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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

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

**[Docket No. FAA-2006-23605; Directorate Identifier 2005-NE-48-AD; Amendment 39-15743; AD 2008-24-03]**

**RIN 2120-AA64**

### **Airworthiness Directives; Rolls-Royce plc Models RB211 Trent 768-60, Trent 772-60, and Trent 772B-60 Turbofan Engines**

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

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

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**SUMMARY:** The FAA is superseding an existing airworthiness directive (AD) for Rolls-Royce plc (RR) models RB211 Trent 768-60, Trent 772-60, and Trent 772B-60 turbofan engines that have not incorporated RR Service Bulletin (SB) No. RB.211-72-E708, SB No. RB.211-72-F227, or SB No. RB.211-72-E965, at original issue or later revision. That AD currently requires initial and repetitive borescope inspections of the high-pressure/intermediate-pressure (HP/IP) turbine bearing internal oil vent tube, scavenge tube, and tube heat shields for wear and cracking, and removing tubes from service if found with any cracks beyond serviceable limits. That AD also currently requires installation of a new or modified HP/IP turbine bearings support as terminating action for the repetitive borescope inspections. This AD has the same requirements, and adds a repetitive inspection of the vent flow restrictor for blockage. This AD results from RR revising their alert service bulletin for inspection of the HP/IP turbine bearing internal oil vent tube, scavenge tube, and tube heat shields for damage, to include a repetitive inspection of the vent flow restrictor for blockage. We are issuing this AD to prevent oil ejecting from the HP/IP turbine bearings chamber and igniting. Burning oil can cause the intermediate-pressure (IP) shaft to fracture, the IP turbine to overspeed, and possible uncontained failure of the engine.

**DATES:** Effective December 15, 2008. The Director of the Federal Register approved the incorporation by reference of certain publications listed in the regulations as of December 15, 2008.

We must receive any comments on this AD by January 27, 2009.

**ADDRESSES:** Use one of the following addresses to comment on this AD.

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

- Mail: Docket Management Facility, 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.

Contact Rolls-Royce plc, PO Box 31, Derby, England, DE248BJ; telephone: 011-44-1332-242424; fax: 011-44-1332-245418, for the service information identified in this AD.

**FOR FURTHER INFORMATION CONTACT:** James Lawrence, Aerospace Engineer, Engine Certification Office, FAA, Engine and Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; e-mail: james.lawrence@faa.gov; telephone (781) 238-7175; fax (781) 238-7199.

**SUPPLEMENTARY INFORMATION:** On February 24, 2006, the FAA issued AD 2006-05-03, Amendment 39-14500 (71 FR 11153, March 6, 2006). That AD requires initial and repetitive borescope inspections of the HP/IP turbine bearing internal oil vent tube, scavenge tube, and tube heat shields for wear and cracking, and removing tubes from service if found with any cracks beyond serviceable limits. That AD also requires installation of a new or modified HP/IP turbine bearings support as terminating action for the repetitive borescope inspections. That AD was the result of two reports of RR RB211 Trent 700 series engines found with the HP/IP internal oil vent tube and scavenge tube fretted by damaged heat shields on the tubes. That condition, if not corrected, could result in oil ejecting from the HP/IP turbine bearings chamber and igniting. Burning oil can cause the IP shaft to fracture, the IP turbine to overspeed, and possible uncontained failure of the engine.

#### **Actions Since AD 2006-05-03 Was Issued**

Since AD 2006-05-03 was issued, the European Aviation Safety Agency (EASA), which is the Technical Agent for the Member States of the European Community, notified us that they issued EASA AD 2007-0255, dated September 14, 2007, to supersede EASA AD 2005-0024, dated October 14, 2005. EASA AD 2007-0255 carries forward the requirements from EASA AD 2005-0024. EASA AD 2007-0255 adds repetitive inspections of the vent flow restrictor for blockage, based on RR issuing Alert Service Bulletin (ASB) No. RB.211-72-AE792, Revision 3. ASB Revision 3, and now Revision 4, add repetitive visual inspections of the vent flow restrictor for blockage. This AD requires the same actions as EASA AD 2007-0255.

