



[4910-13-P]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2007-28059; Directorate Identifier 2007-NE-13-AD]

RIN 2120-AA64

Airworthiness Directives; Rolls-Royce plc Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: We propose to supersede an existing airworthiness directive (AD) for all Rolls-Royce plc (RR) RB211-Trent 553-61, 553A2-61, 556-61, 556A2-61, 556B-61, 556B2-61, 560-61, 560A2-61, 768-60, 772-60, 772B-60, 875-17, 877-17, 884-17, 884B-17, 892-17, 892B-17, and 895-17 turbofan engines. The existing AD currently requires inspection of the intermediate-pressure (IP) compressor rotor shaft rear balance land for cracks. Since we issued that AD, a crack was detected in a Trent 500 IP compressor rotor shaft rear balance land during a shop visit, and further engineering evaluation done by RR concluded that the cracking may also exist in Trent 900 engines. This proposed AD would require inspections of the IP compressor rotor shaft as required by the existing AD while adding on-wing inspections for the Trent 500 engines, and on-wing and in-shop inspections for the Trent 900 engines. We are proposing this AD to detect cracking on the IP compressor rotor shaft rear balance land, which could lead to uncontained engine failure and damage to the airplane.

DATES: We must receive comments on this proposed AD by [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to <http://www.regulations.gov>. Follow the instructions for submitting comments.
- Fax: 202-493-2251.
- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.
- Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this AD, contact Rolls-Royce plc, Corporate Communications, P.O. Box 31, Derby, England, DE248BJ; phone: 011 44 1332 242424; fax: 011 44 1332 245418; email: http://www.rolls-royce.com/contacts/civil_team.jsp. You may view this service information at the FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA. For information on the availability of this material at the FAA, call 781-238-7125.

Examining the AD Docket

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

FOR FURTHER INFORMATION CONTACT: Frederick Zink, Aerospace Engineer, Engine Certification Office, FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; phone: 781-238-7779; fax: 781-238-7199; email: frederick.zink@faa.gov.

SUPPLEMENTARY INFORMATION:

Comments Invited

We invite you to send any written relevant data, views, or arguments about this proposed AD. Send your comments to an address listed under the ADDRESSES section. Include “Docket No. FAA-2007-28059; Directorate Identifier 2007-NE-13-AD” at the beginning of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of this proposed AD. We will consider all comments received by the closing date and may amend this proposed AD because of those comments.

We will post all comments we receive, without change, to <http://www.regulations.gov>, including any personal information you provide. We will also post a report summarizing each substantive verbal contact we receive about this proposed AD.

Discussion

On May 15, 2012, we issued AD 2012-10-12, Amendment 39-17061 (77 FR 31176, May 25, 2012), for all RR RB211-Trent 553-61, 553A2-61, 556-61, 556A2-61, 556B-61, 556B2-61, 560-61, 560A2-61, 768-60, 772-60, 772B-60, 875-17, 877-17, 884-17, 884B-17, 892-17, 892B-17, and 895-17 turbofan engines. That AD requires continuing initial inspections, adding additional inspections, and a mandatory terminating action. That AD resulted from reports of additional cracking on RB211-Trent 700 and RB211-Trent 800 IP compressor rotor shafts. We issued that AD to detect cracking on the IP compressor rotor shaft rear balance land, which could lead to uncontained engine failure and damage to the airplane.

Actions Since Existing AD Was Issued

Since we issued AD 2012-10-12, Amendment 39-17061 (77 FR 31176, May 25, 2012), a crack in a Trent 500 IP compressor rotor shaft rear balance land was detected

during a shop visit. Further engineering evaluation, done by RR, concluded that the cracking may also exist in Trent 900 engines.

Relevant Service Information

We reviewed RR Non-Modification Alert Service Bulletin (NMASB) No. RB.211-72-AH058, dated December 13, 2012, and RR NMASB No. RB.211-72-AH059, dated December 11, 2012. NMASB No. RB.211-72-AH058 describes procedures for inspection of RB211-Trent 553-61, 553A2-61, 556-61, 556A2-61, 556B-61, 556B2-61, 560-61, and 560A2-61 engines. NMASB No. RB.211-72-AH059 describes procedures for inspection of RB211-Trent 970-84, 970B-84, 972-84, 972B-84, 977-84, 977B-84, and 980-84 engines.

