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[4910-13-P]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2007-28059; Directorate Identifier 2007-NE-13-AD; Amendment 39-17526; AD 2013-15-10]

RIN 2120-AA64

Airworthiness Directives; Rolls-Royce plc (RR) Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: We are superseding airworthiness directive (AD) 2012-10-12 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. AD 2012-10-12 required inspecting the intermediate-pressure (IP) compressor rotor shaft rear balance land for cracks. We are issuing this AD to require inspections of the IP compressor rotor shaft, as required by AD 2012-10-12, to add on-wing inspections for the Trent 500 engines, and to add on-wing and in-shop inspections for the Trent 900 engines. This AD was prompted by detection of a crack in a Trent 500 IP compressor rotor shaft rear balance land during a shop visit. Further engineering evaluation, done by RR, concluded that the 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.

DATES: This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference (IBR) of

certain publication listed in the AD as of [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the IBR of certain other publications listed in this AD as of June 29, 2012 (77 FR 31176, May 25, 2012).

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 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/contact/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 AD, the Mandatory Continuing Airworthiness Information (MCAI), the regulatory evaluation, any comments received, and other information. The street address for the Docket Office (phone: 800-647-5527) is provided 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:

Discussion

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to supersede AD 2012-10-12, Amendment 39-17061 (77 FR 31176, May 25, 2012). AD 2012-10-12 applied to the specified products. The NPRM published in the Federal Register on March 21, 2013 (78 FR 17300). The NPRM proposed to require inspections of the IP compressor rotor shaft, as required by AD 2012-10-12, on-wing inspections for the Trent 500 engines, and on-wing and in-shop inspections for the Trent 900 engines.

Comments

We gave the public the opportunity to participate in developing this AD. The following presents the comments received on the proposal and the FAA's response to each comment.

Request to Not Include Revision Level of Service Bulletin (SB)

Texas Aero Engine Service LLC (TAESL) requested that we not include the revision of the SB or that we include "or later revision" in the AD. The commenter's justification for this request is that the SBs are revised often.

We do not agree. The SBs contain unique methods that require IBR. We do not know how a SB will be revised in the future; therefore, we cannot use "or later revision". Any future revisions can be addressed using paragraph (m) of this AD. We did not change the AD.

Request to Include an Alternate Method of Compliance

TAESL requested that RR SB No. RB.211-72-AG401 be included as an alternative means of compliance and that the requirement to perform an eddy current inspection (ECI), on engines which have had the new balance weights fitted using RR SB No. RB.211-72-AG401, be removed. The justification for this request is that the SB

describes procedures for replacing the existing balance weights with new balance weights.

We do not agree. The unsafe condition was identified in the existing balance weights that were installed. RR SB No. RB.211-72-AG401 introduces the new balance weights. In paragraph (j) of this AD we mandate removal of the existing balance weights as terminating action, as opposed to installation of the new balance weights. We did not IBR RR SB No. RB.211-72-AG401 because there could be future versions of the balance weights that would also be acceptable. We did not change the AD.

Conclusion

We reviewed the relevant data, considered the comments received, and determined that air safety and the public interest require adopting this AD as proposed except for minor editorial changes. We have determined that these minor changes:

- Are consistent with the intent that was proposed in the NPRM (78 FR 17300, March 21, 2013) for correcting the unsafe condition; and
- Do not add any additional burden upon the public than was already proposed in the NPRM (78 FR 17300, March 21, 2013).

Costs of Compliance

We estimate that this AD will affect about 136 engines installed on airplanes of U.S. registry. We also estimate that it will take about 14 hours per engine to perform the 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 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 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 that this AD:

(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),

(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.

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 removing airworthiness directive (AD) 2012-10-12, Amendment 39-17061 (77 FR 31176, May 25, 2012), and adding the following new AD:

2013-15-10 Rolls-Royce plc: Amendment 39-17526; Docket No. FAA-2007-28059; Directorate Identifier 2007-NE-13-AD.

(a) Effective Date

This AD is effective [INSERT DATE 35 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. and 3.D.(3) 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), 3.D.(12), and 3.D.(e) to do the inspections.

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

(l) 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), 3.A.(5)(a) through 3.A.(5)(c), and 3.D.(e) 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 engine 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. You are still required to perform the repetitive inspections required by paragraphs (f)(2) and (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 engine 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. You are still required to perform the repetitive inspections required by paragraphs (g)(2) and (g)(3) of this AD.

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

(i) If you borescope inspected your RB211-Trent 500 series engine using RB211 Trent 500, 700 and 800 Series Propulsion Systems NMASB No. RB.211-72-AF260, Revision 4, dated July 28, 2009, or 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 ECIs required by paragraph (h)(3) of this AD.

(ii) If you performed the ECI and in-shop visual inspection of your RB211-Trent 500 series engine 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 ECI and visual inspections required by paragraph (h)(3) of this AD. You are still required to perform the repetitive inspections required by paragraphs (h)(2) and (h)(3) of this AD.

(4) For RB211-Trent 900 series engines:

(i) If you borescope inspected your RB211-Trent 900 series engine 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 requirements of paragraph (i)(1) of this AD.

(ii) If you performed the ECI and in-shop visual inspection of your RB211-Trent 900 series engine 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 ECI and visual inspections required by paragraph (i)(3) of this AD. You are still required to perform the repetitive inspections required by paragraphs (i)(2) and (i)(3) of this AD.

(l) Definitions

For the purpose of this AD, a shop visit is defined as introduction of an engine into the 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) Refer to European Aviation Safety Agency, AD 2013-0002, dated January 4, 2013, for more information. You may examine this AD on the Internet at http://www.regulations.gov/#!documentDetail;D=FAA-2007-28059-0022.

(o) Material Incorporated by Reference

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

(2) You must use this service information as applicable to do the actions required by this AD, unless the AD specifies otherwise.

(3) The following service information was approved for IBR on [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(i) Rolls-Royce plc Non-Modification Alert Service Bulletin No. RB211 Trent 900 Series Propulsion Systems NMASB No. RB.211-72-AH059, dated December 11, 2012.

(ii) Rolls-Royce plc Non-Modification Alert Service Bulletin No. RB211 Trent 500 Series Propulsion Systems RB.211-72-AH058, dated December 13, 2012.

(4) The following service information was approved for IBR on June 29, 2012, (77 FR 31176, May 25, 2012).

(i) Rolls-Royce plc RB211 Trent 700 Series Propulsion System Non-Modification Alert Service Bulletin No. RB.211-72-AG270, Revision 4, dated March 21, 2011.

(ii) Rolls-Royce plc RB211 Trent 700 and 800 Series Propulsion Systems Non-Modification Alert Service Bulletin No. RB.211-72-AG085, Revision 2, dated July 7, 2011.

(iii) Rolls-Royce plc RB211 Trent 800 Series Propulsion System Non-Modification Alert Service Bulletin No. RB.211-72-AG264, Revision 5, dated March 21, 2011.

(iv) Rolls-Royce plc RB211 Trent 500 Series Propulsion System Non-Modification Alert Service Bulletin No. RB.211-72-AF260, Revision 5, dated July 7, 2011.

(v) Rolls-Royce plc RB211 Trent 500 and 900 Series Propulsion Systems Non-Modification Service Bulletin No. RB.211-72-G448, Revision 3, dated July 7, 2011.

(5) 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.

(6) You may view this 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.

(7) You may also view this service information that is IBR 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 July 22, 2013.

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

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