


EASA	PROPOSED AIRWORTHINESS DIRECTIVE
	<p>PAD No.: 07-156</p> <p>Date: 24 August 2007</p>
No person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive unless otherwise agreed with the Authority of the State of Registry.	
Type Approval Holder's Name:	Type/Model designation(s):
ROLLS-ROYCE PLC	RB211 TRENT 768-60, 772-60, 772B-60, 772C-60
TCDS Number: EASA E.042	
Foreign AD: Not applicable	
Supersedure: EASA AD 2006-0073R1 released on 24 October 2006.	
ATA 72	Engine - IP Turbine Bearing / Oil Feed Tube Fretage- Inspection
Manufacturer(s):	Rolls-Royce plc
Applicability:	<p>Models 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-F048 or SB 72-F117 or 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>
Reason:	<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 tubes 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>This Airworthiness Directive (AD) instructs inspection of the feed tube heat shields for damage to prevent the scenario described above.</p> <p>This new AD introduces the Terminating Actions section which references the recently published Rolls-Royce (RR) Service Bulletin (SB) 72-F227 as another terminating action for the inspection requirements of this directive. Some minor editorial changes are introduced, including revised terminology used in the Compliance section.</p>

	Note: AD 2005-0024 instructs similar corrective action for the HP/IP turbine bearing <u>vent</u> and <u>scavenge</u> tubes and should not be confused with this Airworthiness Directive.
Effective Date:	10 April 2006 (effective date of AD 2006-0073)
Compliance:	<p><u>PREVIOUS REQUIREMENTS OF AD 2006-0073</u></p> <p><u>1) 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 Alert Non Modification Service Bulletin RB211-72-AF045 original issue (or later approved issue) section 3 Accomplishment Instructions Part A as follows:</p> <p>a) For 05 modules which have not been previously inspected in accordance with the requirements of AD 2006-0073:</p> <p>i) Carry out the inspection at an 05 module threshold life of 10 000 hours or 2 500 cycles (whichever occurs first) since new or since overhaul:</p> <p>(a) For 05 modules that exceed the threshold life at the effective date of this Airworthiness Directive, carry out the inspection within 1 month of the effective date of this AD.</p> <p>NOTE 1: All engines should have previously met this requirement in compliance with the superseded AD.</p> <p>(b) For 05 modules that are below the threshold life at the effective date of this Airworthiness Directive, carry out the inspection within 3 months of reaching the threshold life.</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, which ever 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, which ever occurs first.</p> <p>(c) HP/IPT support assemblies with cracking in excess of that in 1a)(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 fretting are acceptable for continued operation with no further inspection, subject to any existing fretting 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 accordance with the following;</p> <p>(i) If the insulation blanket is in place inside the heat shield and preventing fretting between the heat</p>

	<p>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.</p> <ul style="list-style-type: none"> (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 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. <p>b) For HP/IPT support assemblies which have been previously inspected in accordance with the requirements of AD 2006-0073:</p> <ul style="list-style-type: none"> i) Inspect the tube before reaching the 'never exceed' period as established in 1 a) ii) or 2 b). ii) Determine the serviceability and 'never exceed' period to the next inspection as detailed in 1 a) ii) above. <p>NOTE 2: For the purposes of compliance with this AD, HP/IP turbine support assembly internal oil feed tube/heatshield inspection carried out previously in accordance with the superseded AD is deemed to be valid.</p> <p>2) <u>Inspection- In shop</u></p> <p>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</p> <ul style="list-style-type: none"> a) At every shop visit (regardless of module life since new or overhaul, and regardless of life since previous inspection). b) Determine the serviceability and establish interval to next inspection of the HP/IPT support assemblies as follows: <ul style="list-style-type: none"> i) 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. ii) 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. iii) 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 subjected to 05 module overhaul (see note 4). <p>NEW REQUIREMENT OF THIS AD</p> <p>3) <u>Terminating Action</u></p>
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	<p>At the next 05 module overhaul from the release date of this AD or before 31 May 2010, whichever occurs first, introduce revised HP/IP turbine bearing support structure in accordance with either:</p> <ul style="list-style-type: none"> a) RR Modification Service Bulletin RB211-72-F117 original (or later approved issue) or; b) RR Immediate Operational Request Service Bulletin RB211-72-F048 original (or later approved issue) or; c) RR Modification Service Bulletin RB211-72-F227 original (or later approved issue). <p>NOTE 3: The hours and cycles quoted in sections 1 and 2 of this AD refer to those hours and cycles accrued on the 05 module.</p> <p>NOTE 4: For the purposes of this AD, the term "overhaul" refers to an 05 module shop visit where the HP/IP turbine internal oil tubes have been exposed and the tube heat shields subjected to a detailed visual inspection in accordance with the Trent 700 Engine Manual task 72-51-24-200-801.</p>
Ref. Publications:	<p>Rolls-Royce Alert Non Modification Service Bulletin RB.211-72-AF045 original issue;</p> <p>RR Modification Service Bulletin RB.211-72-F117 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-F227 original issue;</p> <p>(any later EASA approved revision of these documents is acceptable).</p>
Remarks:	<ol style="list-style-type: none"> 1. If requested and appropriately substantiated EASA can accept Alternative Methods of Compliance (AMOCs) for this AD. 2. The closing date for comment is 21 September 2007 3. Enquiries regarding this Airworthiness Directive should be referred to the AD Focal Point - Certification Directorate, EASA. E-Mail: ADs@easa.europa.eu . 4. For any questions concerning the technical content of the requirements in this AD, please contact Rolls-Royce plc. PO Box 31, Derby, DE24 8BJ, United Kingdom. Phone: +44 (0) 1332 242424, Fax: +44 (0) 1332 249936.