

[Federal Register: November 14, 2008 (Volume 73, Number 221)]  
[Rules and Regulations]  
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[DOCID:fr14no08-2]

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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

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

**[Docket No. FAA-2008-1063; Directorate Identifier 2008-NE-32-AD; Amendment 39-15725; AD 2008-23-04]**

**RIN 2120-AA64**

**Airworthiness Directives; Rolls-Royce plc RB211 Trent 553-61, 553A2-61, 556-61, 556A2-61, 556B-61, 556B2-61, 560-61, and 560A2-61 Turbofan Engines**

**AGENCY:** Federal Aviation Administration (FAA), Department of Transportation (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 affecting only RB211 Trent 500 series turbofan engines that have not incorporated Rolls-Royce plc (RR) Service Bulletin (SB) No. RB.211-72-D733, dated August 21, 2002, or Revision 1 of that SB, dated March 6, 2008, as follows:

The intermediate-pressure (IP) turbine blade shrouds of the RB211 Trent 500 series engines feature closure welds (dust caps). Development engine testing has revealed the potential for dust caps to crack, lift and release. The latter may potentially allow hot annulus gas to be ingested down the core passages of IP turbine blades. Radial inflow of annulus gas into the IP disc rim region could cause local heating of the disc firtree, resulting in creep of the disc material. Failure of the disc rim in creep could simultaneously release two blades and a disc post. Failure to this extent could be beyond the containment capabilities of the casing. Consequently, release of the dust caps would constitute a potentially unsafe condition.

This AD requires actions that are intended to address the unsafe condition described in the MCAI, which could result in uncontained release of IP turbine blades and disc posts, resulting in damage to the airplane.

**DATES:** This AD becomes effective December 1, 2008.

We must receive comments on this AD by December 15, 2008.

The Director of the Federal Register approved the incorporation by reference of Rolls-Royce plc Alert Service Bulletin (ASB) No. RB.211-72-AF994, Revision 1, dated September 1, 2008 and SB No. RB.211-72-D733, Revision 1, dated March 6, 2008, listed in the AD as of December 1, 2008.

**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:** James Lawrence, Aerospace Engineer, Engine Certification Office, FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; e-mail: [james.lawrence@faa.gov](mailto:james.lawrence@faa.gov); telephone (781) 238-7176; fax (781) 238-7199.

### **SUPPLEMENTARY INFORMATION:**

#### **Discussion**

EASA, which is the Technical Agent for the Member States of the European Community, has issued EASA AD 2008-0109 R1, dated June 17, 2008, to correct an unsafe condition for the specified products. The EASA AD states that for RB211 Trent 500 series turbofan engines that have not incorporated RR SB No. RB.211-72-D733, dated August 21, 2002, or Revision 1 of that SB, dated March 6, 2008, the unsafe condition is as follows:

The intermediate-pressure (IP) turbine blade shrouds of the RB211 Trent 500 series engines feature closure welds (dust caps). Development engine testing has revealed the potential for dust caps to crack, lift and release. The latter may potentially allow hot annulus gas to be ingested down the core passages of IP turbine blades. Radial inflow of annulus gas into the IP disc rim region could cause local heating of the disc firtree, resulting in creep of the disc material. Failure of the disc rim in creep could simultaneously release two blades and a disc post. Failure to this extent could be beyond the containment capabilities of the casing. Consequently, release of the dust caps would constitute a potentially unsafe condition.

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

## **Relevant Service Information**

Rolls-Royce plc has issued ASB No. RB.211-72-AF994, Revision 1, dated September 1, 2008 and SB No. RB.211-72-D733, Revision 1, dated March 6, 2008. 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**

Although no airplanes registered in the United States use these engines, the possibility exists that the engines could be used on airplanes registered in the United States in the future. The unsafe condition described previously is likely to exist or develop on other engines of the same type design. We are issuing this AD to prevent release of IP turbine blades and disc posts, resulting in damage to the airplane. This AD requires:

- Initial and repetitive borescope inspections for missing or lifting IP turbine blade outer shroud dust caps; and
- Installation of core restrictor plugs in the IP turbine blade roots, if 20 or more IP turbine blade outer shroud dust caps are found lifting, or if 1 or more dust caps are missing.

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

Since there are currently no domestic operators of this engine model, notice and opportunity for public comment before issuing this AD are unnecessary. Therefore, a situation exists that allows the immediate adoption of this regulation.

## **Differences Between the AD and the MCAI**

We have reviewed the MCAI and related service information and, in general, agree with their substance. But we require the initial borescope inspection to be done within 5 flight cycles, since the MCAI required the initial inspection to be done before July 1, 2008, which has already passed.

## **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-2008-1063; Directorate Identifier 2008-NE-32-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 we receive about this AD.

## **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:



**2008-23-04 Rolls-Royce plc:** Amendment 39-15725.; Docket No. FAA-2008-1063; Directorate Identifier 2008-NE-32-AD.

**Effective Date**

(a) This airworthiness directive (AD) becomes effective December 1, 2008.

**Affected ADs**

(b) None.

