United Kingdom Civil Aviation Authority

AIRWORTHINESS DIRECTIVE

AD No: G-2004-0027

Issue Date: 19 November 2004

This AD is issued by the UK CAA acting for and on behalf of the European Aviation Safety Agency as the Primary Aviation Authority (ICAO Annex 8 Authority of State of Design) for the affected product(s).

Approved by the European Aviation Safety Agency under approval number 2004-11146 on 18 November 2004 .

In accordance with Article 9(7)(b) of the Air Navigation Order 2000 as amended the following action required by this Airworthiness Directive (AD) is mandatory for applicable aircraft registered in the United Kingdom.
No person may operate an aircraft to which an AD applies except in accordance with the requirements of that AD unless otherwise agreed with the Authority of the State of Registry.

Type Approval Holders Name:	Type/Model Designation(s):
ROLLS-ROYCE PLC	**RB211-535**

Type Certificate Data Sheet No: 1044 and 1049

Superseded AD: 003-12-99

ATA 72 – HIGH PRESSURE TURBINE (HPT) – INSPECTION

Manufacturer(s): Rolls-Royce plc

Applicability: Model RB211-535 Series engines installed on Boeing 757 and Tupolev Tu-204 aeroplanes.

Reason: This Airworthiness Directive (AD) has been issued as a result of a recent finding of cracking on a RB211 High Pressure Turbine Disc that had propagated further than expected based on the risk model used to define the inspection thresholds defined in previous Mandatory NMSB 72-C817 (CAA AD 003-12-99).

A certain population of HP turbine discs that were manufactured between 1989-1999 and which were subject to possible machining anomalies are now believed to have an increased chance of suffering from cooling air hole cracking compared to the general fleet 1989-1999 disc population. The serial numbers of the RB211-535 discs that are in this subset are listed separately in this AD and have lower cyclic inspection thresholds than the general fleet population.

An HP turbine disc fracture would be uncontained and create a potential unsafe condition.

This AD introduces revised inspection thresholds and compliance times to reflect the increased risk of HP turbine disc cracking and potential disc fracture.

Effective Date: 22 November 2004

Compliance:

1) Carry out an Eddy Current Inspection (ECI), as defined below in “Action”, of the HPT discs listed in Appendix 1 of this AD in accordance with the following schedule:

   (a) If disc cycles since new were greater than 12,750 cycles on 8 October 2004, then inspect the disc within 250 cycles from 8 October 2004 or 14500 cycles since new whichever is sooner.

   (b) If disc cycles since new were above 10,500 cycles and less than 12,750 cycles on 8 October 2004, then inspect within 500 cycles from 8 October 2004.

   (c) If disc cycles since new were less than 10,500 cycles on 8 October 2004, then inspect the disc prior to 11,000 cycles since new or at next shop visit, whichever occurs first.

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2) Carry out an ECI, as defined below in ”Action”, of the HPT discs listed in Appendix 2 of this AD in accordance with the following schedule:

(a) For those HPT discs with a life less than 13,700 cycles on the 29 January 2001, inspect the discs prior to reaching 14,500 cycles or at next shop visit after the effective date of this AD, whichever occurs first.

(b) Inspect HPT discs with a life greater than 13,700 cycles on the 29 January 2001 at whichever occurs first of the following:

(i) Prior to reaching 15,300 cycles
(ii) Within 800 cycles from 29 January 2001
(iii) At the next shop visit where the HP Turbine rotor is removed from the Combustor Outer Case.

Note:

1. For the purposes of this AD, next shop visit is defined as the first shop visit opportunity when the HPT rotor is removed from the combustion case.

2. The requirements of the AD should not be applied to HP turbine discs until they have achieved 1500 cycles since new.

3. Any engine which is undergoing a shop visit at the effective date of this AD and the HPT rotor has been removed from the Combustor Outer Case and has not yet been refitted to the engine should be inspected in accordance with this AD prior to return to service. An HPT rotor which has been refitted at the effective date of this AD, need not be inspected at that time.

4. If a disc has previously been inspected at less than 1500 cycles since new, then that disc will require re-inspection in accordance with the requirements of this AD.

