

[Federal Register Volume 78, Number 1 (Wednesday, January 2, 2013)]

[Rules and Regulations]

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[FR Doc No: 2012-30383]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2012-0482; Directorate Identifier 2012-NE-14-AD; Amendment 39-17290; AD 2012-25-09]

RIN 2120-AA64

Airworthiness Directives; Rolls-Royce plc Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: We are adopting a new airworthiness directive (AD) for all Rolls-Royce plc (RR) RB211-524G2-19; RB211-524G2-T-19; RB211-524G3-19; RB211-524G3-T-19; RB211-524H2-19; RB211-524H2-T-19; RB211-524H-36; RB211-524H-T-36; RB211-535E4-37; RB211-535E4-B-37; RB211-535E4-B-75; and RB211-535E4-C-37 turbofan engines. This AD was prompted by an investigation by RR concluding that certain intermediate-pressure (IP) turbine discs produced before 1997 by a certain supplier may contain steel inclusions. This AD requires removal of the affected IP turbine discs to inspect them for steel inclusions, and removal of the affected discs from service if they fail the inspection. This AD also requires removal from service of some IP turbine discs at reduced life limits. We are issuing this AD to prevent uncontained IP turbine disc failure, engine failure, and damage to the airplane.

DATES: This AD becomes effective February 6, 2013. The Director of the Federal Register approved the incorporation by reference of certain publications listed in this AD as of February 6, 2013.

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 & Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; phone: 781-238-7143; fax: 781-238-7199; email: alan.strom@faa.gov.

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 July 11, 2012 (77 FR 40820). That NPRM proposed to correct an unsafe condition for the specified products. The MCAI states:

The inspection of several intermediate pressure (IP) turbine discs at past engine overhauls identified the presence of steel inclusions in these parts. Further investigation concluded that all affected parts were manufactured from billets produced before 1997 at a certain supplier who also melted steel in the same furnaces. Initial engineering evaluation concluded that the lives of the parts would not be affected by the presence of the said steel inclusions. This evaluation has been recently repeated, utilizing improved structural analysis, and it is now concluded that the currently published lives of the components cannot be supported for some discs with a steel inclusion.

We are issuing this AD to prevent uncontained IP turbine disc failure, engine failure, and damage to the airplane.

Comments

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

Request To Provide Alternative to Inspection

One commenter, American Airlines, requested that we allow replacement of the removed IP turbine disc with a serviceable part as an alternative to the inspection mandated by paragraph (f) in the proposed AD. American noted that including this alternative would allow operators to avoid the added expense of an inspection of discs that are being removed from service.

We agree. We revised paragraph (f) of the Compliance section of the AD to allow replacement of an affected disc with a part eligible for installation.

Request To Redefine "Shop Visit"

One commenter, FedEx Express, requested that we redefine "shop visit" as any IP turbine disc exposed at shop visit, engine Level 3 (Refurbishment), Level 4 (Overhaul), or 05 Module Level 2 (Check and Repair). FedEx Express indicated that this change would align the AD with the current wording in RR Alert Service Bulletin (ASB) RB.211-72-AG493, dated October 12, 2012.

We do not agree. The terms 'Level 3' and 'Level 4' are not specific enough to be enforceable. Our definition of shop visit in the AD is consistent with the definition in MCAI AD No. 2012-0060, dated April 18, 2012. We did not change the AD based on this comment.

Request To Remove Reference to Demagnetization

Commenter Rolls-Royce requested that we remove the reference to demagnetization from Compliance paragraph (f). The disc does not need to be demagnetized as it will be magnetized as part

of the Superconductive Quantitative Inductive Device (SQUID) inspection process required by paragraph (f).

We agree. We changed the references in Compliance paragraphs (f)(1) and (f)(2) from “clean, demagnetize, and perform * * *” to “clean and perform * * *”. The first sentence in paragraph (f)(1) now reads: “If below the inspection threshold, clean and perform a Superconductive Quantitative Inductive Device (SQUID) inspection of the disc at the next shop visit or before the disc reaches the inspection threshold, whichever is later.” The first sentence in paragraph (f)(2) now reads: “If above the inspection threshold, clean and perform a SQUID inspection of the disc if in the shop or, at the next shop visit, whichever occurs first.”

Request To Allow Full Life Limit for Parts That Pass Inspection

Commenter Rolls-Royce asked that we clarify in the AD that the new, lower life limits in Appendix 2 of ASB RB.211-72-AG493 do not apply to a part that has passed the SQUID inspection. Rolls-Royce noted that the maximum life as defined in Appendix 2 only limits the disc until it has had the SQUID inspection and been confirmed as inclusion-free. If the disc has successfully passed the inspection, then it can be returned to service for the remainder of its life as defined by the Time Limits Manual.

We agree. We changed the AD by adding the phrase “unless it has passed the inspection required by paragraph (f) of the AD” to paragraph (g)(3). This paragraph now reads: “Do not return to service any disc that exceeds its maximum life (in cycles), as found in Appendix 2 of RR ASB No. RB.211-72-AG493, Revision 2, dated October 12, 2012, unless it has passed the inspection required by paragraph (f) of the AD.”

