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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2007-0078; Directorate Identifier 2007-NE-40-AD; Amendment 39-15683; AD 2008-20-04]

RIN 2120-AA64

Airworthiness Directives; Rolls-Royce plc RB211 Series Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), Department of Transportation (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:

High pressure (HP) turbine discs recently inspected in accordance with the Engine Manual have exhibited cracks in the disc rim. The discs have failed to meet the inspection acceptance criteria and have been returned to Rolls-Royce for engineering investigation. This investigation has concluded that the cracks have resulted from scores within the cooling air holes in the disc rim that could have been introduced during new part manufacture or during overhaul of the disc. The engineering investigation has concluded that if this cracking was undetected then it could result in uncontained disc failure and a potential unsafe condition for the aircraft.

We are issuing this AD to prevent uncontained disc failure, possibly resulting in damage to the airplane.

DATES: This AD becomes effective November 3, 2008.

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: Ian Dargin, Aerospace Engineer, Engine Certification Office, FAA, Engine and Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; e-mail: ian.dargin@faa.gov; telephone (781) 238-7178; 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 February 21, 2008 (73 FR 9502). That NPRM proposed to correct an unsafe condition for the specified products. The MCAI states that:

HPT discs recently inspected in accordance with the Engine Manual have exhibited cracks in the disc rim. The discs have failed to meet the inspection acceptance criteria and have been returned to Rolls-Royce for engineering investigation. This investigation has concluded that the cracks have resulted from scores within the cooling air holes in the disc rim that could have been introduced during new part manufacture or during overhaul of the disc. The engineering investigation has concluded that if this cracking was undetected then it could result in uncontained disc failure and a potential unsafe condition for the aircraft.

Comments

One commenter, Federal Express, recommends that we give previous credit for eddy current inspections (ECIs) previously performed on RB211-535 HP turbine discs per AD 2006-17-12 and Rolls-Royce plc (RR) Alert Service Bulletin (ASB) No. RB.211-72-AE651, dated November 22, 2004. The commenter states that the same ECI of the HP turbine discs is referenced in that AD, as in the proposed AD.

We agree. Initial inspections done before the effective date of this AD on RB211-535 HP turbine discs per RR ASB No. RB.211-72-AE651, dated November 22, 2004, and done on RB211-22B HP turbine discs per RR ASB RB.211-72-AE717, dated January 21, 2005, and done on RB211-524 HP discs per RR ASB RB.211-72-AE718, dated January 24, 2006, comply with the initial inspection requirements specified in this AD. We added this information to the previous credit paragraph of the AD.

Request To Exclude HP Turbine Discs From the AD

One commenter, Boeing, requests that we exclude RB211-524 HP turbine discs that have incorporated RR Service Bulletin (SB) No. RB.211-72-C109 or RR SB No. RB.211-72-C762 from the AD. The commenter states that these SBs introduced new HP turbine rotors with reduced stress levels and those rotors are not affected by this AD.

We agree. We changed the applicability to exclude RB211-524 HP turbine discs that incorporate these SBs.

Request To Remove the Revision Date

Boeing also requests that we update or remove the reference to the revision date of RR Repair Document TSD-594-J Overhaul Process 223, from the AD. The proposed AD references the revision date of May 1, 2001, but the document is now up to the revision date of March 15, 2004.

We agree. We removed the date reference from the AD.

Etching Requirement Eliminated

We eliminated the requirement to permanent etch "NMSB 72-AE969" onto the HP turbine disc from the AD, as it is not necessary.

Conclusion

We 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 determined that these changes will not increase the economic burden on any operator or increase the scope of the AD.

Costs of Compliance

Based on the service information, we estimate that this AD will affect about 506 products of U.S. registry. We also estimate that it will take about 4 work-hours per product to comply with the basic requirements of this proposed AD. The average labor rate is \$80 per work-hour. Based on these figures, we estimate the cost of the AD on U.S. operators to be \$161,920.

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 (telephone (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, 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:



2008-20-04 Rolls-Royce plc: Amendment 39-15683. Docket No. FAA-2007-0078; Directorate Identifier 2007-NE-40-AD.

Effective Date

- (a) This airworthiness directive (AD) becomes effective November 3, 2008.

Affected ADs

- (b) None.

(c) This AD applies to Rolls-Royce plc (RR) models RB211-535E4 series, RB211-535E4-B series, RB211-535E4-C series, RB211-535C series, and RB211-22B series turbofan engines. This AD also applies to RB211-524 series turbofan engines except for engines with high pressure (HP) turbine discs incorporating RR Service Bulletin (SB) No. RB.211-72-C109 or RR SB No. RB.211-72-C762. These engines are installed on, but not limited to, Boeing 747, 757, and 767, Lockheed L-1011, and Tupolev Tu204 airplanes.

Reason

(d) European Aviation Safety Agency AD 2006-0180, dated June 26, 2006, AD 2006-0181, dated June 26, 2006, and AD 2006-0182, dated June 28, 2006, state:

HP turbine discs recently inspected in accordance with the Engine Manual have exhibited cracks in the disc rim. The discs have failed to meet the inspection acceptance criteria and have been returned to Rolls-Royce for engineering investigation. This investigation has concluded that the cracks have resulted from scores within the cooling air holes in the disc rim that could have been introduced during new part manufacture or during overhaul of the disc. The engineering investigation has concluded that if this cracking was undetected then it could result in uncontained disc failure and a potential unsafe condition for the aircraft.

