



## Airworthiness Directive Cancellation Notice

**AD No.:** 2009-0051-CN

**Issued:** 15 April 2016

Note: This Airworthiness Directive (AD) Cancellation Notice (CN) is issued by EASA, acting in accordance with Regulation (EC) 216/2008 on behalf of the European Union, its Member States and of the European third countries that participate in the activities of EASA under Article 66 of that Regulation.

**Design Approval Holder's Name:**

ROLLS-ROYCE plc

**Type/Model designation(s):**

RB211 Trent 900 engines

**Effective Date:** 15 April 2016

**TCDS Number(s):** EASA.E.012

**Foreign AD:** Not applicable

**Cancellation:** This Notice cancels EASA AD 2009-0051 dated 05 March 2009.

### ATA 72 – CANCELLED: Engine – High Pressure Turbine Nozzle Guide Vane Convex Surface – Inspection

**Manufacturer(s):**

Rolls-Royce plc (RR)

**Applicability:**

RB211 Trent 970-84, 970B-84, 972-84, 972B-84, 977-84, 977B-84 and 980-84 engines, except those which incorporate RR modification (mod) 72-G025, or Service Bulletin (SB) RB.211-72-G025.

These engines are known to be installed on, but not limited to, Airbus A380 aeroplanes.

**Reason:**

Evidence from development testing and flight test Trent 900 engines identified cracking on some high pressure turbine (HPT) nozzle guide vane (NGV) convex surfaces. Subsequent analysis of test data and review of the manufacturing process revealed compounding effects that could contribute to a shortfall in component life and an increased likelihood of premature cracking in this region. It was determined that not all NGV assemblies were affected, and it was believed that the problem would manifest itself below 1 000 cycles.

This condition, if not detected and corrected, could lead to release of NGV material or blockage of the turbine gas flow, possibly resulting in fracture of HP turbine blades, with consequent loss of engine power or in-flight shut-down (IFSD), or consequent damage to the aeroplane.



To address this potential unsafe condition, RR issued Alert Non Modification Service Bulletin (NMSB) RB.211-72-AF995 Revision 1, and EASA issued AD 2008-0202 to require repetitive inspections of the HPT NGV convex surfaces and, depending on findings, accomplishment of applicable corrective action(s).

After that AD was issued, RR inspected several sets of HPT NGV's returning from service, and determined that tighter limits were needed on some dimensions for some types of damage. It was also determined that relaxed inspection intervals could be allowed for some type of damage, or when no damage was found. These new limits were defined in updated Table 1 and Table 2 in section 3.B of RR Alert NMSB RB.211-72-AF995 Revision 2. RR also introduced a new standard of HPT NGV's with mod 72-G025, that increased the cooling flow of the aerofoils by enlarging the cooling hole diameters. This modification, available for in-service application as SB RB.211-72-G025, significantly reduced the risk of aerofoil cracking and material release, thereby deleting the need for inspection beyond normal maintenance procedures.

Consequently, EASA issued AD 2009-0051, retaining the requirements of EASA AD 2008-0202, which was superseded, but introduced revised inspection limits, as specified in RR Alert NMSB RB.211-72-AF995 Revision 2, while the Applicability was reduced to exclude Trent 900 engines which incorporated mod 72-G025 or SB RB.211-72-G025.

Since that AD was issued, all affected engines have been modified by replacement of their HPT NGV's with post-mod/SB 72-G025 NGV's. In addition, it has been determined that all pre-mod/SB 72-G025 HPT NGV's have been scrapped, providing evidence that no pre-mod/SB 72-G025 HPT NGV can be reinstalled on an engine. As a consequence, the unsafe condition addressed by EASA AD 2009-0051 does not exist anymore and can no longer develop.

For the reasons described above, this Notice cancels EASA AD 2009-0051.

**Required Action(s) and Compliance Time(s):**

None.

**Ref. Publications:**

Rolls-Royce Alert NMSB RB.211-72-AF995 Revision 2, dated 09 February 2009.

**Remarks:**

1. This AD-CN was posted on 18 February 2016 as PAD 16-026-CN for consultation until 17 March 2016. No comments were received during the consultation period.
2. Enquiries regarding this AD-CN should be referred to the EASA Safety Information Section, Certification Directorate. E-mail: [ADs@easa.europa.eu](mailto:ADs@easa.europa.eu).
3. For any question concerning the technical content of this AD-CN, please contact your designated Rolls-Royce representative, or download the publication from your Rolls Royce Care account at <https://customers.rolls-royce.com>.

If you do not have a designated representative or Rolls Royce Care account, please contact **Corporate Communications** at **Rolls-Royce plc**, P.O. Box 31, Derby, DE24 8BJ, United Kingdom Telephone +44 (0)1332 242424,



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