Airworthiness Directive

AD No.: 2018-0079

Issued: 11 April 2018

Note: This Airworthiness Directive (AD) 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.

This AD is issued in accordance with Regulation (EU) 748/2012, Part 21.A.3B. In accordance with Regulation (EU) 1321/2014 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 [Regulation (EU) 1321/2014 Annex I, Part M.A.303] or agreed with the Authority of the State of Registry [Regulation (EC) 216/2008, Article 14(4) exemption].

Design Approval Holder's Name:
ROLLS-ROYCE DEUTSCHLAND Ltd & Co KG

Type/Model designation(s):
Tay 650-15 and Tay 651-54 engines

Effective Date: 25 April 2018

TCDS Number(s): EASA.E.063

Foreign AD: Not applicable

Supersedure: This AD supersedes EASA AD 2017-0217 dated 08 November 2017.

ATA 72 – Engine – Low Pressure Compressor Fan Blades – Identification / Replacement

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Manufacturer(s):
Rolls-Royce plc.

Applicability:
Tay 650-15 and Tay 651-54 engines, all manufacturer serial numbers (s/n), equipped with low pressure compressor (LPC) module M01300AA or M01300AB.

Definitions:
For the purpose of this AD, the following definitions apply:

The NMSB: Rolls Royce Deutschland (RRD) Alert Non Modification Service Bulletin (NMSB) TAY-72-A1833 Revision 1.

Groups: Group 1 engines are those equipped with an LPC fan blade, identified by Part Number (P/N) JR31911, P/N JR33865, or P/N JR33866, and having an s/n as listed in Appendix 1 of the NMSB. Group 2 engines are all other engines.

Reason:

Fractures of LPC fan blade retention lugs were reported on engines that had been subjected to a high number of Dry Film Lubrication (DFL) treatments. Subsequent investigation determined that this had exposed the retention lugs of the affected LPC (fan) blades to excessively high stress cycles.

This condition, if not detected and corrected, could lead to failure of LPC fan blade retention lug(s), high vibration, reduced thrust or in-flight shut down, possibly resulting in reduced control of the aeroplane.

To address this potential unsafe condition, RRD issued original issue of Alert NMSB TAY-72-A1833 to provide identification and replacement instructions and EASA issued AD 2017-0217 to require determination of the number of DFL treatments applied to the LPC fan blades and, based on that determination, fan blade(s) replacement. That AD also introduced the maximum allowable number of DFL treatments applicable to the LPC fan blades.

Since that AD was issued, RRD issued the NMSB to update the calculation methodology which was provided to determine the number of DFL treatments, in case that number could not be identified from the engine maintenance records. The new calculation methodology, compared with the methodology provided in the original issue of the RRD Alert NMSB TAY-72-A1833 can lead, in some cases of LPC fan blades with Tay 651-54 operation history, to earlier replacement of blades.

For the reasons described above, this AD retains the requirements of EASA AD 2017-0217, which is superseded, but refers to an updated alternative method to determine the number of DFL treatments.

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

Required as indicated, unless accomplished previously:

Determination:

(1) For Group 1 and Group 2 engines: Within 30 days after 22 November 2017 [the effective date of AD 2017-0217], determine the number of applications of DFL treatment on each LPC fan blade by reviewing the engine maintenance records, or by using the alternative method specified in, and in accordance with, the instructions of the NMSB.

(2) For Group 1 and Group 2 engines for which, before the effective date of this AD, the alternative method to determine the number of applications of DFL treatment on a LPC fan blade was used in accordance with the instructions of the original issue of the RRD Alert NMSB TAY-72-A1833: Within 30 days after the effective date of this AD, recalculate the number of applications of DFL treatments on each LPC fan blade in accordance with the instructions of the NMSB.

Corrective Action(s):

(3) If it is determined, as required by paragraph (1) or (2) of this AD, as applicable, that the number of DFL treatments is less than 13, during the next LPC fan blade removal after the effective date of this AD, identify the affected LPC blade by applying a specific suffix code mark on the blade dovetail root in accordance with the instructions of the NMSB.

(4) For Group 1 engines: If it is determined, as required by paragraph (1) of this AD, that the number of DFL treatments is 13 or more, but less than 20, within 500 flight hours (FH) after 22 November 2017 [the effective date of AD 2017-0217], accomplish the applicable corrective action(s) in accordance with the instructions of the NMSB, to ensure that no LPC fan blade with 13 to 19 (inclusive) DFL treatments is installed on more than one engine on the same aeroplane.

(5) If it is determined, as required by paragraph (1) or (2) of this AD, as applicable, that the number of DFL treatments is equal to or more than the value as defined in Table 1 of this AD, as applicable, within the compliance time defined in Table 1 of this AD, remove each affected LPC fan blade from service and replace it with a serviceable part in accordance with the instructions of the NMSB.

Table 1 – Fan Blade Replacement

Group	DFL treatments	Compliance time
1	20	Within 500 FH after 22 November 2017 [the effective date of AD 2017-0217]
2	13	Within 500 FH after the effective date of this AD

(6) For Group 2 engines for which the maintenance programme includes DFL treatment: Within 30 days after 22 November 2017 [the effective date of AD 2017-0217] contact RRD for approved instructions and, within the compliance time indicated in those instructions, accomplish those instructions accordingly.

Parts Installation:

(7) From 22 November 2017 [the effective date of AD 2017-0217], it is allowed to install on any engine an affected LPC fan blade, or an LPC module M01300AA or M01300AB, or to install an engine equipped with an affected LPC fan blade or LPC module M01300AA or M01300AB, on an aeroplane, provided that the LPC fan blade passed an assessment and identification in accordance with the instructions of the NMSB, and that, following installation, the LPC fan blade is replaced before exceeding 12 DFL treatments.

(8) From 22 November 2017 [the effective date of AD 2017-0217], do not install on any engine an LPC fan blade that has received 13 DFL treatments or more.

Ref. Publications:

RRD Alert NMSB TAY-72-A1833 original issue dated 18 September 2017, and Revision 1 dated 08 January 2018.

The use of later approved revisions of above-mentioned 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. This AD was posted on 08 February 2018 as PAD 18-020 for consultation until 08 March 2018 and re-published on 26 March 2018 as PAD 18-020R1 for consultation until 09 April 2018. The Comment Response Document can be found in the EASA Safety Publications Tool, in the compressed (zipped) file attached to the record for this AD.

3. Enquiries regarding this AD should be referred to the EASA Safety Information Section, Certification Directorate. E-mail: ADs@easa.europa.eu.

4. For any question concerning the technical content of the requirements in this AD, please contact: Rolls-Royce Deutschland Ltd & Co KG, Eschenweg 11, Dahlewitz, 15827 Blankenfelde-Mahlow, Germany, Telephone: +49 (0) 337086 1200, E-mail: rrd.techhelp@rolls-royce.