FAA's Determination

We are proposing this AD because we evaluated all the relevant information and determined the unsafe condition described previously is likely to exist or develop in other products of the same type design.

Proposed AD Requirements

This proposed AD would retain all the requirements of AD 2012-10-12, Amendment 39-17061 (77 FR 31176, May 25, 2012). This proposed AD would add requirements to perform on-wing inspections for the Trent 500 and on-wing and in-shop inspections for the Trent 900 engines.

Costs of Compliance

We estimate that this proposed AD would affect about 136 engines installed on airplanes of U.S. registry. We also estimate that it would take about 14 hours per engine to perform required inspections. The average labor rate is \$85 per hour. Replacement parts are estimated to cost about \$2,271 per engine. Based on these figures, we estimate the cost of the proposed AD on U.S. operators to be \$470,696.

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 proposed AD would not have federalism implications under Executive Order 13132. This proposed AD 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.

For the reasons discussed above, I certify that the proposed regulation:

- (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),
- (3) Will not affect intrastate aviation in Alaska, to the extent that it justifies making a regulatory distinction, and
- (4) 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.

List of Subjects in 14 CFR Part 39

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

The Proposed Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 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 removing airworthiness directive (AD) 2012-10-12, Amendment 39-17061 (77 FR 31176, May 25, 2012), and adding the following new AD:

Rolls-Royce plc: Docket No. FAA-2007-28059; Directorate Identifier 2007-NE-13-AD.

(a) Comments Due Date

The FAA must receive comments on this AD action by [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

This AD supersedes AD 2012-10-12, Amendment 39-17061 (77 FR 31176, May 25, 2012).

(c) Applicability

This AD applies to Rolls-Royce plc (RR) RB211-Trent 553-61, 553A2-61, 556-61, 556A2-61, 556B-61, 556B2-61, 560-61, 560A2-61, 768-60, 772-60, 772B-60, 875-17, 877-17, 884-17, 884B-17, 892-17, 892B-17, 895-17, 970-84, 970B-84, 972-84, 972B-84, 977-84, 977B-84, and 980-84 turbofan engines.

(d) Unsafe Condition

This AD was prompted by detection of a crack in a Trent 500 intermediate-pressure (IP) compressor rotor shaft rear balance land with follow-on RR engineering evaluation concluding that cracking may also exist in Trent 900 engines. We are issuing this AD to detect cracking on the IP compressor rotor shaft rear balance land, which could lead to uncontained engine failure and damage to the airplane.

(e) Compliance

Comply with this AD within the compliance times specified, unless already done.

(f) RB211-Trent 700 Series Engines - Rear Balance Land Inspections

(1) Within 625 cycles-in-service (CIS) after June 29, 2012, or before the next flight after the effective date of this AD, whichever occurs later, borescope inspect the IP compressor rotor shaft rear balance land. Use RB211 Trent 700 Series Propulsion System Non-Modification Alert Service Bulletin (NMASB) No. RB.211-72-AG270, Revision 4, dated March 21, 2011, sections 3.A.(2)(a) through 3.A.(2)(c) and 3.A.(3)(a) through 3.A.(3)(c) for in-shop procedures, or 3.B.(2)(a) through 3.B.(2)(c) and 3.B.(4)(a) through 3.B.(4)(c) for on-wing procedures, to do the inspection.

(2) Thereafter, repeat the inspection within every 625 cycles-since-last inspection (CSLI). You may count CSLI from the last borescope inspection or the last eddy current inspection (ECI), whichever occurred last.

(3) At each shop visit after the effective date of this AD, perform an ECI and visually inspect the IP compressor rotor shaft rear balance land, and visually inspect the balance weights. Use RB211 Trent 700 and Trent 800 Series Propulsion Systems NMASB No. RB.211-72-AG085, Revision 2, dated July 7, 2011, sections 3.A. through 3.C., to do the inspections.