#### **Relevant Service Information**

We have reviewed and approved the technical contents of RR ASB No. RB.211-72-AE792, Revision 4, dated August 2, 2007. That ASB describes procedures for initial and repetitive borescope inspections of the HP/IP turbine bearing internal oil vent tube, scavenge tube, and tube heat shields for wear and cracking, and removing tubes from service if found with any cracks beyond serviceable limits. That ASB also describes procedures for performing repetitive inspections of the vent flow restrictor for blockage. That ASB also references recently published RR SB No. RB.211-72-F227 and RR SB No. RB.211-72-E965 as terminating actions for the inspection requirements.

#### **Bilateral Airworthiness Agreement**

This engine model is manufactured in the United Kingdom and is type certificated for operation in the United States under the provisions of section 21.29 of the Federal Aviation Regulations (14 CFR 21.29) and the applicable bilateral airworthiness agreement. Under this bilateral airworthiness agreement, the EASA has kept the FAA informed of the situation described above. We have examined the findings of the EASA, reviewed all available information, and determined that AD

action is necessary for products of this type design that are certificated for operation in the United States.

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

Although no airplanes that are registered in the United States use these RR RB211 Trent 768-60, Trent 772-60, and Trent 772B-60 turbofan engines, the possibility exists that the engines could be used on airplanes that are registered in the United States in the future. The unsafe condition described previously is likely to exist or develop on other RR RB211 Trent 768-60, Trent 772-60, and Trent 772B-60 turbofan engines of the same type design. We are issuing this AD to prevent oil ejecting from the HP/IP turbine bearings chamber and igniting. Burning oil can cause the IP shaft to fracture, the IP turbine to overspeed, and possible uncontained failure of the engine. This AD requires:

- Initial and repetitive borescope inspections of the HP/IP turbine bearing internal oil vent tube, scavenge tube, and tube heat shields for wear and cracking; and
- Removing tubes from service if found with any cracks beyond serviceable limits; and
- Performing repetitive inspections of the vent flow restrictor for blockage; and
- As terminating action to the repetitive inspections required by the AD, at the next 05 module overhaul, but before May 31, 2010, removing the HP/IP bearings support and replacing with serviceable parts.

You must use the service information described previously to perform the inspections required by this AD.

### **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.

### **Comments Invited**

This AD is a final rule that involves requirements affecting flight safety and was not preceded by notice and an opportunity for public comment; however, we invite you to send us any written relevant data, views, or arguments regarding this AD. Send your comments to an address listed under ADDRESSES. Include "AD Docket No. FAA-2006-23605; Directorate Identifier 2005-NE-48-AD" in the subject line of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of the rule that might suggest a need to modify it.

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).

### **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.

## **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 have 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 that 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 summary of the costs to comply with this AD and placed it in the AD Docket. You may get a copy of this summary at the address listed under ADDRESSES.

## **List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

## **Adoption of the Amendment**

Under the authority delegated to me by the Administrator, the Federal Aviation Administration amends part 39 of the Federal Aviation Regulations (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 removing Amendment 39-14500 71 FR 11153, March 6, 2006, and by adding a new airworthiness directive, Amendment 39-15743, to read as follows:



**2008-24-03 Rolls-Royce plc:** Amendment 39-15743. Docket No. FAA-2006-23605; Directorate Identifier 2005-NE-48-AD.

### **Effective Date**

(a) This airworthiness directive (AD) becomes effective December 15, 2008.

### **Affected ADs**

(b) This AD supersedes AD 2006-05-03, Amendment 39-14500.

### **Applicability**

(c) This AD applies to Rolls-Royce plc (RR) models RB211 Trent 768-60, Trent 772-60, and Trent 772B-60 turbofan engines that have not incorporated RR Service Bulletin (SB) No. RB.211-72-E708, SB No. RB.211-72-F227, or SB No. RB.211-72-E965, at original issue or later revision. These engines are installed on, but not limited to, Airbus A330-243, A330-341, A330-342, and A330-343 airplanes.

### **Unsafe Condition**

(d) This AD results from RR revising their alert service bulletin for inspection of the high-pressure/intermediate-pressure (HP/IP) turbine bearing internal oil vent tube, scavenge tube, and tube heat shields for damage, to include a repetitive inspection of the vent flow restrictor for blockage. We are issuing this AD to prevent oil ejecting from the HP/IP turbine bearings chamber and igniting. Burning oil can cause the intermediate-pressure (IP) shaft to fracture, the IP turbine to overspeed, and possible uncontained failure of the engine.