**Applicability**

(c) This AD applies to Rolls-Royce plc (RR) RB211 Trent 553-61, 553A2-61, 556-61, 556A2-61, 556B-61, 556B2-61, 560-61, and 560A2-61 turbofan engines that have not incorporated RR Service Bulletin (SB) No. RB.211-72-D733, dated August 21, 2002, or Revision 1 of that SB, dated March 6, 2008. These engines are installed on, but not limited to, Airbus A340-500 and -600 series airplanes.

**Reason**

(d) European Aviation Safety Agency (EASA) AD No. 2008-0109 R1, dated June 17, 2008, states that for RB211 Trent 500 series turbofan engines that have not incorporated RR SB No. RB.211-72-D733, dated August 21, 2002, or Revision 1 of that SB, dated March 6, 2008, the unsafe condition is as follows:

The intermediate-pressure (IP) turbine blade shrouds of the RB211 Trent 500 series engines feature closure welds (dust caps). Development engine testing has revealed the potential for dust caps to crack, lift and release. The latter may potentially allow hot annulus gas to be ingested down the core passages of IP turbine blades. Radial inflow of annulus gas into the IP disc rim region could cause local heating of the disc firtree, resulting in creep of the disc material. Failure of the disc rim in creep could simultaneously release two blades and a disc post. Failure to this extent could be beyond the containment capabilities of the casing. Consequently, release of the dust caps would constitute a potentially unsafe condition.

We are issuing this AD to prevent uncontained release of IP turbine blades and disc posts, resulting in damage to the airplane.

**Actions and Compliance**

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

(1) Within 5 flight cycles, on engines installed or not installed, carry out the initial borescope inspection of the IP turbine blade outer shroud dust caps, using Section 3, Accomplishment Instructions of RR Alert Service Bulletin (ASB) No. RB.211-72-AF994, Revision 1, dated September 1, 2008.

(2) Thereafter, depending on the results of the inspection specified in paragraph (e)(1) of this AD, follow the appropriate action in the following Table 1:

**Table 1 – Required Actions and Compliance Times**

<b>Results of Borescope Inspection</b>	<b>Actions That Must Be Carried Out</b>
(i) Total number of IP turbine blade outer shroud dust caps lifting is 0.	At intervals not to exceed 100 cycles, re-inspect the dust caps using Section 3, Accomplishment Instructions of Rolls-Royce plc ASB No. RB.211-72-AF994, Revision 1, dated September 1, 2008.
(ii) Total number of IP turbine blade outer shroud dust caps lifting exceeds 0 but is equal to or fewer than 10.	At intervals not to exceed 20 cycles, re-inspect the dust caps using Section 3, Accomplishment Instructions of Rolls-Royce plc ASB No. RB.211-72-AF994, Revision 1, dated September 1, 2008.
(iii) Total number of IP turbine blade outer shroud dust caps lifting exceeds 10 but is equal to or fewer than 20.	At intervals not to exceed 10 cycles, re-inspect the dust caps using Section 3, Accomplishment Instructions of Rolls-Royce plc ASB No. RB.211-72-AF994, Revision 1, dated September 1, 2008.
(iv) Total number of IP turbine blade outer shroud dust caps lifting exceeds 20.	Within 10 cycles, remove the engine from service and install core restrictor plugs in the IP turbine blade roots, using Section 3, Accomplishment Instructions of RR Service Bulletin (SB) No. RB.211-72-D733, Revision 1, dated March 6, 2008.
(v) Total number of IP turbine blade outer shroud dust caps missing exceeds 1.	Before further flight, remove the engine from service and install core restrictor plugs in the IP turbine blade roots, using Section 3, Accomplishment Instructions of RR SB No. RB.211-72-D733, Revision 1, dated March 6, 2008.

**FAA AD Differences**

(f) This AD differs from the Mandatory Continuing Airworthiness Information (MCAI) EASA AD by requiring the initial borescope inspection to be done within 5 flight cycles. The MCAI required the initial inspection to be done before July 1, 2008, which has already passed.

(g) Alternative Methods of Compliance (AMOCs): 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 EASA AD 2008-0109 R1, dated June 17, 2008, for related information.

(i) Contact James Lawrence, Aerospace Engineer, Engine Certification Office, FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; e-mail: james.lawrence@faa.gov; telephone (781) 238-7176; fax (781) 238-7199, for more information about this AD.

## Material Incorporated by Reference

(j) You must use the Rolls-Royce plc service information specified in the following Table 2 to do the actions required by this AD.

**Table 2 - Material Incorporated by Reference**

<b>Document No.</b>	<b>Page</b>	<b>Revision</b>	<b>Date</b>
Alert Service Bulletin No. RB.211-72-AF994	All	1	September 1, 2008
Total Pages: 24			
Service Bulletin No. RB.211-72-D733	All	1	March 6, 2008
Total Pages: 8			
Supplement to Service Bulletin No. RB.211-72-D733	All	1	March 6, 2008
Total Pages: 1			

(1) The Director of the Federal Register approved the incorporation by reference of this service information under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) For service information identified in this AD, contact Rolls-Royce plc, P.O. Box 31, Derby, DE24 8BJ, UK, telephone 44-0-1332 242424; fax 44-0-1332 249936.

(3) You may review copies at the FAA, New England Region, 12 New England Executive Park, Burlington, MA; or 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 October 28, 2008.

Diane S. Romanosky,  
Acting Manager, Engine and Propeller Directorate,  
Aircraft Certification Service.