

[Federal Register: August 23, 2010 (Volume 75, Number 162)]
[Rules and Regulations]
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[DOCID:fr23au10-4]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2009-1157; Directorate Identifier 2009-NE-26-AD; Amendment 39-16402; AD 2010-17-10]

RIN 2120-AA64

Airworthiness Directives; Rolls-Royce plc (RR) RB211-22B and RB211-524 Series Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: We are adopting a new airworthiness directive (AD) for the products listed above. This AD results from mandatory continuing airworthiness information (MCAI) issued by an aviation authority of another country to identify and correct an unsafe condition on an aviation product. The MCAI describes the unsafe condition as:

Several low pressure turbine (LPT) shafts have been found with cracks originating from the rear cooling air holes. The cracks were found at normal component overhaul, by the standard Magnetic Particle Inspection (MPI) technique defined in the associated engine manual. The cracks have been found to initiate from corrosion pits. Propagation of a crack from the rear cooling air holes may result in shaft failure and subsequently in an uncontained Low Pressure Turbine failure. For the reasons stated above, this AD requires the inspection of the affected engines' LPT shafts and replacement of the shaft, as necessary.

We are issuing this AD to detect cracks, initiated by corrosion pits, originating from the rear cooling air holes, which could result in shaft failure and subsequently in an uncontained failure of the LPT and damage to the airplane.

DATES: This AD becomes effective September 27, 2010. The Director of the Federal Register approved the incorporation by reference of certain publications listed in this AD as of September 27, 2010.

ADDRESSES: 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: Alan Strom, Aerospace Engineer, Engine Certification Office, FAA, Engine and Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; e-mail: alan.strom@faa.gov; telephone (781) 238-7143; fax (781) 238-7199.

SUPPLEMENTARY INFORMATION:

Discussion

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to include an AD that would apply to the specified products. That NPRM was published in the Federal Register on May 19, 2010 (75 FR 27964). That NPRM proposed to correct an unsafe condition for the specified products. The MCAI states:

Several low pressure turbine (LPT) shafts have been found with cracks originating from the rear cooling air holes. The cracks were found at normal component overhaul, by the standard Magnetic Particle Inspection (MPI) technique defined in the associated engine manual. The cracks have been found to initiate from corrosion pits. Propagation of a crack from the rear cooling air holes may result in shaft failure and subsequently in an uncontained Low Pressure Turbine failure. For the reasons stated above, this AD requires the inspection of the affected engines' LPT shafts and replacement of the shaft, as necessary.

Comments

We gave the public the opportunity to participate in developing this AD. We considered the comment received. The commenter supports the NPRM.

Conclusion

We reviewed the available data, including the comment received, and determined that air safety and the public interest require adopting the AD as proposed.

Costs of Compliance

Based on the service information, we estimate that this AD will affect about 10 products of U.S. registry. We also estimate that it will take about 7 work-hours per product to comply with this AD. The average labor rate is \$85 per work-hour. Required parts will cost about \$15,000 per product. Based on these figures, we estimate the cost of the AD on U.S. operators to be \$155,950.

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 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 this AD:

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. 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 regulatory evaluation of the estimated costs to comply with this AD and placed it in the AD docket.

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 (phone (800) 647-5527) is provided in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

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 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 AD:



2010-17-10 Rolls-Royce plc: Amendment 39-16402. Docket No. FAA-2009-1157; Directorate Identifier 2009-NE-26-AD.

Effective Date

- (a) This airworthiness directive (AD) becomes effective September 27, 2010.

Affected ADs

- (b) None.

Applicability

(c) This AD applies to Rolls-Royce plc RB211-22B series and RB211-524B4-D-02, RB211-524D4-19, RB211-524D4-39, RB211-524D4-B-19, RB211-524D4-B-39, RB211-524D4X-19, and RB211-524D4X-B-19 model turbofan engines. These engines are installed on, but not limited to, Boeing 747 series and Lockheed L-1011 series airplanes.

Reason

- (d) This AD results from:

Several low pressure turbine (LPT) shafts have been found with cracks originating from the rear cooling air holes. The cracks were found at normal component overhaul, by the standard Magnetic Particle Inspection (MPI) technique defined in the associated engine manual. The cracks have been found to initiate from corrosion pits. Propagation of a crack from the rear cooling air holes may result in shaft failure and subsequently in an uncontained Low Pressure Turbine failure. For the reasons stated above, this AD requires the inspection of the affected engines' LPT shafts and replacement of the shaft, as necessary.

We are issuing this AD to detect cracks, initiated by corrosion pits, originating from the rear cooling air holes, which could result in shaft failure and subsequently in an uncontained failure of the LPT and damage to the airplane.

Actions and Compliance

- (e) Unless already done, do the following actions.

Initial Inspection Requirements

(1) At the next engine shop visit after the effective date of this AD when the LPT shaft is completely disassembled to piece-part level, inspect the LPT shaft using paragraphs 3.A.(1)(a)

through 3.A.(4)(1) of the accomplishment instructions of Rolls-Royce Service Bulletin RB.211-72-AF336, dated October 24, 2007.

Repetitive Inspection Requirements

(2) Thereafter, reinspect the LPT shaft using paragraphs 3.A.(1)(a) through 3.A.(4)(1) of the accomplishment instructions of Rolls-Royce Service Bulletin RB.211-72-AF336, dated October 24, 2007 and the following schedule in Table 1 of this AD:

Table 1 – Repetitive Inspection Interval by Engine Model

Engine Model	Maximum Time Between Inspections (engine cycles)
(i) RB211-22B Series, all models.	3,500.
(ii) RB211-524B4-D-02.	4,000.
(iii) RB211-524D4-19, RB211-524D4-39, RB211-524D4-B-19, RB211-524D4-B-39, RB211-524D4X-19 and RB211-524D4X-B-19.	At the next engine shop visit after the last inspection.

Remove Parts With Cracks

(3) Remove cracked LPT shafts, found using paragraphs (e)(1) or (e)(2) of this AD, from service before further flight.

Definitions

(4) For the purpose of this AD, an engine shop visit is the induction of an engine into the shop for maintenance involving the separation of pairs of major mating engine flanges. The separation of engine flanges solely for the purposes of transportation without subsequent engine maintenance does not constitute an engine shop visit.

Alternative Methods of Compliance (AMOCs)

(f) The Manager, Engine Certification Office, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19.

Related Information

(g) Refer to MCAI EASA Airworthiness Directive 2007-0310 R1, dated January 8, 2008, for related information.

(h) Contact Alan Strom, Aerospace Engineer, Engine Certification Office, FAA, Engine and Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; e-mail: alan.strom@faa.gov; telephone (781) 238-7143; fax (781) 238-7199, for more information about this AD.

Material Incorporated by Reference

(i) You must use Rolls-Royce Service Bulletin RB.211-72-AF336, dated October 24, 2007, to do the actions required by this AD, unless the AD specifies otherwise.

(1) The Director of the Federal Register approved the incorporation by reference of this service information under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) For service information identified in this AD, contact Rolls-Royce plc, P.O. Box 31, Derby, DE24 8BJ, United Kingdom; telephone 044 1332 242424; fax 044 1332 249936.

(3) 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>.

Issued in Burlington, Massachusetts, on August 5, 2010.

Peter A. White,
Assistant Manager, Engine and Propeller Directorate,
Aircraft Certification Service.