5. If a disc has previously passed inspection to NMSB 72-C817 (CAA AD 003-12-99) or a focussed inspection carried out in accordance with Rolls-Royce TS 594-J Overhaul Process Manual Task 70-00-00-200-223 at greater than 1500 cycles since new, then either of these inspections satisfies the inspection requirements of this AD.

Action:

CAUTION: DO NOT INSERT ANY HARD OR SHARP OBJECT INTO AIR COOLING HOLES. THIS MAY DAMAGE THE HOLE AND COULD INITIATE CRACKING. CLEANING OF THE HOLES SHOULD ONLY BE DONE IN ACCORDANCE WITH THE NORMAL PRIMARY CLEANING PROCEDURES. ANY RESIDUAL DEBRIS SHOULD BE REMOVED BY REPEATING THE CLEANING PROCEDURE.

A. Thoroughly clean the HP turbine disc in accordance with the Primary Cleaning instructions in the Rolls-Royce Engine Manual (72-41-51).

B. Inspect HP turbine discs in accordance with the inspection technique detailed in Rolls-Royce TS 594-J Overhaul Process Manual Task 70-00-00-200-223.

C. On successful completion of the inspection, permanently etch, SB 72-AE651 onto the HP turbine disc adjacent to the part number.

D. Record accomplishment of this AD and Alert Service Bulletin, SB 72-AE651 along with the HP turbine disc cycles since new in the 04 Module Log Card.

Reference Publications: Rolls-Royce Alert Service Bulletin, SB 72-AE651.

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Remarks: Enquiries regarding this Airworthiness Directive should be directed to the United Kingdom Civil Aviation Authority, Safety Regulation Group, Propulsion Department, Aviation House, Gatwick Airport South, West Sussex, RH6 0YR. Phone: +44(0) 1293 573856 Fax:+44(0) 1293 573979 E-mail: paul.camplisson@srg.caa.co.uk.

Appendix 1

List of affected discs with an increased chance of suffering from machining anomalies.

Part No	Serial No.	Part No	Serial No.
LK80623	CQDY6397	UL27681	LDRCZ11893
LK80623	CQDY6504	UL27681	LDRCZ12893
UL27680	CQDY6451	UL27681	LDRCZ12985
UL27680	CQDY6452	UL27681	LDRCZ13044
UL27680	CQDY6466	UL27681	LDRCZ13047
UL27680	CQDY6468	UL27681	LQDY6803
UL27680	CQDY6471	UL27681	LQDY6814
UL27680	CQDY6496	UL27681	LQDY6847
UL27680	CQDY6505	UL27681	LQDY6868
UL27680	CQDY6653	UL27681	LQDY6875
UL27680	CQDY6656	UL27681	LQDY6892
UL27680	CQDY6657	UL27681	LQDY6898
UL27680	CQDY6684	UL27681	LQDY6904
UL27680	CQDY6883	UL27681	LQDY6909
UL27681	CQDY6465	UL27681	LQDY6910
UL27681	LAQDY6002	UL27681	LQDY9133
UL27681	LAQDY6083	UL27681	LQDY9574
UL27681	LAQDY6087	UL27681	LQDY9579
UL27681	LDRCZ10247	UL27681	LQDY9672
UL27681	LDRCZ10277	UL27681	LQDY9770
UL27681	LDRCZ10318	UL27681	LQDY9783
UL27681	LDRCZ10335	UL27681	LQDY9786
UL27681	LDRCZ10430	UL27681	LQDY9900
UL27681	LDRCZ10531	UL27681	LQDY9902
UL27681	LDCRZ10750	UL27681	LQDY9929
UL27681	LDRCZ10899	UL27681	LQDY9957
UL27681	LDRCZ11616	UL27681	LQDY9982
UL27681	LDRCZ11720	UL27681	LQDY9992
		UL27681	WGQDY0005

Appendix 2

List of affected discs manufactured between 1989 and 1999.

Part No.	Serial No
UL10323	CQDY6070 onwards
UL27680	All Discs
UL27681	All Discs
LK80622	LQDY6316 onwards
LK80623	CQDY5945 onwards
UL28267	All Discs

Note: This Airworthiness Directive was originally issued as an Emergency AD on 19 November 2004.