### **Compliance**

(e) You are responsible for having the actions required by this AD performed within the compliance times specified unless the actions have already been done.

### **On-Wing Initial Borescope Inspection**

(f) Borescope inspect and assess the condition of the HP/IP turbine support assembly internal oil vent and scavenge tubes and heat shields, using Section 3. of the Accomplishment Instructions Part A, of RR Alert Service Bulletin (ASB) No. RB.211-72-AE792, Revision 4, dated August 2, 2007, and Table 1 of this AD.

(g) The threshold life of the 05 module for the initial borescope inspection is 10,000 operating hours since new or since overhaul, or 2,500 cycles since new or since overhaul, whichever occurs first.

**Table 1 – On-Wing Borescope Inspection Criteria**

<b>For:</b>	<b>Action:</b>
(1) 05 modules that exceed the threshold life on the effective date of this AD:	Inspect within 1 month after the effective date of this AD.
(2) 05 modules that are below the threshold life on the effective date of this AD:	Inspect by the threshold life or within 3 months from the effective date of this AD, whichever occurs later.

**On-Wing Repetitive Borescope Inspections**

(h) Determine the serviceability and establish the repetitive inspection intervals using Table 2 of this AD.

**Table 2 – Determination of Serviceability and Repetitive Inspection Interval**

<b>For:</b>	<b>Action:</b>
(1) Outer heat shields of the vent or scavenge tube with no visible damage:	Re-inspect within intervals of 10,000 operating hours or 2,500 cycles, whichever occurs first.
(2) Outer heat shields of the vent or scavenge tube with partial cracking up to 90 degrees around the circumference or 10 mm along the length of either outer heat shield:	Re-inspect within intervals of 6,400 operating hours or 1,600 cycles, whichever occurs first.
(3) Outer heat shields of the vent or scavenge tube with partial cracking in excess of item (2) above, but less than 360 degrees around the circumference of either outer heat shield:	Re-inspect within intervals of 1,600 operating hours or 400 cycles, whichever occurs first.
(4) Outer heat shields of the vent or scavenge tube with cracking around the complete circumference of either outer heat shield, or if there is any missing material from either outer heat shield	Re-inspect or reject using Table 3 of this AD.

**Table 3 – Inspection and Rejection Criteria for Heat Shields Meeting Conditions in Item (4) of Table 2 of This AD**

<b>Condition:</b>	<b>Action:</b>
(1) If the insulation blanket is in place inside the heat shield and preventing fretting between the heat shield and the tube.	Inspect within intervals of 1,600 operating hours or 400 cycles, whichever occurs first.
(2) If either vent or scavenge tube has fretting at the outer heat shield position where the maximum depth of fretting at any point around the full 360 degrees of each tube is less than 0.46 mm (0.018 inch).	Inspect within intervals of 400 operating hours or 100 cycles, whichever occurs first.
(3) If it is not possible to determine the maximum depth of fretting around the full 360 degrees of each tube and item (1) above is not applicable, then the HP/IP turbine support assembly must be rejected from service.	Reject from service within 50 cycles of the inspection being carried out.

(4) If either vent or scavenge tube has fretting at the outer heat shield position and the maximum depth of fretting is greater than 0.46 mm (0.018 inch) then the HP/IP turbine support assembly must be rejected from service.	Reject within 10 cycles of the inspection being carried out.
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(i) For HP/IP turbine support assemblies which have been previously inspected using the superseded AD, or this AD:

(1) Re-inspect the internal oil vent and scavenge tubes and heat shields before exceeding the intervals established in Table 2 of this AD.

(2) Determine the serviceability and intervals to the next inspection using Table 2 of this AD.

### **Inspections of the Vent Flow Restrictor After On-Wing Borescope Inspection**

(j) After a high-power ground run or not later than 25 cycles after heat shield inspection, inspect the vent flow restrictor, using Section 3. of the Accomplishment Instructions of RR SB No. RB.211-72-AE792, Revision 4, dated August 2, 2007.

