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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

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

**[Docket No. FAA-2017-0650; Product Identifier 2017-NE-19-AD; Amendment 39-19394; AD 2018-18-15]**

**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-Trent 875-17, RB211-Trent 877-17, RB211-Trent 884-17, RB211-Trent 884B-17, RB211-Trent 892-17, RB211-Trent 892B-17, and RB211-Trent 895-17 turbofan engines. This AD was prompted by low-pressure compressor (LPC) case A-frame hollow locating pins that may have reduced integrity due to incorrect heat treatment. This AD requires replacement of the LPC case A-frame hollow locating pins. We are issuing this AD to address the unsafe condition on these products.

**DATES:** This AD becomes effective November 1, 2018.

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of November 1, 2018.

**ADDRESSES:** For service information identified in this final rule, contact Rolls-Royce plc, Corporate Communications, P.O. Box 31, Derby, DE24 8BJ, United Kingdom; phone: 011-44-1332-242424; fax: 011-44-1332-249936; email: [http://www.rolls-royce.com/contact/civil\\_team.jsp](http://www.rolls-royce.com/contact/civil_team.jsp); internet: <https://customers.rolls-royce.com/public/rollsroycecare>. You may view this service information at the FAA, Engine and Propeller Standards Branch, 1200 District Avenue, Burlington, MA, 01803. For information on the availability of this material at the FAA, call 781-238-7759. It is also available on the internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2017-0650.

#### **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-2017-0650; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this final rule, the

mandatory continuing airworthiness information (MCAI), the regulatory evaluation, any comments received, and other information. The address for Docket Operations (phone: 800-647-5527) is Docket Operations, 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:** Kevin M. Clark, Aerospace Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: 781-238-7088; fax: 781-238-7199; email: kevin.m.clark@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 RR RB211-Trent 875-17, RB211-Trent 877-17, RB211-Trent 884-17, RB211-Trent 884B-17, RB211-Trent 892-17, RB211-Trent 892B-17, and RB211-Trent 895-17 turbofan engines. The NPRM published in the Federal Register on September 28, 2017 (82 FR 45218). The NPRM was prompted by LPC case A-frame hollow locating pins that may have reduced integrity due to incorrect heat treatment. The NPRM proposed to require replacement of the LPC case A-frame hollow locating pins. We are issuing this AD to address the unsafe condition on these products.

The European Aviation Safety Agency (EASA), which is the Technical Agent for the Member States of the European Community, has issued EASA AD 2017-0096, dated June 1, 2017 (referred to after this as “the MCAI”), to address the unsafe condition on these products. The MCAI states:

All low pressure compressor (LPC) case A-frame hollow locating pins, Part Number (P/N) FK11612, manufactured between 01 January 2012 and 31 May 2016, have potentially been subjected to incorrect heat treatment. This may have reduced the integrity of the pin such that in a Fan Blade Off (FBO) event it is unable to withstand the applied loads.

This condition, if not corrected, could lead to loss of location of the A-frame following an FBO event, possibly resulting in engine separation, loss of thrust reverser unit, release of high-energy debris, or an uncontrolled fire.

To address this potential unsafe condition, RR identified the affected engines that have these A-frame hollow locating pins installed and published Alert Non-Modification Service Bulletin (NMSB) RB.211-72-AJ463, providing instructions for replacement of these pins. The NMSB was recently revised to correct an error in Section 1.A., where ESN 51477 was inadvertently omitted. That ESN was correctly listed in Section 1.D.(1)(f) for the compliance time.

For the reason described above, this AD requires a one-time replacement of the affected A-frame hollow locating pins P/N FK11612. This AD also prohibits installation of pins that were released to service before 05 July 2016.

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-2017-0650.

## Comments

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

### Request To Address Spare Engines

Delta Air Lines (Delta) commented that the NPRM requirement to replace each A-frame pin at next on-wing maintenance opportunity within the compliance time specified in RR NMSB RB.211-72-AJ463, Section 1.D(1), or at next engine shop visit, does not address spare engines. Delta noted that, based on the Installation Prohibition in the NPRM, one could infer that affected spare engines must comply with this AD prior to installation. However, Delta finds that this statement conflicts with NMSB RB.211-72-AJ463, Section 1.D(1)(g)(ii), which allows replacement of A-frame pins on serviceable spare engines prior to the engine's installation on-wing. EASA AD 2017-0096, paragraph 2, has the same allowance for spare engines.

Delta, therefore, requested that we add a new paragraph (g)(3) that would read: "If any engine listed in the applicability of this AD, paragraph (c), is held as a serviceable spare engine, or is removed from the airplane after the effective date of this AD and then held as a serviceable spare engine, replace each affected LPC case A-frame hollow locating pin using Section 3, Accomplishment Instructions, of RR Alert NMSB RB.211-72-AJ463, Revision 2, dated June 28, 2017, before reinstallation of that engine onto an aircraft."

