

<p><b>EASA</b></p>	<p align="center"><b>NOTIFICATION OF A PROPOSAL TO ISSUE AN AIRWORTHINESS DIRECTIVE</b></p>
	<p><b>PAD No.: 09-004</b></p> <p><b>Date: 07 January 2009</b></p> <p>Note: This Proposed Airworthiness Directive (PAD) is issued by EASA, acting in accordance with Regulation (EC) No 216/2008 on behalf of the European Community, its Member States and of the European third countries that participate in the activities of EASA under Article 66 of that Regulation.</p>
<p>In accordance with the EASA Continuing Airworthiness Procedures, the Executive Director is proposing the issuance/cancellation of an EASA Airworthiness Directive (AD), applicable to the aeronautical products identified below. All interested persons may send their comments, referencing the PAD Number above, to the e-mail address specified in the 'Remarks' section, prior to the consultation closing date indicated.</p>	
<p><b>Type Approval Holder's Name :</b></p> <p>Rolls-Royce plc</p>	<p><b>Type/Model designation(s) :</b></p> <p>RB211, RB211-TRENT 768-60, 772-60, 772B-60, 772C-60 engines</p>
<p>TCDS Number : EASA.E.042</p>	
<p>Foreign AD : Not applicable</p>	
<p>Supersedure : This AD supersedes EASA AD 2007-0260 dated 02 October 2007.</p>	
<p><b>ATA 72</b></p>	<p><b>Engine – HP/IP Turbine Bearing Oil Feed Tube – Inspection / Modification</b></p>
<p>Manufacturer(s)</p>	<p>Rolls-Royce plc</p>
<p>Applicability</p>	<p>RB211 Trent 768-60, 772-60, 772B-60, 772C-60 engines, except when previously modified in accordance with Rolls-Royce RB211 Service Bulletin (SB) 72-F227 at original issue or later revision.</p> <p>These engines are known to be installed on, but not limited to, Airbus A330 aeroplanes.</p>
<p>Reason</p>	<p>In 2005, a Trent 700 engine was removed due to oil loss and low oil pressure. Investigation has established that the HP/IP turbine bearing oil feed tube had been fretted by a damaged outer heat shield causing a breach of the oil feed tube. This led to the escape of oil, some of which ignited in the cavity in front of the HP/IP turbine support structure causing heating damage to the rear of the HP turbine disc. This incident has demonstrated the possibility for HP turbine disc overheat as a result of HP/IP turbine bearing oil feed tube heat shield deterioration, which potentially could result in disc burst.</p> <p>EASA Airworthiness Directive (AD) 2006-0073 and its revision were issued to instruct inspection of the feed tube heat shields for damage to prevent the scenario described above.</p> <p>EASA AD 2007-0260 superseded EASA AD 2006-0073R1 retaining the requirements thereof and introducing the Terminating Actions section which references the recently published Rolls-Royce (RR) Service Bulletin (SB) 72-F227 as another terminating action.</p>

	<p>The present AD supersedes EASA AD 2007-0260 retaining the requirements thereof but deleting the terminating action options which involved removal of the outer heatshield. Hence only terminating action by modification to improved heatshield standard remains. This has been necessary due to the increasing incidence of pipe frettage damage caused by the inner heat shield (cannot be inspected on-wing) which was not addressed by the previous, now deleted, terminating action. Correspondingly, the Compliance date has also been extended to allow an appropriate interval for further modification for those operators who have used the outer heatshield removal terminating action option. Minor editorial changes have also been made.</p> <p>Note: EASA AD [AD No. TBD] instructs similar corrective action for the HP/IP turbine bearing vent and scavenge tubes and should not be confused with this Airworthiness Directive.</p>
Effective Date:	[TBD: 14 days after final AD issue date]
Required Action(s) and Compliance Time(s):	<p>Required as indicated, unless accomplished previously:</p> <p><b>Note 1:</b> Engines which have been modified in accordance with Rolls-Royce SB 72-F048 or SB 72-F117 at original issue of this AD, which are exempted from the Inspection Compliance but still subject to the Terminating Action Compliance.</p> <p>1) <u>Inspection- On wing</u></p> <p>Inspect and assess the condition of the HP/IP turbine bearing internal oil feed tube in accordance with Rolls-Royce Next New Modification Service Bulletin RB2007-0260-F048 revision 2 (2007-0260 approval issue) section 3 Accomplishment Instructions Part A as follows:</p> <p>For 05 modules which have not been previously inspected in accordance with this AD (see Note 2 below):</p> <p>Carry out the inspection within 3 months of reaching the 05 module threshold of 10 000 hours or 2 500 cycles (whichever occurs first) since overhaul.</p> <p>ii) Determine the serviceability and establish interval to next inspection as follows:</p> <p>(a) HP/IPT support assemblies with no visible damage to the feed tube outer heat shields must be re-inspected at a 'never exceed' interval of 10 000 hours or 2 500 cycles, whichever occurs first.</p> <p>(b) HP/IPT support assemblies with partial cracking up to 90 degrees around the circumference or 10 mm along the length of the feed tube outer heat shield must be re-inspected at a 'never exceed' interval of 6 400 hours or 1600 cycles, whichever occurs first.</p> <p>(c) HP/IPT support assemblies with cracking in excess of that in 1) a) (ii) (b) but less than 360 degrees around the circumference of the feed tube outer heat shield must be re-inspected at a 'never exceed' interval of 1 600 hours or 400 cycles whichever occurs first.</p> <p>(d) HP/IPT support assemblies with no feed tube outer heat shield material remaining that can cause further frettage are acceptable for continued operation with no further inspection, subject to any existing frettage being less than 0,46 mm (0.018in.) depth.</p> <p>(e) HP/IPT support assemblies with cracking around the complete circumference of the feed tube outer heat shield, or if there is any missing material from the heat shield, re-inspect or reject in</p>

accordance with the following;

