engines versus the ALF502L series, in order to better match the maintenance intervals stated in the FAA-approved Airworthiness Limitations Section. In addition, the commenter states that low-time engines need not be inspected until reaching 4,500 cycles since new (CSN). The FAA concurs. Accordingly, the FAA has revised the compliance section of this final rule by splitting the compliance requirements into two subparagraphs, one for ALF502L engines, and one for ALF502R and LF507 engines. In addition, the FAA has determined, based on a new risk analysis, that engines with less than 3,250 CSN on the effective date of the AD could now be inspected prior to reaching 4,500 CSN for ALF502R and LF507 engines, and 5,250 CSN for ALF502L engines. ALF502R and LF507 engines must still be inspected at

intervals not to exceed 1,250 cycles in service (CIS) following the initial inspection, and ALF502L engines need repetitive inspections every hot section inspection (HSI) not to exceed 2,000 CIS. These changes allow the compliance intervals to better match the maintenance intervals stated in the FAA-approved Airworthiness Limitations Section.

The commenter states that all the applicable fuel assembly P/Ns should be listed in the AD. The FAA does not concur. The P/Ns for fuel manifold assemblies affected by this AD are listed in the manufacturer's SB, which is incorporated by reference in the AD.

The commenter states that a cracked fuel manifold assembly should be replaced with a serviceable assembly instead of only the new fuel manifold assembly, P/N 2-163-620-37 or -38, as stated in the NPRM. The manufacturer expressed concern regarding a shortage of spare parts should replacement of the defective manifold assemblies with the new fuel manifold assemblies, P/N 2-163-620-37 or -38, become mandatory. The manufacturer stated that the new fuel manifold assemblies, P/N 2-163-620-37 or -38, are currently available for installation on production LF507 engines only. The FAA concurs. With the repetitive inspection procedures in place, an operator may continue replacing the cracked fuel manifold assemblies with serviceable fuel manifold assemblies. However, only replacement of a fuel manifold assembly with a newly improved fuel manifold assembly, P/N 2-163-620-37 or -38, will provide terminating action for the repetitive inspection requirements of this AD. This final rule has been changed accordingly.

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.

There are approximately 1,500 engines of the affected design in the worldwide fleet. The FAA estimates that 270 engines installed on aircraft of U.S. registry will be affected by this AD, that it will take approximately 2 work hours per engine per inspection to accomplish the ECI, 4 work hours per engine per inspection to accomplish the FPI, and that the average labor rate is \$60 per work hour. Based on these figures, annual total cost impact of AD on U.S. operators is estimated to be \$97,200 at

the estimated rate of one inspection per year.

The regulations adopted herein will not have substantial direct effects 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. Therefore, in accordance with Executive Order 12612, it is determined that this final rule does not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

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 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. A final evaluation has been prepared for this action and it is contained in the Rules Docket. A copy of it may be obtained from 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 the following new airworthiness directive:

97-11-05 AlliedSignal Inc.: Amendment 39-10034. Docket 96-ANE-26.

Applicability: AlliedSignal Inc. (formerly Textron Lycoming) ALF502 and LF507 series turbofan engines with fuel manifold assemblies having Part Numbers (P/Ns) listed in paragraph 1(A) of AlliedSignal Service Bulletin (SB) No. ALF/LF 73-1002, dated December 22, 1995, installed on but not limited, British Aerospace Models BAe 146-100A, -200A, and -300A series; Avro International Models 146-RJ70A, -RJ85A, and -RJ100A series; and Canadair Model CL-600-1A11 series aircraft.

Note 1: This airworthiness directive (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 (c) 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: Required as indicated, unless accomplished previously.

To prevent cracking of the fuel manifold assembly, which could result in an engine fire, accomplish the following:

(a) Perform initial and repetitive on-wing eddy current inspection (ECI) or in-shop fluorescent penetrant inspection (FPI) of fuel manifold assemblies having P/Ns listed in the paragraph 1.A of AlliedSignal Aerospace SB No. ALF/LF 73-1002, dated December 22, 1995, for cracks, and replace, if necessary, with serviceable parts, in accordance with accomplishment instructions of this SB as follows:

- (1) For ALF502L series engines:
 - (i) For fuel manifold assemblies with 3,250 or more cycles since new (CSN), or unknown CSN, on the effective date of this AD, inspect

at the next hot section inspection (HSI), or 2,000 cycles in service (CIS) after the effective date of this AD, whichever occurs first.

(ii) For fuel manifold assemblies with less than 3,250 CSN on the effective date of this AD, inspect at the next HSI, or prior to accumulating 5,250 CSN, whichever occurs first.

(iii) Thereafter, inspect at HSI intervals not to exceed 2,000 CIS since last inspection.

(iv) If a fuel manifold assembly is found cracked, prior to further flight, replace with a serviceable assembly.

(2) For ALF502R and LF507 series engines:

- (i) For fuel manifold assemblies with 3,250 or more CSN, or unknown CSN, on the effective date of this AD, inspect within 1,250 CIS after the effective date of this AD.

(ii) For fuel manifold assemblies with less than 3,250 CSN on the effective date of this AD, inspect prior to accumulating 4,500 CSN.

(iii) Thereafter, inspect at intervals not to exceed 1,250 CIS since last inspection.

(iv) If a fuel manifold assembly is found cracked, prior to further flight, replace with a serviceable assembly.

(b) Installation of a new, improved design fuel manifold assembly, P/N 2-163-620-37 or -38, constitutes terminating action to the inspection requirements of paragraph (a) of this AD.

(c) 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, Los Angeles Aircraft Certification Office. Operators shall forward their requests through an appropriate FAA Principal Maintenance Inspector, who may add comments and then send it to the Manager, Los Angeles Aircraft Certification Office.

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

(d) Special flight permits may be issued in accordance with sections 21.197 and 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199) to operate the aircraft to a location where the requirements of this AD can be accomplished.

(e) The actions required by this AD shall be done in accordance with the following AlliedSignal Aerospace SB:

| Document No. | Pages | Revision | Date |
|---|-------|----------------|----------------|
| ALF/LF 73-1002 Total Pages: 8. | 1-8 | Original | Dec. 22, 1995. |

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 AlliedSignal Aerospace, Attn: Data Distribution, M/S 64-3/2101-201, P.O. Box 29003, Phoenix, AZ 85038-9003; telephone (602) 365-2493, fax (602) 365-5577. Copies may be inspected at the FAA, New England Region, Office of the Assistant Chief 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.

(f) This amendment becomes effective on July 28, 1997.

Issued in Burlington, Massachusetts, on May 15, 1997.

Jay J. Pardee,
Manager, Engine and Propeller Directorate,
Aircraft Certification Service.

[FR Doc. 97-13590 Filed 5-28-97; 8:45 am]

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