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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. FAA-2009-0811; Directorate Identifier 2008-NE-41-AD; Amendment 39-17715; AD 2013-26-06]**

**RIN 2120-AA64**

#### **Airworthiness Directives; Rolls-Royce Corporation Turbofan Engines**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final rule.

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**SUMMARY:** We are superseding airworthiness directive (AD) 2010-19-01 for certain Rolls-Royce Corporation (RRC) AE 3007A series turbofan engines. AD 2010-19-01 required removing certain high-pressure turbine (HPT) stage 2 wheels, or performing inspections on them, and reduced their approved life limits. This new AD clarifies the AE 3007A turbofan engine model applicability, further reduces the approved life limits of affected HPT stage 2 wheels, and eliminates the inspections required by the existing AD. This AD was prompted by additional analysis that concluded that lower life limits for the affected HPT stage 2 wheels are necessary. We are issuing this AD to prevent uncontained failure of the HPT stage 2 wheel, damage to the engine, and damage to the airplane.

**DATES:** This AD is effective February 7, 2014.

**ADDRESSES:** For service information identified in this AD, contact Rolls-Royce Corporation, 450 South Meridian Street, Mail Code NB-01-06, Indianapolis, IN 46225, phone: 317-230-1667; email: CMSEindyOSD@rolls-royce.com; Internet: www.rolls-royce.com. 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> by searching for and locating Docket No. FAA-2009-0811; 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 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:** Kyri Zaroyiannis, Aerospace Engineer, Chicago Aircraft Certification Office, Small Airplane Directorate, FAA, 2300 E. Devon Ave., Des Plaines, IL 60018; phone: 847-294-7836; fax: 847-294-7834; email: kyri.zaroyiannis@faa.gov.

## **SUPPLEMENTARY INFORMATION:**

### **Discussion**

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to supersede AD 2010-19-01, Amendment 39-16429 (75 FR 57660, September 22, 2010), ("AD 2010-19-01"). AD 2010-19-01 applied to the specified products. The NPRM published in the Federal Register on August 8, 2013 (78 FR 48339). The NPRM proposed to clarify the AE 3007A turbofan engine model applicability, further reduce the approved life limits of affected HPT stage 2 wheels, and eliminate the inspections required by the existing AD.

### **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 Clarify Applicability**

One commenter indicated that the compliance section may lead the operator to remove all engines with HPT stage 2 wheels, part number (P/N) 23074462, while only a few engines are affected. He noted that compliance paragraphs in previous ADs on HPT stage 2 wheels used tables to identify affected and non-affected wheels.

We do not agree. The applicability section of this AD states that the AD applies to RRC AE 3007A, A1, A1/1, A1/2, A1/3, A1P, A1E, and A3 turbofan engines with an installed HPT stage 2 wheel, P/N 23084520 or P/N 23069438, 23069592, 23074462, 23074644, or 23075345, except for the HPT stage 2 wheel serial numbers listed in Table 2 through Table 5 of RRC Alert Service Bulletin (ASB) No. AE 3007A-A-72-414, Revision 1, dated December 5, 2012. Therefore, as noted in the AD, operators do not need to remove engines with HPT stage 2 wheels, P/N 23074462 with the serial numbers listed in Table 2 through Table 5 of this ASB. We did not change this AD.

#### **Request Not To Reduce Life Limits**

One commenter indicated that eddy current inspections (ECIs) or surface wave ultrasonic test (SWUT) inspections of the HPT stage 2 wheels have proven satisfactory to this point as there have been no failures of engines in service worldwide. The commenter noted that reducing the life limit for these HPT stage 2 wheels is not justified.

We do not agree. Per FAA risk guidelines as published in Advisory Circular (AC) No. 39-8 "Continued Airworthiness Assessments Of Powerplant And Auxiliary Power Unit Installations Of Transport Category Airplanes," dated September 8, 2003 (online at [http://www.faa.gov/documentLibrary/media/Advisory\\_Circular/AC39-8.pdf](http://www.faa.gov/documentLibrary/media/Advisory_Circular/AC39-8.pdf)), we do not rely on recurring inspections to serve as a final corrective action unless there is no practicable alternative. In this case, analysis and testing performed on the affected wheels by RRC has shown that the life limit for the affected wheels must be reduced. We did not change this AD.

