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| EASA | AIRWORTHINESS DIRECTIVE |
|  | <p>AD No.: 2007-0260R1</p> <p>Date: 25 March 2009</p> <p>Note: This Airworthiness Directive (AD) 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>This AD is issued in accordance with EC 1702/2003, Part 21A.3B. In accordance with EC 2042/2003 Annex I, Part M.A.301, the continuing airworthiness of an aircraft shall be ensured by accomplishing any applicable ADs. Consequently, no person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive unless otherwise specified by the Agency [EC 2042/2003 Annex I, Part M.A.303] or agreed with the Authority of the State of Registry [EC 216/2008, Article 14(4) exemption].</p> | |
| <p>Type Approval Holder's Name :</p> <p>Rolls-Royce plc</p> | <p>Type/Model designation(s) :</p> <p>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>Revision: This AD revises EASA AD 2007-0260 dated 02 October 2007.</p> | |
| ATA 72 | Engine – HP Turbine Bearing Oil Feed Tube – Inspection / Modification |
| Manufacturer(s): | Rolls-Royce plc |
| Applicability: | <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) SB 72-F117, SB 72-F048 or 72-F227.</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 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 overheating 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> |

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| | <p>This AD Revision 1 extends the deadline for accomplishing the terminating action. This has been necessary to avoid a situation where operators are forced to apply IOR SB 72-F048 to remove undamaged heatshields on-wing, to satisfy the compliance date. The Compliance date has been extended to allow an appropriate interval for in-shop modification of all engines to SB 72-F227, which is the preferred terminating action for engines which have undamaged heatshields. Minor editorial changes have also been made.</p> <p>Note: EASA AD 2009-0069 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.</p> |
| Effective Date: | 16 October 2007 |
| Required Action(s) and Compliance Time(s): | <p>Required as indicated, unless accomplished previously:</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 Alert Non Modification Service Bulletin RB211-72-AF045 revision 2 (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 this AD (see Note 1 below):</p> <p>i) Carry out the inspection within 3 months of reaching the 05 module threshold life of 10 000 hours or 2 500 cycles, whichever occurs first, since new or 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 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 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> |

- (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.

b) For 05 modules which **have** been previously inspected in accordance with the requirements of this AD (see Note 1 below):

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

NOTE 1: 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/revised ADs (2006-0073, 2006-0073R1, 2007-0260) are deemed to be valid.

2) Inspection- In shop

a) For 05 modules in-shop which **are not** undergoing strip and overhaul (See Note 3). 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 Revision 2 (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 Terminating Action as detailed in 3) below should be carried out.

b) For 05 modules in-shop which **are** undergoing strip and overhaul carry

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| | <p>out the Terminating Action as detailed in 3) below (See Note 3).</p> <p>3) <u>Terminating Action</u></p> <p>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 either:</p> <ul style="list-style-type: none"> a) RR Modification Service Bulletin RB211-72-F227 original or later approved issue (this is the preferred Terminating Action); or b) RR Modification Service Bulletin RB211-72-F117 original or later approved issue; or c) RR Immediate Operational Request Service Bulletin RB211-72-F048 (only available upon request from RR) original or later approved issue. <p>NOTE 2: The hours and cycles quoted in sections 1 and 2 above refer to those hours and cycles accrued on the 05 module.</p> <p>NOTE 3: 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> <p>NOTE 4: Rolls-Royce Modification Service Bulletin 72-F227 reworks a Turbine Bearing Support Assembly which embodies SB 72-E708 and 72-F117.</p> |
| Ref. Publications: | <p>Rolls-Royce Alert Non Modification Service Bulletin RB211-72-AF045 Revision 2; Rolls-Royce Modification Service Bulletin RB211-72-F117 original issue; Rolls-Royce Immediate Operational Request Service Bulletin RB211-72-F048 original issue, Rolls-Royce Modification Service Bulletin RB211- 72-E708 Revision 2; Rolls-Royce Modification Service Bulletin RB211-72-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: | <ol style="list-style-type: none"> 1. If requested and appropriately substantiated, EASA can approve Alternative Methods of Compliance for this AD. 2. This AD was posted on 24 August 2007 as PAD 07-156 for consultation until 21 September 2007. No comments were received during the consultation period. PAD 09-004, related to this AD but later cancelled, was posted on 07 January 2009 for consultation until 04 February 2009. The Comment Response Document can be found at http://ad.easa.europa.eu. 3. Enquiries regarding this AD should be referred to the Airworthiness Directives, Safety Management & Research Section, Certification Directorate, EASA. E-mail: ADs@easa.europa.eu. 4. For any question concerning the technical content of the requirements in this AD, 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. |