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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2006-25513; Directorate Identifier 99-NE-61-AD; Amendment 39-18614; AD 2016-17-01]

RIN 2120-AA64

Airworthiness Directives; Rolls-Royce Deutschland Ltd & Co KG Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: We are superseding airworthiness directive (AD) 2006-18-14 for all Rolls-Royce Deutschland Ltd & Co KG (RRD) Tay 650-15 and Tay 651-54 turbofan engines. AD 2006-18-14 required calculating and re-establishing the cyclic life of stage 1 high-pressure turbine (HPT) disks, part number (P/N) JR32013 and P/N JR33838, and stage 1 low-pressure turbine (LPT) disk, P/N JR32318A. In addition, this AD requires re-calculating the cyclic life, and would impose a reduced cyclic life of stage 1 HPT disk, P/N JR32013. This AD was prompted by RRD review of the cyclic life limit of parts affected by AD 2006-18-14 and the RRD conclusion that the stage 1 HPT disk, P/N JR32013, requires further cyclic life limit reduction. We are issuing this AD to prevent failure of stage 1 HPT disks, P/N JR32013 and P/N JR33838, and stage 1 LPT disk, P/N JR32318A, uncontained disk release and damage to the airplane.

DATES: This AD is effective September 27, 2016. The Director of the Federal Register approved the incorporation by reference a certain publication listed in this AD as of September 27, 2016.

ADDRESSES: For service information identified in this final rule, contact Rolls-Royce Deutschland Ltd & Co KG; Eschenweg 11, Dahlewitz, 15827 Blankenfelde-Mahlow, Germany; phone: 49-0-33-7086-1064; fax: 49-0-33-7086-3276. You may view this service information at the FAA, Engine & Propeller Directorate, 1200 District Avenue, Burlington, MA. For information on the availability of this material at the FAA, call 781-238-7125. It is also available on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2006-25513.

Examining the AD Docket

You may examine the AD docket on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2006-25513; 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, regulatory evaluation, any comments received, and other information. The address for the Docket Office (phone: 800-647-5527) is Document Management Facility, U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.

FOR FURTHER INFORMATION CONTACT: Philip Haberlen, Aerospace Engineer, Engine Certification Office, FAA, Engine & Propeller Directorate, 1200 District Avenue, Burlington, MA 01803; phone: 781-238-7770; fax: 781-238-7199; email: philip.haberlen@faa.gov.

SUPPLEMENTARY INFORMATION:

Discussion

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to supersede AD 2006-18-14, Amendment 39-14753 (71 FR 52988, September 8, 2006), ("AD 2006-18-14"). AD 2006-18-14 applied to the specified products. The NPRM published in the Federal Register on March 11, 2016 (81 FR 12841). The NPRM proposed to require calculating and re-establishing the cyclic life of stage 1 HPT disks, P/N JR32013 and P/N JR33838, and stage 1 LPT disk, P/N JR32318A. The NPRM also proposed to require removing from service, using a drawdown schedule, those stage 1 HPT disks and stage 1 LPT disks operated under Tay 650-15 engine flight plan profiles A, B, C, or D; or operated under the Tay 651-54 engine datum flight profile, at reduced cyclic life limits found in the RRD Time Limits Manual (TLM) T-TAY-3RR, Chapter 05, Time Limits, Subject 05-10-01, dated September 15, 2014 and T-TAY-5RR, Chapter 05-10-01, dated September 15, 2014.

Comments

We gave the public the opportunity to participate in developing this AD. We considered the comments received.

Changes to Related Service Information Under 1 CFR Part 51

We removed Alert Non-Modification Service Bulletin (NMSB) No. TAY-72-A1821, Revision 1, dated March 26, 2015 from Related Service Information under 1 CFR part 51, which is not incorporated by reference in this AD.

We added the RRD TLM T-TAY-3RR, Chapter 05, Time Limits, Subject 05-10-01, dated September 15, 2014.

Request To Change Compliance

RRD requests that the cyclic life limits for the HPT stage 1 disk, P/N JR33838, installed in RRD Tay 650-15 and Tay 651-54 engines to be changed in this AD to match the life limits found in the RRD TLM T-TAY-3RR, Chapter 05, Time Limits, Subject 05-10-01, dated September 15, 2014 and the RRD TLM T-TAY-5RR, Chapter 05-10-01, dated September 15, 2014. RRD updated their lifing analysis for the HPT stage 1 disk, P/N JR33838 and their new analysis justified an increased cyclic life limit for the HPT stage 1 disk, P/N JR33838 installed in the RRD Tay 650-15 and Tay 651-54 engines for certain flight profiles. These life increases were reflected in the applicable service bulletin and the TLM and the FAA did not have an opportunity to mandate the increase in the cyclic life limits via AD until now. The FAA previously addressed the increase in the life limits via a global AMOC.

We agree. The FAA accepts RRD's new lifing analysis. We changed the cyclic life limits in paragraphs (e)(3)(i)(B), (C), and (D) of this AD for the HPT stage 1 disk, P/N JR33838, installed in

RRD Tay 650-15 engines to 21,000 flight cycles since new (FCSN), 18,000 FCSN, and 14,250 FCSN for flight profiles B, C, and D, respectively. We also changed the cyclic life limit in paragraph (e)(3)(i)(E) of this AD for the HPT stage 1 disk, P/N JR33838, installed in RRD Tay 651-54 engines to 14,250 FCSN for any flight profile.

Conclusion

We reviewed the available data, including the comments received, and determined that air safety and the public interest require adopting this 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 this AD.

Related Service Information Under 1 CFR Part 51

RRD TLM T-TAY-3RR, Chapter 05, Time Limits, Subject 05-10-01, dated September 15, 2014, contains information on re-calculating the cyclic life. This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in the ADDRESSES section.

Other Related Service Information

RRD TLM T-TAY-5RR, Chapter 05-10-01, dated September 15, 2014 provides the new, reduced cyclic life limits for RRD Tay 651-54 engines operated under any engine flight plan profile.

RRD Alert Non-Modification Service Bulletin TAY-72-A1821, Revision 1, dated March 26, 2015, provides reduced cyclic life limits for RRD Tay 650-15 and RRD Tay 651-54 engines operated under various affected flight plan profiles.

Costs of Compliance

We estimate that this AD affects 25 engines installed on airplanes of U.S. registry. We also estimate that it would take about 0.5 hours per engine to comply with this AD. The average labor rate is \$85 per hour. The pro-rated life limit reduction cost is about \$23,053 per engine. Based on these figures, we estimate the cost of this AD on U.S. operators to be \$577,388.

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

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 part 39 of the Federal Aviation Regulations (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) 2006-18-14, Amendment 39-14753 (71 FR 52988, September 8, 2006), ("AD 2006-18-14"), and adding the following new AD:



2016-17-01 Rolls-Royce Deutschland Ltd & Co KG (formerly Rolls-Royce plc): Amendment 39-18614; Docket No. FAA-2006-25513; Directorate Identifier 99-NE-61-AD.

(a) Effective Date

This AD is effective September 27, 2016.

(b) Affected ADs

This AD supersedes AD 2006-18-14.

(c) Applicability

This AD applies to Rolls-Royce Deutschland Ltd & Co (RRD) KG Tay 650-15 and Tay 651-54 turbofan engines with stage 1 high-pressure turbine (HPT) disks, part number (P/N) JR32013 or P/N JR33838, or stage 1 low-pressure turbine (LPT) disks, P/N JR32318A, installed.

(d) Unsafe Condition

This AD was prompted by RRD review of the cyclic life limit of parts affected by AD 2006-18-14 and the RRD conclusion that the stage 1 HPT disk, P/N JR32013, requires further cyclic life limit reduction. We are issuing this AD to prevent failure of stage 1 HPT disks, P/N JR32013 and P/N JR33838, and stage 1 LPT disk, P/N JR32318A, which could result in an uncontained engine failure and damage to the airplane.

(e) Compliance

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

(1) Re-calculate the cyclic life of stage 1 HPT disks, P/N JR32013, as follows:

(i) If a stage 1 HPT disk, P/N JR32013, was ever operated under a different engine flight plan profile than the engine flight plan profile operated on the last flight, or was ever installed and operated in a different engine model, do the following:

(A) Within 30 days after the effective date of this AD, re-calculate the cyclic life for each stage 1 HPT disk, P/N JR32013. Use the RRD Time Limits Manual (TLM) T-TAY-3RR, Chapter 05, Time Limits, Subject 05-10-01, Task 05-10-01-800-000, Subtask 05-10-01-860-036, paragraph 1(E) or (1)(F), dated September 15, 2014 to re-calculate the cyclic life.

(B) Reserved.

(ii) If you change your flight plan profile or install a stage 1 HPT disk, P/N JR32013 or P/N JR33838, or stage 1 LPT disk, P/N JR32318A, into a different engine model after the effective date of this AD, re-calculate the cyclic life within 30 days of making the change. Use the RRD TLM T-TAY-3RR, Chapter 05, Time Limits, Subject 05-10-01, Task 05-10-01-800-000, Subtask 05-10-01-860-036, paragraph 1(E) or (1)(F), dated September 15, 2014 to re-calculate the cyclic life.

(2) For engines with a stage 1 HPT disk, P/N JR32013, installed, do the following:

(i) Remove from service any stage 1 HPT disk, P/N JR32013, within 100 flight cycles after the effective date of this AD or before exceeding the new, reduced cyclic life limits specified in paragraphs (e)(2)(i)(A) through (e)(2)(i)(E) of this AD, whichever occurs later, as follows:

(A) For RRD Tay 650-15 engines operated under engine flight plan profile A, the new, reduced cyclic life limit is 18,900 flight cycles-since-new (FCSN).

(B) For RRD Tay 650-15 engines operated under engine flight plan profile B, the new, reduced cyclic life limit is 15,500 FCSN.

(C) For RRD Tay 650-15 engines operated under engine flight plan profile C, the new, reduced cyclic life limit is 11,500 FCSN.

(D) For RRD Tay 650-15 engines operated under engine flight plan profile D, the new, reduced cyclic life limit is 9,300 FCSN.

(E) For RRD Tay 651-54 engines operated under any engine flight plan profile, the new, reduced cyclic life limit is 10,873 FCSN.

(ii) Reserved.

(3) For engines with a stage 1 HPT disk, P/N JR33838, or stage 1 LPT disk, P/N JR32318A, installed, do the following:

(i) Remove from service any stage 1 HPT disk, P/N JR33838, or stage 1 LPT disk, P/N JR32318A, before exceeding the cyclic life limits specified in paragraphs (e)(3)(i)(A) through (e)(3)(i)(E) of this AD, as follows:

(A) For RRD Tay 650-15 engines operated under engine flight plan profile A, the cyclic life limit for stage 1 HPT disk, P/N JR33838, and stage 1 LPT disk, P/N JR32318A, is 23,000 FCSN.

(B) For RRD Tay 650-15 engines operated under engine flight plan profile B, the cyclic life limit for stage 1 HPT disk, P/N JR33838, and stage 1 LPT disk, P/N JR32318A, is 21,000 FCSN.

(C) For RRD Tay 650-15 engines operated under engine flight plan profile C, the cyclic life limit for stage 1 HPT disk, P/N JR33838, and stage 1 LPT disk, P/N JR32318A, is 18,000 FCSN.

(D) For RRD Tay 650-15 engines operated under engine flight plan profile D, the cyclic life limit for stage 1 HPT disk, P/N JR33838, and stage 1 LPT disk, P/N JR32318A, is 14,250 FCSN.

(E) For RRD Tay 651-54 engines operated under any engine flight plan profile, the cyclic life limit for stage 1 HPT disk, P/N JR33838, is 14,250 FCSN and the cyclic life limit for stage 1 LPT disk, P/N JR32318A, is 20,000 FCSN.

(ii) Reserved.

(f) Installation Prohibition

After the effective date of this AD, do not install any part identified in paragraph (e) of this AD into any engine, or return any engine to service with any part identified in paragraph (e) of this AD, installed, if the part exceeds the cyclic life limit specified in paragraphs (e)(2) and (e)(3) of this AD.

(g) 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. You may email your request to: ANE-AD-AMOC@faa.gov.

(h) Related Information

(1) For more information about this AD, contact Philip Haberlen, Aerospace Engineer, Engine Certification Office, FAA, Engine & Propeller Directorate, 1200 District Avenue, Burlington, MA 01803; phone: 781-238-7770; fax: 781-238-7199; email: philip.haberlen@faa.gov.

(2) Refer to MCAI European Aviation Safety Agency, AD 2015-0056, dated March 31, 2015, for more information. You may examine the MCAI in the AD docket on the Internet at <http://www.regulations.gov> by searching for and locating it in Docket No. FAA-2006-25513.

(3) Rolls-Royce Deutschland Ltd & Co KG Alert Non-Modification Service Bulletin No. TAY-72-A1821, Revision 1, dated March 26, 2015, which is not incorporated by reference in this AD, can be obtained from Rolls-Royce Deutschland Ltd & Co KG, using the contact information in paragraph (i)(3) of this AD.

(4) RRD TLM T-TAY-5RR, Chapter 05-10-01, dated September 15, 2014.

(5) You may view this service information at the FAA, Engine & Propeller Directorate, 1200 District Avenue, Burlington, MA. For information on the availability of this material at the FAA, call 781-238-7125.

(i) 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 Deutschland Ltd & Co KG, Time Limits Manual T-TAY-3RR, Chapter 05, Time Limits, Subject 05-10-01, dated September 15, 2014.

(ii) Reserved.

(3) For Rolls-Royce Deutschland Ltd & Co KG service information identified in this AD, contact Rolls-Royce Deutschland Ltd & Co KG, Eschenweg 11, Dahlewitz, 15827 Blankenfelde-Mahlow, Germany; phone: 49-0-33-7086-1064; fax: 49-0-33-7086-3276.

(4) You may view this service information at FAA, Engine & Propeller Directorate, 1200 District Avenue, 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 August 16, 2016.

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