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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

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

**[Docket No. FAA-2014-0462; Directorate Identifier 2014-NE-06; Amendment 39-18075; AD 2015-02-08]**

**RIN 2120-AA64**

### **Airworthiness Directives; Rolls-Royce Corporation Turboprop and Turbofan Engines (Type Certificate Previously Held by Allison Engine Company)**

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

**ACTION:** Final rule.

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**SUMMARY:** We are adopting a new airworthiness directive (AD) for certain Rolls-Royce Corporation (RRC) AE 2100 series turboprop engines and AE 3007A and 3007C series turbofan engines. This AD was prompted by reports of pitting in the wheel bores and subsequent RRC analysis that concluded that lower life limits are needed for the affected turbine wheels. This AD requires a reduction for the approved life limits of the affected turbine wheels. This AD also requires an eddy current inspection (ECI) of certain RRC engines with affected turbine wheels. We are issuing this AD to prevent uncontained failure of the turbine wheels, damage to the engine, and damage to the airplane.

**DATES:** This AD is effective March 11, 2015.

The Director of the Federal Register approved the incorporation by reference of certain publications listed in this AD as of March 11, 2015.

**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-2014-0462, 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 by adding an AD that would apply to certain RRC AE 2100 series turboprop engines and AE 3007A and 3007C series turbofan engines. The NPRM published in the Federal Register on October 2, 2014 (79 FR 59461). The NPRM was prompted by reports of pitting in the wheel bores and subsequent RRC analysis that concluded that lower life limits are needed for the affected turbine wheels. The NPRM proposed to require reducing the approved life limits of the affected turbine wheels and performing an ECI of certain RRC engines with affected turbine wheels. We are issuing this AD to prevent uncontained failure of the turbine wheels, damage to the engine, and damage to the airplane.

### **Comments**

We gave the public the opportunity to participate in developing this AD. We have considered the comment received. An anonymous commenter supported the NPRM (79 FR 59461, October 2, 2014).

### **Conclusion**

We reviewed the relevant data, considered the comment received, and determined that air safety and the public interest require adopting this AD as proposed except for minor editorial changes, e.g., verb tense changes and word changes appropriate to a final rule. We have determined that these minor changes:

- Are consistent with the intent that was proposed in the NPRM (79 FR 59461, October 2, 2014) for correcting the unsafe condition; and
- Do not add any additional burden upon the public than was already proposed in the NPRM (79 FR 59461, October 2, 2014).

### **Related Service Information**

We reviewed:

- Rolls-Royce (RR) Alert Service Bulletin (ASB) No. AE 2100D2-A-72-085, dated July 25, 2013.
- RR ASB No. AE 2100D3-A-72-277, dated July 25, 2013.
- RR ASB No. AE 2100P-A-72-019, dated July 25, 2013.
- RR ASB No. AE 3007A-A-72-407, Revision 1, dated August 29, 2014.
- RR ASB No. AE 3007A-A-72-408, Revision 1, dated August 29, 2014.
- RR ASB No. AE 3007C-A-72-316, dated December 6, 2013.

These service bulletins describe procedures for inspecting high-pressure turbine (HPT) stage 2 wheels and identify life-limit reduction for all affected HPT wheels. You can find this information at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2014-0462.

## **Costs of Compliance**

We estimate that this AD will affect 664 engines installed on airplanes of U.S. registry. We also estimate that it will take about 1 hour to perform an ECI in the bore of the turbine wheel for affected engines. The average labor rate is \$85 per hour. We estimate the pro-rated replacement cost would be \$30,688 for a 1st stage gas generator turbine wheel; \$63,693 for a HPT stage 1 wheel; \$13,941 for an HPT stage 2 wheel; and \$13,186 for a 4th stage turbine wheel. We also estimate that these parts would be replaced during an engine shop visit at no additional labor cost. Based on these figures, we estimate the total cost of this AD on U.S. operators to be \$11,317,969.

## **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 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 airworthiness directive (AD):



**2015-02-08 Roll-Royce Corporation (Type Certificate previously held by Allison Engine Company):** Amendment 39-18075; Docket No. FAA-2014-0462; Directorate Identifier 2014-NE-06-AD.

**(a) Effective Date**

This AD is effective March 11, 2015.

**(b) Affected ADs**

None.

**(c) Applicability**

This AD applies to all Rolls-Royce Corporation (RRC) AE 2100D2, 2100D2A, 2100D3, and 2100P turboprop engines and AE 3007A1, A1/1, A1/3, A1E, A1P, A2, A3, C, C1, and C2 turbofan engines:

(1) With an installed 1st stage gas generator turbine wheel, part number (P/N) 23079946, 23088906, or 23089692, all serial numbers (S/Ns) listed in Table 2 and Table 3 of RRC Alert Service Bulletin (ASB) No. AE 2100D2-A-72-085, dated July 25, 2013; and in Table 2 and Table 3 of RRC ASB No. AE 2100D3-A-72-277, dated July 25, 2013.

(2) With an installed high-pressure turbine (HPT) stage 1 or HPT stage 2 wheel, P/N 23079946, 23088906, 23088784, 23084520, 23084781, 23088817, or 23088818, all S/Ns listed in Table 1 through Table 7 of RRC ASB No. AE 3007A-A-72-407, Revision 1, dated August 29, 2014, except those S/Ns excluded by Table 1, Table 2, Table 4, and Table 5 of RRC ASB No. AE 3007A-A-72-407, Revision 1, dated August 29, 2014.

(3) With an installed HPT stage 2 wheel, P/N 23084520 or 23088818, all S/Ns listed in Table 1 and Table 2 of RRC ASB No. AE 3007C-A-72-316, dated December 6, 2013, except those S/Ns excluded by Table 1 of RRC ASB No. AE 3007C-A-72-316, dated December 6, 2013.

(4) With an installed 4th stage turbine wheel, P/N 23083536, all S/Ns listed in Table 2 of RRC ASB No. AE 2100P-A-72-019, dated July 25, 2013.

**(d) Unsafe Condition**

This AD was prompted by reports of pitting in the wheel bores and subsequent RRC analysis that concluded that lower life limits are needed for the affected turbine wheels. We are issuing this AD to prevent uncontained failure of the turbine wheels, 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 all RRC AE 3007A1, A1/1, A1/3, A1E, A1P, and A3 series engines with an HPT stage 2 wheel P/N and S/N identified in RRC ASB No. AE 3007A-A-72-408, Revision 1, dated August 29, 2014, at each shop visit after the effective date of this AD, eddy current inspect the bore of the

affected HPT stage 2 wheels. Use RRC ASB No. AE 3007A-A-72-408, Revision 1, August 29, 2014, to do the inspection. Do not return to service any wheel that fails the inspection required by this AD.

(2) Thirty days after the effective date of this AD, do not return to service any engine that has a turbine wheel with a P/N and an S/N listed in any of the following RRC ASBs whose wheel life exceeds the new life limits identified in the following RRC ASBs:

- (i) RRC ASB No. AE 2100D2-A-72-085, dated July 25, 2013;
- (ii) RRC ASB No. AE 2100D3-A-72-277, dated July 25, 2013;
- (iii) RRC ASB No. AE 2100P-A-72-019, dated July 25, 2013;
- (iv) RRC ASB No. AE 3007A-A-72-407, Revision 1, dated August 29, 2014; or
- (v) RRC ASB No. AE 3007C-A-72-316, dated December 6, 2013.

#### **(f) Installation Prohibition**

Thirty days after the effective date of this AD, do not install an affected wheel, as identified in paragraph (c) of this AD, into any RRC AE 3007C2 engine.

#### **(g) Definition**

For the purpose of this AD, an "engine shop visit" is the induction of an engine into the shop for maintenance involving the separation of pairs of major mating engine flanges, except that the separation of engine flanges solely for the purposes of transportation without subsequent engine maintenance is not an engine shop visit.

#### **(h) Alternative Methods of Compliance (AMOCs)**

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

#### **(i) Related Information**

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.

#### **(j) 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 Alert Service Bulletin (ASB) No. AE 2100D2-A-72-085, dated July 25, 2013.
- (ii) Rolls-Royce ASB No. AE 2100D3-A-72-277, dated July 25, 2013.
- (iii) Rolls-Royce ASB No. AE 2100P-A-72-019, dated July 25, 2013.
- (iv) Rolls-Royce ASB No. AE 3007A-A-72-407, Revision 1, dated August 29, 2014.
- (v) Rolls-Royce ASB No. AE 3007A-A-72-408, Revision 1, dated August 29, 2014.
- (vi) Rolls-Royce ASB No. AE 3007C-A-72-316, dated December 6, 2013.

(3) For RRC 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: royce.com">CMSEindyOSD@rolls-royce.com; Internet: www.rolls-royce.com.

(4) You may view this service information at 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 January 13, 2015.  
Thomas A. Boudreau,  
Acting Directorate Manager, Engine & Propeller Directorate,  
Aircraft Certification Service.