- (i) If the insulation blanket is in place inside the heat shield and preventing fretage between the heat shield and the tube, then the tube must be re-inspected at a 'never exceed' interval of 1 600 hours or 400 cycles, whichever occurs first.
- (ii) If the tube is fretted by loose heat shield material where the maximum depth of fretage is less than 0,46mm (0.018in.), then the tubes must be re-inspected at a 'never exceed' interval of 400 hours or 100 cycles, whichever occurs first.
- (iii) If it is not possible to determine the depth of fretage around the full 360 degrees of the tube (and 1a)ii)e)(i) above is not applicable) then the assembly must be rejected from service within 50 cycles of the inspection being carried out.
- (iv) If the tube is fretted by loose heat shield material and the maximum depth of the fretage is greater than 0,46mm (0.018in), then the assembly must be rejected from service within 10 cycles of the inspection being carried out.

b) For 05 modules which **have** been previously inspected in accordance with the requirements of this AD (see Note 2 below):

- i) Inspect the HP/IP Turbine support assembly, oil feed tube and heatshield before reaching the 'never exceed' period as established by the previous inspection (see 1) a) i) or 2) a) ii) ).
- ii) Determine the serviceability and 'never exceed' period to the next inspection as detailed in 1) a) ii) above.

**Note 2:** For the purposes of compliance with this AD, HP/IP turbine support assembly internal oil feed tube/heatshield inspections carried out previously in accordance with the superseded AD's are deemed to be valid.

## 2) Inspection in shop

a) For 05 modules in-shop which **are not** undergoing strip and overhaul, inspect and assess the condition of the HP/IP turbine bearing internal oil feed tube in accordance with Rolls-Royce Alert Non Modification Service Bulletin RB211-72-AF045 original issue (or later approved issue) section 3 Accomplishment Instructions Part B as follows:

- i) At every shop visit (regardless of module life since new or overhaul, and regardless of life since previous inspection).
- ii) Determine the serviceability and establish interval to next inspection of the HP/IPT support assemblies as follows:
  - (a) HP/IPT support assemblies with no visible damage to the feed tube outer heat shield must be re-inspected at a 'never exceed' interval of 10 000 hours or 2 500 cycles, whichever occurs first.
  - (b) HP/IPT support assemblies with partial cracking up to 90 degrees around the circumference or 10 mm along the length of the feed tube outer heat shield must be re-inspected at a 'never exceed' interval of 6 400 hours or 1 600 cycles, whichever occurs first.
  - (c) HP/IPT support assemblies with visible cracking greater than 90 degrees of the circumference or 10 mm in length of the feed tube outer heat shield must be rejected and the module

	<p>subjected to 05 module overhaul (see note 4).</p> <p>b) For 05 modules in-shop which <b>are</b> undergoing strip and overhaul carry out the Terminating Action as detailed in 3) below.</p> <p>3) <u>Terminating Action</u></p> <p>a) At the next 05 module overhaul after the effective date of this AD but not later than 31 May 2014, whichever occurs first, introduce revised HP/IP turbine bearing support structure in accordance with RR Modification Service Bulletin RB211-72-F227 original or later approved issue (see note 5).</p> <p><b>NOTE 3:</b> The hours and cycles quoted in sections 1 and 2 above refer to those hours and cycles accrued on the 05 module.</p> <p><b>NOTE 4:</b> For the purposes of this AD, the term "overhaul" refers to an 05 module shop visit where the HP/IP turbine internal components have been exposed and the tube heat shields subjected to a detailed visual inspection in accordance with the Trent 700 Engine Manual task 72-1-2420089.</p> <p><b>NOTE 5:</b> Rolls-Royce Modification Service Bulletin RB211-08-F217 must be accomplished as a pre-requisite to implementation of SB RB211-72-F227.</p>
Ref. Publications:	<p>Rolls-Royce Alert Non Modification Service Bulletin RB.211-72-AE705 original issue,</p> <p>RR Modification Service Bulletin RB.211-72-F217 original issue,</p> <p>RR Immediate Operational Request Service Bulletin RB.211-72-F048 original issue,</p> <p>RR Modification Service Bulletin RB.211-72-AE708 revision 2,</p> <p>RR Modification Service Bulletin RB.211-72-F227 original issue,</p> <p>The use of later approved revisions of these documents is acceptable for compliance with the requirements of this AD.</p>
Remarks:	<p>1. This Proposed AD will be closed for consultation on 04 February 2009.</p> <p>2. Enquiries regarding this PAD should be referred to the Airworthiness Director, Safety Management &amp; Research Section, Certification Directorate, EASA. E-mail <a href="mailto:ADs@easa.europa.eu">ADs@easa.europa.eu</a>.</p> <p>3. For any questions concerning the technical content of the requirements in this PAD, please contact: Rolls-Royce plc, Publication Services, P.O. Box 31, Derby, DE24 8BJ, United Kingdom; Telephone: +44 (0) 1332 242424, Fax: +44 (0) 1332 249936.</p>