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

We estimate that this AD will affect about 200 engines installed on airplanes of U.S. registry. We also estimate that it will take about 12.5 work-hours per engine to inspect an IP turbine disc. The average labor rate is \$85 per work-hour. In addition, 77 discs must be removed earlier than the existing Airworthiness Limitation Section requires. A prorated replacement IP turbine disc would cost about \$9,925 per engine. We also estimate the cost of replacing a disc if it fails the inspection is \$225,000. Based on these figures, we estimate the cost of the AD on U.S. operators to be \$976,725.

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:



2012-25-09 Rolls-Royce plc: Amendment 39-17290; Docket No. FAA-2012-0482; Directorate Identifier 2012-NE-14-AD.

(a) Effective Date

This airworthiness directive (AD) becomes effective February 6, 2013.

(b) Affected ADs

None.

(c) Applicability

This AD applies to all Rolls-Royce plc (RR) RB211-524G2-19; RB211-524G2-T-19; RB211-524G3-19; RB211-524G3-T-19; RB211-524H2-19; RB211-524H2-T-19; RB211-524H-36; RB211-524H-T-36; RB211-535E4-37; RB211-535E4-B-37; RB211-535E4-B-75; and RB211-535E4-C-37 turbofan engines with intermediate-pressure (IP) discs listed in Appendix 1 and Appendix 2 of RR Alert Service Bulletin (ASB) No. RB.211-72-AG493, Revision 2, dated October 12, 2012.

(d) Reason

This AD was prompted by an investigation by RR concluding that certain IP turbine discs produced before 1997 by a certain supplier may contain steel inclusions. We are issuing this AD to prevent uncontained IP turbine disc failure, engine failure, and damage to the airplane.

(e) Actions and Compliance

Unless already done, do the following actions.

(f) Disc Inspection

After the effective date of this AD, use Appendix 1 and Appendix 2 of RR ASB No. RB.211-72-AG493, Revision 2, dated October 12, 2012, to determine if the IP turbine disc is below or above the inspection threshold.

(1) If below the inspection threshold, clean and perform a Superconductive Quantitative Inductive Device (SQUID) inspection of the disc at the next shop visit or before the disc reaches the inspection threshold, whichever is later. Use Appendix 4 of RR ASB No. RB.211-72-AG493, Revision 2, dated October 12, 2012, to perform the SQUID inspection.

(2) If above the inspection threshold, clean and perform a SQUID inspection of the disc if in the shop or, at the next shop visit, whichever occurs first. Use Appendix 4 of RR ASB No. RB.211-72-AG493, Revision 2, dated October 12, 2012, to perform the SQUID inspection.

(3) Do not return to service any disc that fails the inspection required by this AD.

(4) Instead of performing the inspection required by paragraph (f), you may replace an affected disc with a part eligible for installation. See Appendix 1 and Appendix 2 of RR ASB No. RB.211-72-AG493, Revision 2, dated October 12, 2012, to determine if you have an affected disc.

(g) Disc Life Intervals

(1) After the effective date of this AD, use Appendix 2 of RR ASB No. RB.211-72-AG493, Revision 2, dated October 12, 2012, to determine the maximum life (in cycles) of affected IP turbine disc(s).

(2) Remove from service any disc at the next shop visit or before it exceeds its maximum life (in cycles), whichever is later, as found in Appendix 2 of RR ASB No. RB.211-72-AG493, Revision 2, dated October 12, 2012.

(3) Do not return to service any disc that exceeds its maximum life (in cycles) as found in Appendix 2 of RR ASB No. RB.211-72-AG493, Revision 2, dated October 12, 2012, unless it has passed the inspection required by paragraph (f) of the AD.

(h) Definition of Shop Visit

For purposes of this AD, a shop visit is defined as induction into the shop where the IP and low pressure (LP) turbine module is removed from the engine, and any casing is removed from the IP and LP turbine module.

(i) Credit for Previous Actions

If you performed the actions required by paragraph (f) using RR ASB No. RB.211-72-AG493, Revision 1, dated November 11, 2011, you met the requirements of this AD.

(j) Alternative Methods of Compliance (AMOCs)

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

(k) Related Information

(1) For more information about this AD, contact Alan Strom, Aerospace Engineer, Engine Certification Office, FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; phone: 781-238-7143; fax: 781-238-7199; email: alan.strom@faa.gov.

(2) European Aviation Safety Agency AD 2012-0060, dated April 18, 2012 pertains to the subject of this AD.

(l) 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.

(i) Rolls-Royce (RR) plc Alert Service Bulletin No. RB.211-72-AG493, Revision 2, dated October 12, 2012.

(ii) Reserved.

(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 or email from http://www.rolls-royce.com/contact/civil_team.jsp, or download the publication from <https://www.aeromanager.com>.

(4) You may view this service information at FAA, 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.

(5) You may view this service information 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 December 7, 2012.
Colleen M. D'Alessandro,
Assistant Manager, Engine & Propeller Directorate,
Aircraft Certification Service.