(g) RB211-Trent 800 Series Engines - Rear Balance Land Inspections

(1) Within 475 CIS after June 29, 2012, or before the next flight after the effective date of this AD, whichever occurs later, borescope inspect the IP compressor rotor shaft rear balance land. Use RB211 Trent 800 Series Propulsion System NMASB No. RB.211-72-AG264, Revision 5, dated March 21, 2011, sections 3.A.(2)(b) through 3.A.(2)(c) and 3.A.(3)(a) through 3.A.(3)(c) for in-shop procedures, or 3.B.(2)(a) through 3.B.(2)(c) and 3.B.(4)(a) through 3.B.(4)(c) for on-wing procedures, to do the inspection.

(2) Thereafter, repeat the inspection within every 475 CSLI. You may count CSLI from the last borescope inspection or the last ECI, whichever occurred last.

(3) At each shop visit, perform an ECI and visually inspect the IP compressor rotor shaft rear balance land, and visually inspect the balance weights. Use RB211 Trent 700 and Trent 800 Series Propulsion Systems NMASB No. RB.211-72-AG085, Revision 2, dated July 7, 2011, sections 3.A. through 3.C., to do the inspections.

(h) RB211-Trent 500 Series Engines - Rear Balance Land Inspections

(1) Within 340 CIS after the effective date of this AD, borescope inspect the IP compressor rotor shaft rear balance land. Use RB211 Trent 500 Series Propulsion Systems NMASB No. RB.211-72-AH058, dated December 13, 2012, sections 3.A.(2)(a) through 3.A.(2)(c), 3.A.(3)(a) through 3.A.(3)(d), and 3.A.(5)(a) through 3.A.(5)(c) for on-wing procedures, to do the inspection.

(2) Thereafter, repeat the inspection within every 340 CSLI. You may count CSLI from the last borescope inspection or the last ECI, whichever occurred last.

(3) At each shop visit, perform an ECI and visually inspect the IP compressor rotor shaft rear balance land, and visually inspect the balance weights. Use RB211 Trent 500 and Trent 900 Series Propulsion Systems Non-Modification Service Bulletin (NMSB) No. RB.211-72-G448, Revision 3, dated July 7, 2011, sections 3.D.(4) through

3.D.(5), 3.D.(6)(f) through 3.D.(7)(w), 3.D.(8)(f) through 3.D.(8)(w), 3.D.(11), and 3.D.(12), to do the inspections.

(i) RB211-Trent 900 Series Engines – Rear Balance Land Inspections

(1) Within 280 flight cycles after the effective date of this AD, borescope inspect the IP compressor rotor shaft rear balance land. Use RB211 Trent 900 Series Propulsion Systems NMASB No. RB.211-72-AH059, dated December 11, 2012, sections 3.A.(2)(a) through 3.A.(2)(c), 3.A.(3)(a) through 3.A.(3)(d), and 3.A.(5)(a) through 3.A.(5)(c), to do the inspection.

(2) Thereafter, repeat the inspection within every 280 CSLI. You may count from the last borescope inspection or the last ECI, whichever occurred last.

(3) At each shop visit after the effective date of this AD, perform an ECI and visually inspect the IP compressor rotor shaft rear balance land, and visually inspect the balance weights. Use RB211 Trent 500 and Trent 900 Series Propulsion Systems NMSB No. RB.211-72-G448, Revision 3, dated July 7, 2011, sections 3.D.(4) through 3.D.(5), 3.D.(6)(f) through 3.D.(7)(w), 3.D.(8)(f) through 3.D.(8)(w), 3.D.(11), and 3.D.(12), to do the inspection.

(j) Mandatory Termination Action for RB211-Trent 700 and RB211-Trent 800 Engines

(1) For RB211–Trent 700 engines. At the next shop visit in which any level of inspection or strip is scheduled to be carried out on the IP compressor, remove the existing IP compressor balance weights.

