

EASA	AIRWORTHINESS DIRECTIVE
	AD No.: 2010-0242R1 Date: 21 December 2010 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 : ROLLS-ROYCE PLC	Type/Model designation(s) : RB211 Trent 900 series engines
TCDS Number : EASA.E.012	
Foreign AD : Not applicable	
Revision: This AD revises EASA AD 2010-0242-E dated 22 November 2010; the original issue of this AD superseded EASA AD 2010-0236-E dated 10 November 2010.	
ATA 72	Engine – High Pressure / Intermediate Pressure (HP/IP) Structure – Inspections
Manufacturer(s): Rolls-Royce plc	
Applicability:	RB211 Trent 900 series engines, variants RB211 Trent 970-84, RB211 Trent 970B-84, RB211 Trent 972-84, RB211 Trent 972B-84, RB211 Trent 977-84, RB211 Trent 977B-84 and RB211 Trent 980-84, all serial numbers. These engines are known to be installed on, but not limited to, Airbus A380 series aeroplanes.
Reason:	An uncontained engine failure has recently occurred on a Rolls-Royce RB211 Trent 900 involving release of high energy debris and resulting in damage to the aeroplane. Analysis of the preliminary elements from the incident investigation shows that an oil fire in the High Pressure / Intermediate Pressure (HP/IP) structure cavity may have initiated a sequence of events leading to rupture of the drive arm of the IP Turbine (IPT) disc and subsequent overspeed and burst of that same disc. This condition, if not detected and corrected, could lead to additional uncontained engine failures, possibly resulting in damage to the aeroplane and injury to persons on the ground. Pending conclusion of the investigation, EASA issued AD 2010-0242-E, which superseded AD 2010-0236-E, requiring repetitive inspections of the Low Pressure Turbine (LPT) case drain, HP/IP structure air buffer cavity and oil service tubes in order to detect any abnormal oil leakage, and if any discrepancy was found, prohibiting further engine operation. Further progress of the on-going investigation shows that the most probable primary failure was the oil feed tube fracture initiated by thin wall section,

	leading to an oil leak and fire. This thin wall section has now been confirmed to have originated during the manufacturing process. Manufacturing and inspection data, and stress analysis performed by Rolls-Royce, now confirm that oil feed tubes with a defined minimum thin wall section feature a higher life and lower risk of fracture. This AD is therefore revised to extend the inspection threshold and interval requirements for engines where the HP/IP structure is within the population assessed as being at lower risk. The requirements of this AD are considered as interim action. If, as a result of the on-going incident investigation, a terminating action is later identified, further mandatory actions might be considered.
Effective Date:	Revision 1: 21 December 2010 Original issue: 23 November 2010
Required Action(s) and Compliance Time(s):	Required as indicated, unless accomplished previously: (1) Within the compliance times indicated in Appendix 1 of this AD, accomplish inspections in accordance with the instructions of Rolls-Royce Non Modification Service Bulletin (NMSB) 72-AG590 Revision 4, Section 3, paragraphs 3.A or 3.B, as applicable to the engine configuration. (2) Inspections accomplished prior to the effective date of this revised AD, in accordance with the instructions of Rolls-Royce NMSB 72-AG590 prior to Revision 4, are acceptable to comply with the initial inspections required by paragraph (1) of this AD. After the effective date of this AD, all inspections must be accomplished in accordance with the instructions of Rolls-Royce NMSB 72-AG590 at Revision 4. (3) If a discrepancy is found during any inspection as required by paragraph (1) of this AD, except as specified in paragraph (4.1) of this AD, further operation of the affected engine is prohibited. (4) If the result of an inspection, as required by paragraph (1) of this AD, indicates that [as specified in Rolls-Royce NMSB 72-AG590 Revision 4] <i>"continued operation is acceptable subject to authorisation from Rolls-Royce"</i>, before further operation of the engine, contact Rolls-Royce for an assessment, and: (4.1) If Rolls-Royce determine that the engine condition is acceptable, this is not a discrepancy and further operation of the affected engine is allowed. (4.2) If Rolls-Royce determine that the engine condition is not acceptable, this is a discrepancy and further operation of the affected engine is prohibited. (5) If any discrepancy is found during an inspection as required by paragraph (1) of this AD, within one day after the inspection, report the findings to Rolls-Royce. (6) From the effective date of this AD, do not operate an engine on an aeroplane, unless it has been inspected in accordance with the requirements of this AD.
Ref. Publications:	Rolls-Royce RB211 Trent 900 Alert NMSB 72-AG590 Revision 4 dated 20 December 2010. 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 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: Your designated Rolls-Royce representative or download the publication from your Aeromanager account at www.aeromanager.com. If you do not have a designated representative or Aeromanager account, please contact Corporate Communications at Rolls-Royce plc. PO Box 31, Derby, DE24 8BJ, United Kingdom. Phone: +44 (0) 1332 242424, or e-mail from http://www.rolls-royce.com/contact/civil_team.jsp identifying the correspondence as being related to Airworthiness Directives.
--	---

Appendix 1 – Compliance Times

Engine Configuration		Compliance time	
		Initial Threshold	Repetitive Interval
Engines incorporating HP/IP structure serial numbers identified in Appendix 1 of Rolls-Royce NMSB 72-AG590 Revision 4	On-wing	Within 10 flight cycles (FC) after 10 November 2010 [the effective date of AD 2010-0236-E]	At intervals not exceeding 20 FC
	Un-installed	After engine installation and before next flight	
	In-shop	After the engine test procedure and before next flight	
Engines NOT incorporating HP/IP structure serial numbers identified in Appendix 1 of Rolls-Royce NMSB 72-AG590 Revision 4	On-wing, for engines previously inspected to any revisions of Rolls-Royce NMSB 72-AG590 prior to Revision 4	Within 100 FC of the previous inspection, or at an HP/IP structure life no greater than 200 cycles since new, whichever occurs later	At intervals not exceeding 100 FC
	On-wing, for engines NOT previously inspected to any revisions of Rolls-Royce NMSB 72-AG590 prior to Revision 4	At an HP/IP structure life no greater than 200 FC since new	
	In-shop, where the life of the HP/IP structure is greater than 200 FC since new.	After the engine test procedure and before next flight	