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| EASA | AIRWORTHINESS DIRECTIVE | |
|  | <p>AD No.: 2010-0097</p> <p>Date: 26 May 2010</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 AD applies, except in accordance with the requirements of that AD 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 800 series engines</p> | |
| TCDS Number : | UK CAA 1051 | |
| Foreign AD : | Not applicable | |
| Supersedure : | None | |
| ATA 72 | Engine – Low Pressure Compressor Fan Blades - Inspection | |
| Manufacturer(s): | Rolls-Royce plc | |
| Applicability: | <p>Models RB211 Trent 895-17, 892-17, 892B-17, 884-17, 884B-17, 877-17 and 875-17.</p> <p>These engines are known to be installed on, but not limited to, Boeing 777 series aeroplanes.</p> | |
| Reason: | <p>In January 2009 a Trent 895 powered Boeing 777-200 aircraft experienced release of a Low Pressure (LP) compressor blade which failed due to fatigue cracking in the root section of the blade. The released blade (undercut root standard) had received a part life processing to apply a compression layer to the blade root (Service Bulletin SB72-D672 - Introduction of Laser Shock Peening (LSP)) and also a part life upgrade to the retention feature lubrication system. Investigation has revealed that the effectiveness of this upgraded blade root lubrication coating system may be reduced dependant on the extent of previous running with the earlier standard, leading to increased blade root stress levels. In the specific case of the released blade, a review of its in-service modification history has shown that it operated for a relatively high number of flight cycles prior to the compression layer processing and the new retention feature lubrication system. A review of the Engine Health Monitoring data has also identified it operated at high N1 speeds compared to the Trent 800 fleet average N1 speeds. The combination of these factors has resulted in increased fatigue life usage which is considered to have led to crack initiation and propagation prior to reaching the blades declared life limit. A review of all in-service undercut / LSP</p> | |

| | <p>standard Trent 800 LP compressor blades has identified specific blades that carry a similar increased susceptibility to cracking.</p> <p>This AD is issued to mitigate the risk of possible multiple fan blades failure affecting those blades identified as described above which could lead to high energy non contained debris from the engine.</p> <p>This AD requires repetitive ultrasonic inspections of the specific LP compressor blades as identified in the Rolls Royce Non Modification Service Bulletin (NMSB) RB211-72-AG244 to detect possible root cracks developing in the undercut radius shear key slot area and, if necessary, replacement of any LP compressor blade.</p> | | | | | | | | | | | | | | |
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| Effective Date: | 09 June 2010 | | | | | | | | | | | | | | |
| Required Action(s) and Compliance Time(s): | <p>Required as indicated:</p> <p>(1) Initial Inspection: as specified in the first column of Table 1 (below) inspect the affected LP compressor blades complying with the corresponding thresholds indicated in the second column, in accordance with (i.a.w.) Section 3 "Accomplishment Instructions" of Rolls Royce Non Modification Service Bulletin (NMSB) RB211-72-AG244, rejected LP compressor blades must be removed from the engine before next flight.</p> <p>(2) Repetitive Inspections: following Initial Inspection, repeat the inspection at recurring intervals not exceeding 100 flight cycles and reject, as required, the affected LP compressor blades as detailed in paragraph (1) of this AD.</p> <p>(3) After the thresholds indicated in Table 1 of this AD, do not install any affected LP compressor blade unless previously inspected i.a.w. the requirements of paragraph (1) of this AD and thereafter, repeat the inspection i.a.w. paragraph (2) of this AD.</p> <p style="text-align: center;">Table 1:</p> <table border="1" data-bbox="453 1205 1449 1895"> <thead> <tr> <th data-bbox="453 1205 1077 1328">Appendix number of NMSB RB211-72-AG244 which identifies affected LP compressor blades by Serial Number:</th> <th data-bbox="1077 1205 1449 1328">Initial Inspection threshold</th> </tr> </thead> <tbody> <tr> <td data-bbox="453 1328 1077 1424">3A</td> <td data-bbox="1077 1328 1449 1424">120 Flight Cycles after the effective date of this AD</td> </tr> <tr> <td data-bbox="453 1424 1077 1520">3B</td> <td data-bbox="1077 1424 1449 1520">No later than 1 January 2012</td> </tr> <tr> <td data-bbox="453 1520 1077 1617">3C</td> <td data-bbox="1077 1520 1449 1617">No later than 1 January 2013</td> </tr> <tr> <td data-bbox="453 1617 1077 1713">3D</td> <td data-bbox="1077 1617 1449 1713">No later than 1 January 2014</td> </tr> <tr> <td data-bbox="453 1713 1077 1809">3E</td> <td data-bbox="1077 1713 1449 1809">No later than 1 January 2015</td> </tr> <tr> <td data-bbox="453 1809 1077 1895">3F</td> <td data-bbox="1077 1809 1449 1895">No later than 1 January 2016</td> </tr> </tbody> </table> | Appendix number of NMSB RB211-72-AG244 which identifies affected LP compressor blades by Serial Number: | Initial Inspection threshold | 3A | 120 Flight Cycles after the effective date of this AD | 3B | No later than 1 January 2012 | 3C | No later than 1 January 2013 | 3D | No later than 1 January 2014 | 3E | No later than 1 January 2015 | 3F | No later than 1 January 2016 |
| Appendix number of NMSB RB211-72-AG244 which identifies affected LP compressor blades by Serial Number: | Initial Inspection threshold | | | | | | | | | | | | | | |
| 3A | 120 Flight Cycles after the effective date of this AD | | | | | | | | | | | | | | |
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| 3D | No later than 1 January 2014 | | | | | | | | | | | | | | |
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| 3F | No later than 1 January 2016 | | | | | | | | | | | | | | |

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| Ref. Publications: | Rolls-Royce RB211 Propulsion System Non Modification Service Bulletin RB211-72-AG244 Initial issue. The use of later approved revisions is acceptable for compliance with the requirements of this AD. |
| 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 23 March 2010 as PAD 10-030 for consultation until 20 April 2010. No comments were received during the consultation period.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. PO Box 31, Derby, DE24 8BJ, United Kingdom. Phone: +44 (0) 1332 242424, Fax: +44 (0) 1332 249936. Email: tech.help@rolls-royce.com or download the publication from https://www.aeromanager.com. |

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