(2) For RB211–Trent 800 engines. At the next shop visit in which any level of inspection or strip is scheduled to be carried out on the IP compressor, remove the existing IP compressor balance weights.

(3) Once you have removed the balance weights, do not re-install them on any IP compressor shaft rear balance land.

(k) Credit for Previous Actions

(1) For RB211-Trent 700 series engines:

(i) If you borescope inspected your RB211-Trent 700 series engine using RB211 Trent 700 Series Propulsion System NMASB No. RB.211-72-AG270, Revision 1, dated December 14, 2009, or Revision 2, dated December 21, 2010, or Revision 3, dated February 25, 2011, before the effective date of this AD, you have satisfied the requirements of paragraph (f)(1) of this AD.

(ii) If you performed the ECI and visual inspection of your RB211-Trent 700 series engines using RB211 Trent 700 and Trent 800 Series Propulsion Systems NMASB No. RB.211-72-AG085, Revision 1, dated September 27, 2010, before the effective date of this AD, you have satisfied the ECI and visual inspections required by paragraph (f)(3) of this AD.

(2) For RB211-Trent 800 series engines:

(i) If you borescope inspected your RB211-Trent 800 series engine using RB211 Trent 800 Series Propulsion System NMASB No. RB.211-72-AG264, Revision 3, dated December 21, 2010, or Revision 4, dated February 25, 2011, before the effective date of this AD, you have satisfied the requirements of paragraph (g)(1) of this AD.

(ii) If you performed the ECI and in-shop visual inspection of your RB211-Trent 800 series engines using RB211 Trent 700 and Trent 800 Series Propulsion Systems NMASB No. RB.211-72-AG085, Revision 1, dated September 27, 2010, before the effective date of this AD, you have satisfied the ECI and visual inspections required by paragraph (g)(3) of this AD.

(3) For RB211-Trent 500 and 900 series engines:

(i) If you performed the ECI of your RB211-Trent 500 series engines using RB211 Trent 500, 700 and 800 Series Propulsion Systems NMASB No. RB.211-72-AF260, Revision 4, dated July 28, 2009, and RB211 Trent 500 and Trent 900 Series

Propulsion Systems NMSB No. RB.211-72-G448, Revision 2, dated December 23, 2010 before the effective date of this AD, you have satisfied the ECIs required by paragraph (h)(3) of this AD.

(ii) If you performed the in-shop visual inspection of your RB211-Trent 500 series engines using RB211 Trent 500 and Trent 900 Series Propulsion Systems NMSB No. RB.211-72-G448, Revision 2, dated December 23, 2010, before the effective date of this AD, you have satisfied the in-shop visual inspections required by paragraph (h)(3) of this AD.

(l) Definitions

For the purpose of this AD, a shop visit is defined as introduction of an engine into a shop and disassembly sufficient to expose the IP compressor module rear face.

(m) Alternative Methods of Compliance (AMOCs)

The Manager, Engine Certification Office, FAA, may approve AMOCs for this AD. Use the procedures in 14 CFR 39.19 to make your request.

(n) Related Information

(1) For more information about this AD, contact Frederick Zink, Aerospace Engineer, Engine Certification Office, FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; phone: 781-238-7779; fax: 781-238-7199; email: frederick.zink@faa.gov.

(2) European Aviation Safety Agency AD 2013-0002, dated January 4, 2013 also pertains to the subject of this AD.

(3) For service information identified in this AD, contact Rolls-Royce plc, Corporate Communications, P.O. Box 31, Derby, England, DE248BJ; phone: 011-44-1332-242424; fax: 011-44-1332-245418; Internet: http://www.rolls-royce.com/contact/civil_team.jsp.

(4) You may view the referenced service information at the FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803. For information on the availability of this material at the FAA, call 781-238-7125.

Issued in Burlington, Massachusetts, on March 13, 2013.

Colleen M. D'Alessandro,
Assistant Manager, Engine & Propeller Directorate,
Aircraft Certification Service.

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