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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

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

**[Docket No. FAA-2011-0445; Directorate Identifier 2011-NE-14-AD; Amendment 39-16727; AD 2011-13-04]**

**RIN 2120-AA64**

#### **Airworthiness Directives; Rolls-Royce plc RB211–Trent 500 Series Turbofan Engines**

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

**ACTION:** Final rule; request for comments.

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**SUMMARY:** We are adopting a new airworthiness directive (AD) for the products listed above. This AD results from mandatory continuing airworthiness information (MCAI) issued by an aviation authority of another country to identify and correct an unsafe condition on an aviation product. The MCAI describes the unsafe condition as:

A Trent 500 engine has been found with thermal distress of the Intermediate Pressure (IP) Turbine Nozzle Guide Vanes. The resultant investigation found the root cause to be carbon blockage of the fuel spray nozzles. The source of the carbon has been identified to be the RH fuel manifold assembly. Analysis has verified that low fuel velocity and thermal input may cause formation of carbon in a specific region of the RH fuel manifold. As advanced thermal distress of IP Turbine components may potentially result in uncontained, high energy debris release, the formation of carbon in the RH fuel manifold constitutes a potentially unsafe condition. To address and correct this unsafe condition, Rolls Royce have developed a cleaning or replacement programme of the RH fuel manifold and an optional part replacement.

We are issuing this AD to prevent the release of uncontained high-energy debris in the event of IP turbine component failure, which could result in damage to the airplane.

**DATES:** This AD becomes effective July 11, 2011.

We must receive comments on this AD by July 25, 2011.

**ADDRESSES:** You may send comments by any of the following methods:

- Federal eRulemaking Portal: Go to <http://www.regulations.gov> and follow the instructions for sending your comments electronically.

- Mail: U.S. Department of Transportation, 1200 New Jersey Avenue, SE., West Building Ground Floor, Room W12-140, Washington, DC 20590-0001.
- Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.
- Fax: (202) 493-2251.

### **Examining the AD Docket**

You may examine the AD docket on the Internet at <http://www.regulations.gov>; or in person at the Docket Operations office 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 street address for the Docket Operations office (telephone (800) 647-5527) is the same as the Mail address provided in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

**FOR FURTHER INFORMATION CONTACT:** Alan Strom, Aerospace Engineer, Engine Certification Office, FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; telephone 781-238-7143; fax 781-238-7199; e-mail: alan.strom@faa.gov.

### **SUPPLEMENTARY INFORMATION: Discussion**

The European Aviation Safety Agency (EASA), which is the Technical Agent for the Member States of the European Community, has issued EASA Airworthiness Directive 2011-0050, dated March 21, 2011 (referred to after this as "the MCAI"), to correct an unsafe condition for the specified products. The MCAI states:

A Trent 500 engine has been found with thermal distress of the Intermediate Pressure (IP) Turbine Nozzle Guide Vanes. The resultant investigation found the root cause to be carbon blockage of the fuel spray nozzles. The source of the carbon has been identified to be the RH fuel manifold assembly. Analysis has verified that low fuel velocity and thermal input may cause formation of carbon in a specific region of the RH fuel manifold. As advanced thermal distress of IP Turbine components may potentially result in uncontained, high energy debris release, the formation of carbon in the RH fuel manifold constitutes a potentially unsafe condition. To address and correct this unsafe condition, Rolls Royce have developed a cleaning or replacement programme of the RH fuel manifold and an optional part replacement.

You may obtain further information by examining the MCAI in the AD docket.

### **Relevant Service Information**

Rolls-Royce plc has issued Alert Service Bulletin No. RB.211-73-AG422, Revision 2, dated January 14, 2011. The actions described in this service information are intended to correct the unsafe condition identified in the MCAI.

### **FAA's Determination and Requirements of This AD**

This product has been approved by the aviation authority of the United Kingdom, and is approved for operation in the United States. Pursuant to our bilateral agreement with the United Kingdom, they have notified us of the unsafe condition described in the MCAI and service information referenced above. We are issuing this AD because we evaluated all information provided

by EASA and determined the unsafe condition exists and is likely to exist or develop on other products of the same type design.

