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| <b>EASA</b>                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>NOTIFICATION OF A PROPOSAL TO ISSUE AN<br/>AIRWORTHINESS DIRECTIVE</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                                                                                                                                                                                                                                                                                                                                             | <p><b>PAD No.: 14-140</b></p> <p><b>Date: 10 September 2014</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 product(s) identified below.<br/>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>Design Change Approval Holder's Name:</b></p> <p>ROLLS-ROYCE plc</p>                                                                                                                                                                                                                                                                                                                                                                   | <p><b>Type/Model designation(s):</b></p> <p>RB211 Trent 700 engines</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <p>TCDS Number: EASA.E.042</p>                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <p>Foreign AD: Not applicable</p>                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <p>Supersedure: This AD supersedes EASA AD 2014-0089 dated 15 April 2014.</p>                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>ATA 73</b>                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Engine Fuel and Control – Low Pressure Fuel Tubes and Clips, Fuel Oil Heat Exchanger Mounts – Inspection / Replacement</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Manufacturer(s):                                                                                                                                                                                                                                                                                                                                                                                                                             | Rolls-Royce plc (RR)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Applicability:                                                                                                                                                                                                                                                                                                                                                                                                                               | <p>RB211 Trent 768-60, 772-60, 772B-60 and 772C-60 engines, all serial numbers, if fitted with fuel tube Part Number (P/N) FW53576, which was incorporated through RR modification 73-F343 in production, or by in-service modification in accordance with RR Service Bulletin (SB) RB.211-73-F343.</p> <p>These engines are known to be installed on, but not limited to, Airbus A330 aeroplanes.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Reason:                                                                                                                                                                                                                                                                                                                                                                                                                                      | <p>Fuel leaks from the engine have occurred in-service due to damage to sections of the fan case Low Pressure (LP) fuel tube which runs between the Fuel Oil Heat Exchanger (FOHE) and the High Pressure Fuel Pump. Fretting damage between the securing clips and the tube outer surface has been caused by excessive movement within the system. Previous experience on a similar engine type indicated that this movement was increased by deterioration of the FOHE mounting hardware. The thinning of the tube wall causes the tube to fracture and fuel loss to occur.</p> <p>Fuel leak detection and the associated flight crew procedures can be complex, leading to some flight crews failing to detect and/or address such situations.</p> <p>This condition, if not detected and corrected, could lead to a critical fuel imbalance or in-flight fuel starvation, possibly resulting in engine in-flight shut-down and, consequently, reduced control of the aeroplane.</p> <p>To address this potential unsafe condition, RR issued Non-Modification Service Bulletin (NMSB) RB.211-73-AH522 to provide instructions to detect and replace deteriorated hardware.</p> |

|                                                                                                    | <p>Consequently, EASA issued AD 2014-0089 to require repetitive on-wing and in-shop inspections and, depending on findings, replacement of fan case LP fuel tubes, clips and FOHE mounting hardware.</p> <p>Since that AD was issued, reports were received of a limited number of P-clip tang fractures at clip point 4881 that resulted in fretting and leaks from the LP Fuel tube between the FOHE to LP/HP fuel pump, which occurred prior to the next required inspection in accordance with NMSB RB.211-73-AH522. In all cases it has been reported that the tangs were found broken at the clip point. Prompted by these occurrences, RR published NMSB RB.211-73-AH837 to provide instructions for additional specific visual inspections of the upper P-clip attaching feature and the bracket holding this P-clip to the oil tank, at shorter intervals as those specified in NMSB RB.211-73-AH522.</p> <p>For the reasons described above, this AD retains the requirements of EASA AD 2014-0089, which is superseded, and adds repetitive on-wing inspections of the uppermost clip-stack (P/N CP4881) on the FOHE to fuel pump LP fuel tube (P/N FW53576) and the relevant associated bracket (P/N FW26692) and, depending on findings, accomplishment of the applicable corrective action(s).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                    |                 |                  |                                                                             |                    |                                     |