We are issuing this AD to prevent uncontained disc failure, possibly resulting in damage to the airplane.

Actions and Compliance

(e) Unless already done, perform an initial eddy current inspection (ECI) of the HP turbine disc air cooling holes. Information on ECI of HP turbine disc cooling holes can be found in RR Engine Overhaul Process Manual No. TSD594-J, Overhaul Process 223.

Initial Inspection for RB211-22B Series Turbofan Engines

- (f) For RB211-22B series turbofan engines:

(1) If an installed HP turbine disc has more than 9,500 cycles-since-new (CSN) on the effective date of this AD, then ECI the HP turbine disc by whichever is the soonest of the following conditions:

- (i) Within 500 cycles from the effective date of this AD; or
- (ii) At the next shop visit where the HP turbine rotor is removed from the combustor outer casing.

(2) If an installed HP turbine disc has 9,500 or fewer CSN on the effective date of this AD, then ECI the HP turbine disc by whichever is the soonest of the following conditions:

- (i) Before reaching 10,000 CSN; or
- (ii) At the next shop visit where the HP turbine rotor is removed from the combustor outer casing and the HP turbine disc has more than 2,750 CSN.

(3) For HP turbine rotors at shop visit and already removed from the combustor outer casing on the effective date of this AD, ECI the HP turbine disc before reinstalling the HP turbine rotor in the combustor outer casing.

Initial Inspection of RB211-524 Series Turbofan Engines

(g) For RB211-524 series turbofan engines, ECI the HP turbine disc at the soonest of the following after the effective date of the AD:

(1) At the next shop visit where the HP turbine blades are removed from the HP turbine disc and when the HP turbine disc has more than 2,750 CSN.

(2) For HP turbine rotors at shop visit and the HP turbine blades are removed from the HP turbine disc and the HP turbine disc life is more than 2,750 CSN, ECI the turbine disc before reinstalling the HP turbine blades.

Initial Inspection of RB211-535C, -535E4, -535E4-B, and -535E4-C Series Turbofan Engines

(h) For RB211-535C, -535E4, -535E4-B, and -535E4-C series turbofan engines:

(1) If an installed HP turbine disc has 17,500 or fewer CSN on the effective date of this AD, then ECI the HP turbine disc by whichever is the soonest of the following conditions:

- (i) Before reaching 18,000 CSN; or
- (ii) At the next shop visit where the HP turbine rotor is removed from the combustor outer casing, and the HP turbine disc has 5,000 or more CSN.

(iii) For HP turbine rotors at shop visit on the effective date of this AD that are removed from the combustor outer casing, and that have HP turbine discs with 5,000 or more CSN, ECI the HP turbine disc before reinstalling the HP turbine rotor in the combustor outer casing.

(2) If an installed HP turbine disc has more than 17,500 CSN on the effective date of this AD, then ECI the HP turbine disc by whichever is the soonest of the following conditions:

- (i) Within 500 cycles from the effective date of this AD; or
- (ii) At the next shop visit where the HP turbine rotor is removed from the combustor outer casing.

(iii) For HP turbine rotors at shop visit on the effective date of this AD that are removed from the combustor outer casing, ECI the HP turbine disc before reinstalling the HP turbine rotor in the combustor outer casing.

Repetitive ECI Inspections

(i) Thereafter, perform repetitive ECIs at every shop visit where the HP turbine blades are removed from the HP turbine disc. Information on ECI of HP turbine disc air cooling holes can be found in RR Engine Overhaul Process Manual No. TSD594-J, Overhaul Process 223.

(j) Alternative Methods of Compliance (AMOCs): 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.

Previous Credit

(k) Initial inspections done before the effective date of this AD on HP turbine discs with a disc life above the minimum threshold (5,000 CSN for the RB211-535 engines and 2,750 CSN for both the RB211-524 and the RB211-22B engines) at the time of inspection, per paragraph 1.C.(2) of RR Alert Service Bulletin No. RB.211-72-AE969, comply with the initial inspection requirements specified in this AD.

(l) Initial inspections done before the effective date of this AD using the following RR Alert Service Bulletins, comply with the initial inspection requirements specified in this AD:

- (1) RB211-535 HP turbine discs per RR ASB No. RB.211-72-AE651, dated November 22, 2004.
- (2) RB211-22B HP turbine discs per RR ASB RB.211-72-AE717, dated January 21, 2005.
- (3) RB211-524 HP discs per RR ASB RB.211-72-AE718, dated January 24, 2006.

Related Information

(m) Refer to EASA AD 2006-0180, dated June 26, 2006, AD 2006-0181, dated June 26, 2006, and AD 2006-0182, dated June 28, 2006, for related information.

(n) Contact Ian Dargin, Aerospace Engineer, Engine Certification Office, FAA, Engine and Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; e-mail: ian.dargin@faa.gov; telephone (781) 238-7178; fax (781) 238-7199, for more information about this AD.

Material Incorporated by Reference

(o) None.

Issued in Burlington, Massachusetts, on September 19, 2008.

Francis A. Favara,

Manager, Engine and Propeller Directorate, Aircraft Certification Service.

[FR Doc. E8-22521 Filed 9-26-08; 8:45 am]