### **FAA's Determination of the Effective Date**

Since no domestic operators use this product, notice and opportunity for public comment before issuing this AD are unnecessary. Therefore, we are adopting this regulation immediately.

### **Comments Invited**

This AD is a final rule that involves requirements affecting flight safety, and we did not precede it by notice and opportunity for public comment. We invite you to send any written relevant data, views, or arguments about this AD. Send your comments to an address listed under the ADDRESSES section. Include "Docket No. FAA-2011-0445; Directorate Identifier 2011-NE-14-AD" at the beginning of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of this AD. We will consider all comments received by the closing date and may amend this AD because of those comments.

We will post all comments we receive, without change, to <http://www.regulations.gov>, including any personal information you provide. We will also post a report summarizing each substantive verbal contact with FAA personnel concerning this AD. Using the search function of the Web site, anyone can find and read the comments in any of our dockets, including, if provided, the name of the individual who sent the comment (or signed the comment on behalf of an association, business, labor union, etc.). You may review the DOT's complete Privacy Act Statement in the Federal Register published on April 11, 2000 (65 FR 19477-78).

### **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); and
3. 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.

We prepared a regulatory evaluation of the estimated costs to comply with this AD and placed it in the AD docket.

## **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 AD:



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**2011-13-04 Rolls-Royce plc:** Amendment 39-16727; Docket No. FAA-2011-0445; Directorate Identifier 2011-NE-14-AD.

**Effective Date**

(a) This airworthiness directive (AD) becomes effective July 11, 2011.

**Affected ADs**

(b) None.

**Applicability**

(c) This AD applies to Rolls-Royce plc RB211-Trent 553-61, RB211-Trent 553A2-61, RB211-Trent 556-61, RB211-Trent 556A2-61, RB211-Trent 556B-61, RB211-Trent 556B2-61, RB211-Trent 560-61, and RB211-Trent 560A2-61 turbofan engines, with right-hand (RH) fuel manifold assembly, part number FW18706, installed.

**Reason**

(d) This AD results from mandatory continuing airworthiness information (MCAI) issued by an aviation authority of another country to identify and correct an unsafe condition on an aviation product. The MCAI describes the unsafe condition as:

A Trent 500 engine has been found with thermal distress of the Intermediate Pressure (IP) Turbine Nozzle Guide Vanes. The resultant investigation found the root cause to be carbon blockage of the fuel spray nozzles. The source of the carbon has been identified to be the RH fuel manifold assembly. Analysis has verified that low fuel velocity and thermal input may cause formation of carbon in a specific region of the RH fuel manifold.

As advanced thermal distress of IP Turbine components may potentially result in uncontained, high energy debris release, the formation of carbon in the RH fuel manifold constitutes a potentially unsafe condition. To address and correct this unsafe condition, Rolls Royce have developed a cleaning or replacement programme of the RH fuel manifold and an optional part replacement.

We are issuing this AD to prevent the release of uncontained high-energy debris in the event of IP turbine component failure, which could result in damage to the airplane.

**Actions and Compliance**

(e) Unless already done, do the following actions:

**Initial Cleaning and Inspection, or Replacement**

(1) For engines that on the effective date of this AD, have not been repaired using Engine Management Program, Issue 7, dated May 7, 2010 or later version; and

(2) That have not incorporated Rolls-Royce Repeater Technical Variance TV97291, dated July 2009, or later version; and

(3) That have not had the RH fuel manifold assembly cleaned using Overhaul Process Manual TSD594-J, Task 70-00-00-100-121, as instructed in Component Maintenance Manual, Tubes, Hoses, and Ducts, dated October 2009, or later version; and

(4) That have not had the RH manifold assembly replaced with a new RH manifold assembly; and

(5) That have not incorporated Rolls-Royce plc Alert Service Bulletin No. RB.211-73-AG327, Revision 1, dated May 4, 2010, or later version, then:

(i) Initially clean and inspect the RH fuel manifold assembly or replace the RH fuel manifold assembly with a serviceable RH fuel manifold assembly.