### **Repetitive Inspections of the Vent Flow Restrictor After On-Wing Borescope Inspection**

(k) After each on-wing borescope inspection, specified in paragraphs (f) through (h) of this AD, repeat the inspection of the vent flow restrictor, as specified in paragraph (j) of this AD.

### **In-Shop Borescope Inspection**

(l) For 05 modules in-shop which are not undergoing strip and overhaul:

(1) Borescope inspect and assess the condition of the HP/IP turbine support assembly internal oil vent and scavenge tubes and heat shields.

(2) Inspect the vent tubes and the vent flow restrictor for carbon, after performing a high-power ground run.

(3) Use Section 3. of the Accomplishment Instructions Part B, of RR ASB No. RB.211-72-AE792, Revision 4, dated August 2, 2007, and Table 4 of this AD to do the inspections.

(4) Determine the serviceability and establish the interval to next inspection of the HP/IP turbine support assembly internal oil vent and scavenge tubes and heat shields, using Table 4 of this AD:

**Table 4 – Re-inspection Criteria**

<b>For:</b>	<b>Action:</b>
(i) Outer heat shields of the vent and scavenge tubes with no visible damage:	Re-inspect at a threshold of 10,000 operating hours time-since-new or time-since-overhaul, or 2,500 cycles-since-new or cycles-since-overhaul, whichever occurs first.
(ii) Outer heat shields of the vent and scavenge tubes with cracking up to 90 degrees around the circumference or 10 mm along the length of either outer heat shield:	Re-inspect at a not to exceed interval of 6,400 operating hours or 1,600 cycles, whichever occurs first.
(iii) Outer heat shields of the vent and scavenge tubes with visible cracking greater than 90 degrees of the circumference or 10 mm along the length of either outer heat shield:	Reject the tube and perform the terminating action specified in paragraph (n) of this AD.

(m) For 05 modules in-shop which are undergoing strip and overhaul, carry out the terminating action specified in paragraph (n) of this AD.

### **Terminating Action**

(n) As terminating action to the repetitive inspections required by this AD, at the next 05 module overhaul, but before May 31, 2010, remove the affected HP/IP bearings supports and replace with serviceable parts. Information on serviceable parts can be found in RR SB No. RB.211-72-E708, Revision 2, dated September 6, 2005, or in RR SB No. RB.211-72-F227, Revision 1, dated October 8, 2007, or in RR SB No. RB.211-72-E965, Revision 1, dated October 4, 2005. To obtain these SBs, see paragraph (r) of this AD for RR contact information.

### **Definition**

(o) For the purposes of this AD, serviceable parts are new or reworked bearings supports which reduce the adverse effects of HP3 cooling air turbulence on the HP/IP turbine bearing internal oil vent and scavenge tubes and tube heat shields, as described in RR SB No. RB.211-72-E708, Revision 2, dated September 6, 2005, or in RR SB No. RB.211-72-F227, Revision 1, dated October 8, 2007, or in RR SB No. RB.211-72-E965, Revision 1, dated October 4, 2005.

### **Alternative Methods of Compliance**

(p) The Manager, Engine Certification Office, has the authority to approve alternative methods of compliance for this AD if requested using the procedures found in 14 CFR 39.19.

### **Related Information**

(q) European Aviation Safety Agency AD 2007-0255, dated September 14, 2007, also addresses the subject of this AD.

### **Material Incorporated by Reference**

(r) You must use the service information specified in Table 5 of this AD to perform the inspections required by this AD. The Director of the Federal Register approved the incorporation by reference of the documents listed in Table 5 of this AD in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Contact Rolls-Royce plc, PO Box 31, Derby, England, DE248BJ; telephone: 011-44-1332-242424; fax: 011-44-1332-245418, for a copy of this service information. 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>.

**Table 5 - Incorporation by Reference**

<b>Rolls-Royce Alert Service Bulletin No.</b>	<b>Page</b>	<b>Revision</b>	<b>Date</b>
RB.211-72-AE792, including Appendix A	All	4	August 2, 2007
Total Pages: 31			

Issued in Burlington, Massachusetts, on November 12, 2008.  
Peter A. White,  
Assistant Manager, Engine and Propeller Directorate,  
Aircraft Certification Service.