## **Request Not To Issue AD**

The same commenter noted that reduced life limits are already required based on an ASB published by RRC and incorporation of these life limits in the new RRC Engine Maintenance Manual (EMM), dated January 20, 2013. Operators have to consider these updates in their own maintenance programs. Therefore, an AD is not necessary.

We do not agree. Companies cannot mandate that operators follow new life limits. AD compliance is mandatory. We did not change this AD.

## **Request To Revise the Cost of Compliance Estimate**

The same commenter requested that the FAA include the number of aircraft affected worldwide in its cost of compliance estimate. He also indicated that cost of compliance should include an estimated labor cost of \$250 per engine for each HPT stage 2 wheel change.

We do not agree. First, our ADs apply only to U.S. registered or operated products, not to products registered elsewhere. Therefore, costs to operators registered elsewhere are speculative.

Second, our cost estimate in this AD is based on the pro-rated cost of the reduction in life to the wheel. The labor cost of replacing the wheel is the same as it would be if the life of the wheel had not been changed. We did not change this AD.

## **Request To Continue Inspections and Related Compliance Issues**

The same commenter suggested revising the compliance section of this AD by continuing with ECIs and/or SWUT inspections at the interval required by AD 2010-19-01 (75 FR 57660, September 22, 2010) or if the inspections are not performed at the required interval, then (1) the new life limit published in the RRC EMM, dated January 20, 2013, shall be considered; (2) at the next engine shop visit or when the life limit is reached, the affected parts will be changed; and (3) no engine can be released from an engine shop with life limits that exceed those published in the RRC EMM, dated January 20, 2013.

The commenter asked that if this change cannot be accepted, then RRC should be required to lend an engine to the operator free of charge and change the HPT wheels free of charge.

The commenter also indicated that providing a grace period of 15 cycles in service before removal of the engine for an issue that has been known and managed for the last 5 years without incident is not justified.

We do not agree. Repetitive inspection of the affected HPT wheels is not a replacement for reduction in their life limit. As stated above, based on FAA risk guidelines as published in AC 39-8, we do not rely on recurring inspections to serve as a final corrective action unless there is no practicable alternative. In the case of these affected wheels, analysis has shown that the life of these wheels must be reduced. Second, requests for warranty support, i.e., that RRC provide a free lease engine and free replacement HPT stage 2 wheel are economic issues between the operator and the original equipment manufacturer. Third, successful performance of a part has no effect on the need to remove that part once it has reached its life limit. However, we are providing a 15-cycle allowance to minimize disruptions to operators. This grace period is supported by our risk assessment. We did not change this 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.

## **Costs of Compliance**

We estimate that this AD affects 18 engines installed on airplanes of U.S. registry. We also estimate that a replacement HPT stage 2 wheel costs about \$145,524, and that it will be replaced during an engine shop visit at no additional labor cost. Based on these figures, we estimate the total cost of the AD to U.S. operators to be \$2,619,432.

## **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) 2010-19-01, Amendment 39-16429 (75 FR 57660, September 22, 2010) and adding the following new AD:



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**2013-26-06 Rolls-Royce Corporation (Formerly Allison Engine Company):** Amendment 39-17715; Docket No. FAA-2009-0811; Directorate Identifier 2008-NE-41-AD.

**(a) Effective Date**

This AD is effective February 7, 2014.

**(b) Affected ADs**

This AD supersedes AD 2010-19-01, Amendment 39-16429 (75 FR 57660, September 22, 2010).

**(c) Applicability**

This AD applies to the following Rolls-Royce Corporation (RRC) AE 3007A, A1, A1/1, A1/2, A1/3, A1P, A1E, and A3 turbofan engines:

- (1) With an installed high-pressure turbine (HPT) stage 2 wheel, part number (P/N) 23084520, or
- (2) With an installed HPT stage 2 wheel, P/N 23069438, 23069592, 23074462, 23074644, or 23075345, except for the HPT stage 2 wheel serial numbers listed in Table 2 through Table 5 of RRC Alert Service Bulletin (ASB) No. AE 3007A-A-72-414, Revision 1, dated December 5, 2012. Those HPT stage 2 wheels maintain their existing approved life limits.