We partially agree. We agree that affected LPC case A-frame hollow locating pins do not have to be replaced on spare engines until the spare engine is installed on an airplane. We disagree with the suggested addition of a new paragraph (g)(3). Instead, we revised paragraph (g)(1) of this AD to refer only to engines installed on-wing on an airplane. Based on this change, spare engines are not affected by the requirements of paragraph (g)(1) of this AD.

### Request To Remove "Maintenance Opportunity" From Compliance Time

American Airlines and Delta requested the reference to "maintenance opportunity" be removed from paragraph (g)(1) of this AD, as the NPRM already indicated that compliance should be performed based on the times specified in Section 1.D(1), Planning Information, in RR NMSB RB.211 72 AJ463, Revision 2, dated June 28, 2017. The commenters saw the potential for confusion and the risk of non-compliance if this phrase is misunderstood.

We agree. We find that specifying replacement of the LPC case A-frame hollow locating pins at the next on-wing maintenance opportunity requirement is unnecessary because we already specify to comply within the times listed in the RR NMSB. We revised paragraph (g)(1) of this AD to remove this reference from the AD.

### Request To Revise Compliance Time

Delta commented that paragraph (g)(1) of the NPRM requires replacing the A-frame pins within the compliance times listed in Planning Information, Section 1.D.(1), in RR NMSB RB.211-72-AJ463, Revision 2, dated June 28, 2017, except for those listed in Sections 1.D.(1)(a) and (b) which have a compliance requirement of November 13, 2017. Delta recommended rewording this sentence to clarify that engine serial numbers listed in Sections 1.D.(1)(a) and (b) will have their existing deadlines replaced with a new compliance deadline as a part of this AD. American Airlines recommended a compliance deadline of 30 days after the effective date of the AD.

We agree. We revised paragraph (g)(1) of this AD to indicate the compliance time is within the times specified in RR Alert NMSB RB.211-72-AJ463, Planning Information, Section 1.D.(1), or within 30 days after the effective date of this AD, whichever occurs later.

## **Request To Allow Use of Alternative RR-Approved Tool**

American requested a paragraph be added to this AD to allow the use of alternative RR-authorized pin replacement tooling. American indicated that RR is currently pursuing an alternative tooling design for improved reliability.

We disagree. Allowing the use of alternate tooling would require changes to the instructions for use, and a corresponding revision to, the RR NMSB. If RR revises its approved tooling, and publishes a revised NMSB, we will consider alternate method of compliance (AMOC) requests. We did not change this AD.

## **Request To Revise Installation Prohibition**

American requested that the Installation Prohibition paragraph of this AD be revised to allow installation of an engine with an affected pin providing replacement is accomplished before engine operation. American asked that this installation be allowed to provide favorable pin loading for replacement and to allow operators to install an engine on-wing in order to replace the affected parts with parts eligible for installation. American indicated that pin loads in an engine stand adversely affect replacement, and Rolls Royce has advised operators not to attempt the A-frame pin replacement while engine is in an engine stand.

We agree. The proposed changes meet our safety objectives. We revised the Installation Prohibition to allow installation of an engine with an affected pin if the pin is replaced with a part eligible for installation before engine operation.

## **Request To Modify Installation Prohibition**

American also requested we revise the Installation Prohibition by deleting “unless the pin is eligible for installation.” American commented that this change would improve the clarity of the AD.

We disagree. Requiring that the replacement part is eligible for installation is the intent of the AD. We did not change this AD.

## **Request To Add Credit for Previous Actions Paragraph**

American requested that we add a Credit For Previous Actions paragraph to give credit for eligible A-frame pins, P/N FK11612, installed in an engine prior to June 28, 2017. American commented that prior to the issuance of RR NMSB RB.211-72-AJ463, Revision 2, dated June 28, 2017, RR had issued work instructions for engines at overhaul bases to have the A-frame pins replaced with eligible pins.

We disagree. If an operator installed an eligible LPC case A-frame hollow locating pin prior to the effective date of this AD, this meets the requirements of paragraph (f) of this AD, which states “Comply with this AD within the compliance times specified, unless already done.” This AD does not require use of a particular service bulletin to install an eligible LPC case A-frame hollow locating pin, therefore no change is needed. We did not change this AD.

## **Support for the AD**

The Air Line Pilots Association expressed support for this AD.

## **Conclusion**

We reviewed the relevant data, considered the comments received, and determined that air safety and the public interest require adopting this final rule with the changes described previously and minor editorial changes. We have determined that these minor changes:

- Are consistent with the intent that was proposed in the NPRM for addressing the unsafe condition; and
- Do not add any additional burden upon the public than was already proposed in the NPRM.

We also determined that these changes will not increase the economic burden on any operator or increase the scope of this final rule.

### Related Service Information Under 1 CFR Part 51

We reviewed RR Alert NMSB RB.211-72-AJ463, Revision 2, dated June 28, 2017. The Alert SB describes procedures for replacement of all non-conforming LPC case A-frame hollow locating pins. 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.