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| 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>Note: Where in this AD, reference is made to an RR SB or NMSB with an 'A' (Alert) in the number, it should be recognised that an earlier or later revision may not have that 'A'. This kind of change does not effectively alter the publication references for the purpose of this AD.</p> <ol style="list-style-type: none"> <li>(1) Within the compliance time specified in Table 1 of this AD and, thereafter, at intervals not to exceed 4 000 flight hours (FH), accomplish an on-wing inspection of fan case LP fuel tubes P/N FW53576 and the relevant associated clips, and FOHE mounts and associated hardware in accordance with the instructions of RR NMSB RB.211-73-AH522.</li> <li>(2) Inspections on an engine, accomplished before 29 April 2014 [the effective date of EASA AD 2014-0089] in accordance with instructions of RR NMSB RB.211-73-G848 (at any Revision), are acceptable in lieu of the initial inspections as required by paragraph (1) of this AD for that engine.</li> </ol> <p style="text-align: center;">Table 1</p> <table border="1"> <thead> <tr> <th>FH accumulated by the Engine since new, on 29 April 2014 [the effective date of EASA AD 2014-0089]</th><th>Compliance time</th></tr> </thead> <tbody> <tr> <td>3 200 FH or more</td><td>Within 800 FH after 29 April 2014 [the effective date of EASA AD 2014-0089]</td></tr> <tr> <td>Less than 3 200 FH</td><td>Before exceeding 4 000 FH since new</td></tr> </tbody> </table> <ol style="list-style-type: none"> <li>(3) Within 800 FH after the effective date of this AD and, thereafter, at intervals not to exceed 800 FH, visually inspect the uppermost clip-stack (P/N CP4881) on the FOHE to fuel pump LP fuel tubes (P/N FW53576) upper section and the relevant associated bracket (P/N FW26692) in accordance with the instructions of RR NMSB RB.211-73-AH837.</li> <li>(4) From 29 April 2014 [the effective date of EASA AD 2014-0089], during each engine shop visit, inspect the fan case LP fuel tubes P/N FW26589, P/N FW36335, P/N FW26587, P/N FW53576 and P/N FW53577 and the relevant associated clips, and the FOHE mounts and associated hardware, in accordance with the instructions of RR NMSB RB.211-73-AH522.</li> </ol> | FH accumulated by the Engine since new, on 29 April 2014 [the effective date of EASA AD 2014-0089] | Compliance time | 3 200 FH or more | Within 800 FH after 29 April 2014 [the effective date of EASA AD 2014-0089] | Less than 3 200 FH | Before exceeding 4 000 FH since new |
| FH accumulated by the Engine since new, on 29 April 2014 [the effective date of EASA AD 2014-0089] | Compliance time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                    |                 |                  |                                                                             |                    |                                     |
| 3 200 FH or more                                                                                   | Within 800 FH after 29 April 2014 [the effective date of EASA AD 2014-0089]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                    |                 |                  |                                                                             |                    |                                     |
| Less than 3 200 FH                                                                                 | Before exceeding 4 000 FH since new                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                    |                 |                  |                                                                             |                    |                                     |

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|                    | <p>(5) If, during any inspection as required by paragraph (1) or (4) of this AD, any discrepancies (as defined in RR NMSB RB.211-73-AH522) are detected, within the compliance time(s) specified in RR NMSB RB.211-73-AH522 (for on-wing inspection), or before release to service of the engine (for in-shop inspection), as applicable, replace any damaged fan case LP fuel tube(s) and relevant associated clips, and/or any damaged FOHE, in accordance with the instructions of RR NMSB RB.211-73-AH522.</p> <p>(6) If, during any inspection as required by paragraph (3) of this AD, any discrepancies (as defined in RR NMSB RB.211-73-AH837) are detected, accomplish the applicable corrective action(s), depending on findings, as specified in paragraph (6.1) or (6.2) of this AD, as applicable.</p> <p>(6.1) For the clip-stack (P/N CP4881), before next flight, remove the clip, inspect the fuel tube in accordance with the instructions of RR NMSB RB.211-73-AH837, and, depending on condition, replace the affected fan case LP fuel tubes and relevant associated clips in accordance with the instructions of RR NMSB RB.211-73-AH837.</p> <p>(6.2) For the associated bracket (P/N FW26692), within 100 FH after detection of the discrepancy, replace the bracket and inspect the fuel tube in accordance with the instructions of RR NMSB RB.211-73-AH837, and, depending on condition, replace the affected fan case LP fuel tubes and relevant associated clips in accordance with the instructions of RR NMSB RB.211-73-AH837.</p> <p>(7) An in-shop inspection accomplished in accordance with paragraph (4) of this AD is acceptable in lieu of an on-wing inspection as required by paragraph (1) of this AD.</p> <p>(8) Replacement of fan case LP fuel tubes and the relevant associated clips or FOHE mounts and associated hardware with serviceable parts, as required by paragraph (5) or (6) of this AD, as applicable, does not constitute terminating action for the repetitive inspections required by paragraphs (1) and (3) of this AD.</p> |
| Ref. Publications: | <p>Rolls-Royce NMSB RB.211-73-AH522 dated 20 September 2013, or Revision 1 dated 18 March 2014.</p> <p>Rolls-Royce SB RB.211-73-F343 dated 08 November 2006, or Revision 1 dated 14 May 2009, or Revision 2 dated 1 July 2009, or Revision 3 dated 15 July 2009, or Revision 4 dated 26 May 2011.</p> <p>Rolls-Royce NMSB RB.211-73-AH837 dated 09 September 2014.</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"> <li>1. This Proposed AD will be closed for consultation on 08 October 2014.</li> <li>2. Enquiries regarding this PAD should be referred to the Safety Information Section, Certification Directorate, EASA. E-mail: <a href="mailto:ADs@easa.europa.eu">ADs@easa.europa.eu</a>.</li> <li>3. For any question concerning the technical content of the requirements in this PAD, please contact your designated Rolls-Royce representative or download the publication from your Aeromanager account at <a href="http://www.aeromanager.com">www.aeromanager.com</a>.</li> </ol> <p>If you do not have a designated representative or Aeromanager account, please contact Corporate Communications at Rolls-Royce plc., P.O. Box 31, Derby, DE24 8BJ, United Kingdom, telephone: +44 (0) 1332 242424, or</p> <p>send an e-mail through <a href="http://www.rolls-royce.com/contact/civil_team.jsp">http://www.rolls-royce.com/contact/civil_team.jsp</a> identifying the correspondence as being related to <b>airworthiness directives</b>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |