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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

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

**[Docket No. FAA-2015-4076; Directorate Identifier 2015-NE-30-AD; Amendment 39-18483; AD 2016-08-07]**

**RIN 2120-AA64**

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

**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 plc (RR) RB211-22B and RB211-524 turbofan engines with low-pressure turbine (LPT) support roller bearing, part number (P/N) LK30313 or P/N UL29651, installed. This AD requires removal of certain LPT support roller bearings installed in RR RB211-22B and RB211-524 engines. This AD was prompted by a report of a breach of the turbine casing and release of engine debris through a hole in the engine nacelle. We are issuing this AD to prevent failure of the LPT support roller bearing, loss of radial position following LPT blade failure, uncontained part release, damage to the engine, and damage to the airplane.

**DATES:** This AD becomes effective May 16, 2016.

**ADDRESSES:** See the FOR FURTHER INFORMATION CONTACT section.

#### **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-2015-4076; 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 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:** Brian Kierstead, Aerospace Engineer, Engine Certification Office, FAA, Engine & Propeller Directorate, 1200 District Avenue, Burlington, MA 01803; phone: 781-238-7772; fax: 781-238-7199; email: brian.kierstead@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 the specified products. The NPRM was published in the Federal Register on December 9, 2015 (80 FR 76402). The NPRM proposed to correct an unsafe condition for the specified products. The MCAI states:

An RB211-524G2-T engine experienced an in-service event that resulted in breach of a turbine casing and some release of core engine debris through a hole in the engine nacelle. The investigation of the event determined the primary cause to have been fracture and release of a Low Pressure (LP) turbine stage 2 blade. The blade release caused secondary damage to the LP turbine, producing significant out-of-balance forces. The event engine was fitted with an LP turbine support bearing where the roller retention cage is constructed from two halves that are riveted together. The LP turbine imbalance resulted in an overload of the LP turbine support bearing and caused separation of the riveted, two-piece roller retention cage. Radial location of the LP turbine shaft was lost, allowing further progression of the event that resulted in a breach of the IP turbine casing.

You may obtain further information by examining the MCAI in the AD docket on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2015-4076.

### **Comments**

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

### **Support for the NPRM (80 FR 76402, December 9, 2015)**

Boeing concurred with the NPRM.

### **Request To Change Compliance**

Orbital ATK and Lockheed Martin requested that the compliance time be based on LPT blade cycles instead of calendar time. Orbital ATK cites correspondence with the U.S. Rolls-Royce representative who recommends a 15,000 cycles-since-new (CSN) duration for the LPT blade design life. Since there is no calendar time driving the unsafe condition, Orbital ATK believes this is a good mitigation factor for low utilization rate operators. Orbital ATK believes that routine borescope inspections of the LPT blades and removal of the engine prior to reaching an LPT blade limit of 15,000 CSN offers an equivalent level of safety.

We partially agree. We agree that the failure mode of the bearing support is not a time-based dependency. However, a compliance time of 24 months is specified to allow for a shop visit interval. We have determined that removal of the LPT support roller bearing addresses the unsafe condition. Operators with unique circumstances may apply for an alternative method of compliance using the procedures listed in this AD. We did not change this AD.

## **Request To Change Costs of Compliance**

Lockheed Martin requested an adjustment to the estimated costs of compliance. The costs to low utilization operators would be significantly increased by imposing an unscheduled shop visit and/or unscheduled engine removal. Another possible contributor for increased costs is the lack of an approved repair station within the United States.

We partially agree. We disagree that no repair stations exist within the U.S. that may perform the work required by this AD. We agree that this AD may drive low utilization operators to the shop faster. Operators with unique circumstances may apply for an alternative method of compliance using the procedures listed in this AD. We did not change this AD.

## **Conclusion**

We reviewed the available data, including 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 9 engines installed on airplanes of U.S. registry. We also estimate it will take 0 hours to comply with this AD. Removing the LPT support roller bearing is required during a shop visit; therefore, no additional time is needed for removal. Required parts cost about \$8,184 per engine. The average labor rate is \$85 per hour. Based on these figures, we estimate the cost of this AD on U.S. operators to be \$73,656.

## **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),
- (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):



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**2016-08-07 Rolls-Royce plc:** Amendment 39-18483; Docket No. FAA-2015-4076; Directorate Identifier 2015-NE-30-AD.

**(a) Effective Date**

This AD becomes effective May 16, 2016.

**(b) Affected ADs**

None.

**(c) Applicability**

This AD applies to Rolls-Royce plc RB211-22B-02, RB211-22B (MOD 72-8700), RB211-524B-02, RB211-524B-B-02, RB211-524B2-19, RB211-524B2-B-19, RB211-524B3-02, RB211-524B4-02, RB211-524B4-D-02, RB211-524C2-19, RB211-524C2-B-19, RB211-524D4-19, RB211-524D4-B-19, RB211-524D4X-19, RB211-524D4X-B-19, RB211-524D4-39, RB211-524D4-B-39, RB211-524G2-19, RB211-524G3-19, RB211-524-G2-T-19, RB211-524G3-T-19, RB211-524H-36, RB211-524H2-19, RB211-524H-T-36, and RB211-524H2-T-19 turbofan engines, all serial numbers, with low-pressure turbine (LPT) support roller bearing, part number (P/N) LK30313 or P/N UL29651, installed.

**(d) Reason**

This AD was prompted by a report of a breach of the turbine casing and release of engine debris through a hole in the engine nacelle. We are issuing this AD to prevent failure of the LPT support roller bearing, loss of radial position following LPT blade failure, uncontained part release, damage to the engine, and damage to the airplane.

**(e) Actions and Compliance**

Comply with this AD within the compliance times specified, unless already done. At the next shop visit or within 24 months after the effective date of this AD, whichever occurs first, remove from service LPT support roller bearing, P/N LK30313 or P/N UL29651, and replace with a part eligible for installation.

**(f) Installation Prohibition**

After the effective date of this AD, do not install an LPT support roller bearing, P/N LK30313 or P/N UL29651, onto any engine.

**(g) Definition**

For the purpose of this AD, a "shop visit" is defined as 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 does not constitute an engine shop visit.

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

The Manager, Engine Certification Office, FAA, 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.

**(i) Related Information**

(1) For more information about this AD, contact Brian Kierstead, Aerospace Engineer, Engine Certification Office, FAA, Engine & Propeller Directorate, 1200 District Avenue, Burlington, MA 01803; phone: 781-238-7772; fax: 781-238-7199; email: brian.kierstead@faa.gov.

(2) Refer to MCAI European Aviation Safety Agency AD 2015-0187, dated September 9, 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-2015-4076.

**(j) Material Incorporated by Reference**

None.

Issued in Burlington, Massachusetts, on April 4, 2016.  
Colleen M. D'Alessandro,  
Manager, Engine & Propeller Directorate,  
Aircraft Certification Service.