### Costs of Compliance

We estimate that this AD affects 95 engines installed on airplanes of U.S. registry. We estimate the following costs to comply with this AD:

#### Estimated costs

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
LPC case A-frame hollow locating pin replacement	9.5 work-hours × \$85 per hour = \$807.50	\$453.00	\$1,260.50	\$119,747.50

### 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.

This AD is issued in accordance with authority delegated by the Executive Director, Aircraft Certification Service, as authorized by FAA Order 8000.51C. In accordance with that order, issuance of ADs is normally a function of the Compliance and Airworthiness Division, but during this transition period, the Executive Director has delegated the authority to issue ADs applicable to engines, propellers, and associated appliances to the Manager, Engine and Propeller Standards Branch, Policy and Innovation Division.

### 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 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, 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):



**FAA**  
**Aviation Safety**

## **AIRWORTHINESS DIRECTIVE**

[www.faa.gov/aircraft/safety/alerts/](http://www.faa.gov/aircraft/safety/alerts/)  
[www.gpoaccess.gov/fr/advanced.html](http://www.gpoaccess.gov/fr/advanced.html)

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**2018-18-15 Rolls-Royce plc:** Amendment 39-19394; Docket No. FAA-2017-0650; Product Identifier 2017-NE-19-AD.

**(a) Effective Date**

This AD is effective November 1, 2018.

**(b) Affected ADs**

None.

**(c) Applicability**

This AD applies to certain Rolls-Royce plc (RR) RB211-Trent 875-17, 877-17, 884-17, 884B-17, 892-17, 892B-17 and 895-17 turbofan engines with an engine serial number listed in Section 1.A., Effectivity, of RR Alert Non-Modification Service Bulletin (NMSB) RB.211-72-AJ463, Revision 2, dated June 28, 2017.

**(d) Subject**

Joint Aircraft System Component (JASC) Code 7230, Turbine Engine Compressor Section.

**(e) Reason**

This AD was prompted by low-pressure compressor (LPC) case A-frame hollow locating pins that may have reduced integrity due to incorrect heat treatment. We are issuing this AD to prevent failure of the locating pins, engine separation, and loss of the airplane.

**(f) Compliance**

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

**(g) Required Actions**

(1) For engines installed on-wing, after the effective date of this AD, replace each affected LPC case A-frame hollow locating pin, part number (P/N) FK11612, within the compliance times specified in RR Alert NMSB RB.211-72-AJ463, Planning Information, Section 1.D.(1), or within 30 days after the effective date of this AD, whichever occurs later, with a part eligible for installation.

(2) After the effective date of this AD, unless already accomplished by paragraph (g)(1) of this AD, at the next engine shop visit, replace each affected LPC case A-frame hollow locating pin, P/N FK11612, with a part eligible for installation.

(3) Use Section 3, Accomplishment Instructions, of RR Alert NMSB RB.211-72-AJ463, Revision 2, dated June 28, 2017, to perform the replacements required by paragraphs (g)(1) and (2) of this AD.

## **(h) Installation Prohibition**

After the effective date of this AD, an engine with an affected LPC case A-frame hollow location pin, P/N FK11612, may not be installed on an airplane and subsequently operated. It is permissible to install an engine on an airplane with an affected pin if it is replaced with a part eligible for installation before engine operation.

## **(i) Definitions**

For the purposes of this AD:

(1) An affected part is an LPC case A-frame hollow locating pin, P/N FK11612, except those with an original RR authorized release certificate dated July 5, 2016, or later.

(2) A part eligible for installation is an LPC case A-frame hollow locating pin, P/N FK11612, with an original RR authorized release certificate dated July 5, 2016, or later.

(3) An engine shop visit is when the engine is subject to a serviceability check and repair, rebuild, or overhaul.

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

(1) The Manager, ECO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the ECO Branch, send it to the attention of the person identified in paragraph (k)(1) of this AD. You may email your request to: ANE-AD-AMOC@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

## **(k) Related Information**

(1) Kevin M. Clark, Aerospace Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: 781-238-7088; fax: 781-238-7199; email: kevin.m.clark@faa.gov.

(2) Refer to European Aviation Safety Agency (EASA) AD 2017-0096, dated June 1, 2017, for more information. You may examine the EASA AD in the AD docket on the internet at <http://www.regulations.gov> by searching for and locating it in Docket No. FAA-2017-0650.

## **(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 plc (RR) Alert Non Modification Service Bulletin RB.211-72-AJ463, Revision 2, dated June 28, 2017.

(ii) Reserved.

(3) For RR service information identified in this AD, contact Rolls-Royce plc, Corporate Communications, P.O. Box 31, Derby, DE24 8BJ, United Kingdom; phone: 011-44-1332-242424; fax: 011-44-1332-249936; email: [http://www.rolls-royce.com/contact/civil\\_team.jsp](http://www.rolls-royce.com/contact/civil_team.jsp); internet: <https://customers.rolls-royce.com/public/rollsroycecare>.



(4) You may view this service information at FAA, Engine & Propeller Standards Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call 781-238-7759.

(5) You may view this service information that is incorporated by reference 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 September 17, 2018.

Robert J. Ganley,  
Manager, Engine and Propeller Standards Branch,  
Aircraft Certification Service.