EASA	AIRWORTHINESS DIRECTIVE
	AD No.: 2012-0025 **Date: 08 February 2012** 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.

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].

Type Approval Holder's Name :	**Type/Model designation(s) :**
Rolls-Royce plc	RB211 Trent 800 series engines

TCDS Number:	United Kingdom 1051
Foreign AD:	Not applicable
Supersedure:	This AD supersedes EASA AD 2010-0097 dated 26 May 2010.

ATA 72	**Engine – Low Pressure Compressor Fan Blades – Inspection / Replacement**
Manufacturer(s):	Rolls-Royce plc
Applicability:	RB211 Trent 895-17, 892-17, 892B-17, 884-17, 884B-17, 877-17 and 875-17 engines, all serial numbers. These engines are known to be installed on, but not limited to, Boeing 777 series aeroplanes.
Reason:	In January 2009, a Trent 895 powered Boeing 777-200 aeroplane experienced release of a Low Pressure (LP) compressor blade which had 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 RB211-72-D672 - Introduction of Laser Shock Peening (LSP)) and also a part life upgrade to the retention feature lubrication system. Investigation 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 resulted in increased fatigue life usage which is considered to have led to crack initiation and propagation prior to reaching the blade's declared life limit. A review of all in-service undercut / LSP standard Trent 800 LP compressor blades was done, which identified specific blades that

	carry a similar increased susceptibility to cracking. This condition, if not detected and corrected, could lead to multiple fan blade failure, possibly resulting in release of high energy non contained debris from the engine. To address this potential unsafe condition, EASA AD issued 2010-0097 to require repetitive inspections of the affected LP compressor fan blades to detect possible root cracks in the undercut radius shear key slot area and, depending on findings, replacement of LP compressor fan blades. Since that AD was issued, a root crack was discovered in a fan blade which was not predicted to crack until at a higher life. Prompted by this finding, more blades have been identified to be affected by this potential unsafe condition, listed by serial number (s/n) in Appendix 3 of Rolls Royce Non Modification Service Bulletin (NMSB) RB211-72-AG244 Revision 4 (hereafter referred to as the SB). For the reasons described above, this AD retains the requirements of EASA AD 2010-0097, which is superseded, expands the applicability by adding certain LP compressor fan blades listed in Appendix 3 of the SB, and reduces the compliance time for the initial inspection.
Effective Date:	13 February 2012
Required Action(s) and Compliance Time(s):	Required as indicated, unless previously accomplished: (1) Initially, within the compliance time specified in Table 1 of this AD, as applicable, and thereafter at intervals not exceeding 100 flight cycles (FC), inspect each affected LP compressor blade in accordance with the instructions of Section 3 of the SB. (2) If, during any inspection as required by paragraph (1) of this AD, cracks are detected in a LP compressor fan blade, before next flight, replace the affected LP compressor blade with a serviceable blade. (3) Inspections and corrective actions accomplished prior to the effective date of this AD, in accordance with the instructions of the SB at original issue, Revision 1, Revision 2, or Revision 3, are acceptable to comply with the initial requirements of paragraphs (1) and (2) of this AD. After the effective date of this AD, all inspections must be accomplished in accordance with the instructions of the SB at Revision 4. (4) From the effective date of this AD, do not install a LP compressor fan blade, identified by s/n in Appendix 3 of the SB, in any engines, unless in compliance with the requirements of this AD.

Table 1 – Initial Inspection Compliance Time

Affected LP compressor blades listed by s/n in the SB, Appendix number:	**Initial Inspection threshold, after the effective date of this AD**
3A and 3B	70 FC
3C	Within 10 months
3D	Within 22 months
3E	Within 34 months
3F	Within 46 months
3G	Within 58 months
3H	Within 70 months
3I	Within 82 months
3J	Within 94 months
3K	Within 106 months
3L	Within 118 months

Ref. Publications:	Rolls-Royce RB211 Propulsion System NMSB RB211-72-AG244 Revision 4, dated 22 December 2011. The use of later approved revisions of this document is acceptable for compliance with the requirements of this AD.
Remarks :	1. If requested and appropriately substantiated, EASA can approve Alternative Methods of Compliance for this AD. 2. The required actions and the risk allowance have granted the issuance of a Final AD with Request for Comments, postponing the public consultation process after publication. 3. Enquiries regarding this AD should be referred to the Safety Information Section, Executive 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., P.O. Box 31, Derby, DE24 8BJ, The United Kingdom. Telephone: +44 (0) 1332 242424, Fax: +44 (0) 1332 249936. Email: tech.help@rolls-royce.com or download the publication from https://www.aeromanager.com.