**(d) Unsafe Condition**

This AD was prompted by additional analysis that concluded that lower life limits for the affected HPT stage 2 wheels are necessary. We are issuing this AD to prevent uncontained failure of the HPT stage 2 wheel, damage to the engine, and damage to the airplane.

**(e) Compliance**

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

- (1) For HPT stage 2 wheels, P/N 23069438 and P/N 23069592, do the following:
  - (i) For HPT stage 2 wheels that have 9,500 cycles since new (CSN) or more on the effective date of this AD, remove the HPT stage 2 wheel from service within 15 cycles-in-service (CIS) after the effective date of this AD.
  - (ii) After the effective date of this AD, do not approve for return to service any engine with an HPT stage 2 wheel, P/N 23069438 or P/N 23069592, that exceeds the new life limit of 9,500 CSN.
- (2) For HPT stage 2 wheels, P/N 23074462, do the following:
  - (i) For AE 3007A1E turbofan engines with HPT stage 2 wheels installed that have 7,500 CSN or more on the effective date of this AD, and for the AE 3007A, A1, A1/1, A1/2, A1/3, A1P, and A3 turbofan engines with HPT stage 2 wheels installed that have 9,500 CSN or more on the effective date of this AD, remove the wheel from service within 15 CIS after the effective date of this AD.
  - (ii) Thereafter:
    - (A) Do not approve for return to service any AE 3007A1E turbofan engine with an HPT stage 2 wheel, P/N 23074462, installed, that exceeds the new life limit of 7,500 CSN; and

(B) Do not approve for return to service any AE 3007A, A1, A1/1, A1/2, A1/3, A1P, and A3 turbofan engines with an HPT stage 2 wheel, P/N 23074462, installed, that exceeds the new life limit of 9,500 CSN.

(C) Throughout the life of the HPT stage 2 wheel, always use the lowest life limit applicable to any engine model in which the part was used in service. If life usage records are not sufficient to identify all engine models in which the part has been flown, the lowest life applicable to any engine model for which the part is eligible must be used.

(3) For HPT stage 2 wheels, P/N 23074644 and P/N 23075345, do the following:

(i) For HPT stage 2 wheels that have 9,500 CSN or more on the effective date of this AD, remove the HPT stage 2 wheel from service within 15 CIS after the effective date of this AD.

(ii) Thereafter, do not approve for return to service any engine with an HPT stage 2 wheel, P/N 23074644 or P/N 23075345, installed, that exceeds the new life limit of 9,500 CSN.

(4) For HPT stage 2 wheels, P/N 23084520, do the following:

(i) For HPT stage 2 wheels that have 23,000 CSN or more on the effective date of this AD, remove the HPT stage 2 wheel from service before the next flight after the effective date of this AD.

(ii) Thereafter, do not approve for return to service any engine with an HPT stage 2 wheel, P/N 23084520, installed, that exceeds the new life limit of 23,000 CSN.

#### **(f) Alternative Methods of Compliance**

The Manager, Chicago Aircraft Certification Office, may approve alternative methods of compliance for this AD. Use the procedures 14 CFR 39.19 to make your request.

#### **(g) Related Information**

(1) For more information about this AD, contact Kyri Zaroyiannis, Aerospace Engineer, Chicago Aircraft Certification Office, Small Airplane Directorate, FAA, 2300 E. Devon Ave., Des Plaines, IL 60018; phone: 847-294-7836; fax: 847-294-7834; email: kyri.zaroyiannis@faa.gov.

(2) RRC ASB No. AE 3007A-A-72-414, Revision 1, dated December 5, 2012, which is not incorporated by reference in this AD, can be obtained from RRC, using the contact information in paragraph (g)(3) of this AD.

(3) For service information identified in this AD, contact Rolls-Royce Corporation, 450 South Meridian Street, Mail Code NB-01-06, Indianapolis, IN 46225, phone: 317-230-1667; email: CMSEindyOSD@rolls-royce.com; Internet: www.rolls-royce.com.

(4) 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.

#### **(h) Material Incorporated by Reference**

None.

Issued in Burlington, Massachusetts, on December 17, 2013.  
Colleen M. D'Alessandro,  
Assistant Directorate Manager, Engine & Propeller Directorate,  
Aircraft Certification Service.