(ii) Guidance on cleaning, inspecting, or replacing of the RH manifold assembly, can be found in Rolls-Royce plc Alert Service Bulletin No. RB.211-73-AG422, Revision 2, dated January 14, 2011.

(iii) Perform the cleaning, inspection, or replacement at the following times:

(A) For engines with 3,200 cycles-since-new (CSN) or more, clean and inspect within 200 cycles after the effective date of this AD.

(B) For engines with between 3,000 CSN and 3,199 CSN, clean and inspect no later than 3,400 CSN.

(C) For engines with between 2,600 CSN and 2,999 CSN, clean and inspect within 400 cycles after the effective date of this AD.

(D) For engines with between 2,400 CSN and 2,599 CSN, clean and inspect no later than 3,000 CSN.

(E) For engines with between 1,300 CSN and 2,399 CSN, clean and inspect within 600 cycles after the effective date of this AD.

(F) For engines with fewer than 1,300 CSN, clean and inspect no later than 1,900 CSN.

(6) For engines that on the effective date of this AD, have been repaired using Engine Management Program, Issue 7, dated May 7, 2010 or later version; or

(7) That have incorporated Rolls-Royce Repeater Technical Variance TV97291, dated July 2009, or later version; or

(8) That have had the RH fuel manifold assembly cleaned using Overhaul Process Manual TSD594-J, Task 70-00-00-100-121, as instructed in Component Maintenance Manual, Tubes, Hoses, and Ducts, dated October 2009, or later version; or

(9) That have had the RH manifold assembly replaced with a new RH manifold assembly; or

(10) That have incorporated Rolls-Royce plc Alert Service Bulletin No. RB.211-73-AG327, Revision 1, dated May 4, 2010, or later version, then:

(i) Initially clean and inspect the RH fuel manifold assembly or replace the RH fuel manifold assembly with a serviceable RH fuel manifold assembly, within 1,300 cycles since the engine most recently met any of the requirements of paragraphs (e)(6) through (e)(10) of this AD.

(ii) Guidance on cleaning, inspecting, or replacing of the RH manifold assembly, can be found in Rolls-Royce plc Alert Service Bulletin No. RB.211-73-AG422, Revision 2, dated January 14, 2011.

### **Repetitive Cleaning and Inspection, or Replacement**

(11) Thereafter, repetitively clean and inspect the RH fuel manifold assembly or replace the RH fuel manifold assembly with a serviceable RH fuel manifold assembly, within 1,300 cycles since performing the last cleaning and inspection or replacement.

### **Optional Terminating Action**

(12) As optional terminating action to the repetitive actions in this AD, remove RH fuel manifold assembly, part number FW18706, and install a redesigned RH fuel manifold assembly. Guidance on

installing the redesigned RH fuel manifold assembly can be found in Rolls-Royce plc Service Bulletin No. RB.211-73-G547, dated December 7, 2010.

### **FAA AD Differences**

(f) None.

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

(g) The Manager, Engine Certification Office, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19.

### **Related Information**

(h) Refer to MCAI European Aviation Safety Agency Airworthiness Directive 2011-0050, dated March 21, 2011, Rolls-Royce plc Alert Service Bulletin No. RB.211-73-AG422, Revision 2, dated January 14, 2011, and Rolls-Royce plc Service Bulletin No. RB.211-73-G547, dated December 7, 2010, for related information. Contact Rolls-Royce plc, Corporate Communications, P.O. Box 31, Derby, England, DE248BJ, telephone: 011-44-1332-242424; fax: 011-44-1332-245418; or e-mail via: [http://www.rolls-royce.com/contact/civil\\_team.jsp](http://www.rolls-royce.com/contact/civil_team.jsp), for a copy of this service information.

(i) Contact Alan Strom, Aerospace Engineer, Engine Certification Office, FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; telephone 781-238-7143; fax 781-238-7199; e-mail: [alan.strom@faa.gov](mailto:alan.strom@faa.gov), for more information about this AD.

### **Material Incorporated by Reference**

(j) None.

Issued in Burlington, Massachusetts, on June 14, 2011.  
Peter A. White,  
Acting Manager, Engine and Propeller Directorate,  
Aircraft Certification Service.