



## Notification of a proposal to issue an Airworthiness Directive

**PAD No.: 16-176**

**Issued: 19 December 2016**

Note: This Proposed Airworthiness Directive (PAD) 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.

In accordance with the EASA Continuing Airworthiness Procedures, the Executive Director is proposing the issuance of an EASA Airworthiness Directive (AD), applicable to the aeronautical product(s) identified below.

All interested persons may send their comments, referencing the PAD Number above, to the e-mail address specified in the 'Remarks' section, prior to the consultation date indicated.

### Design Approval Holder's Name:

Rolls-Royce Deutschland Ltd & Co KG

### Type/Model designation(s):

Spey 500 series engines

**Effective Date:** [TBD – standard: 14 days after AD issue date]

**TCDS Number(s):** EASA.E.064

**Foreign AD:** Not applicable

**Supersedure:** None

### ATA 72 – Engine – High Pressure Compressor Stage 12 Rotor Discs – Service Life Recalculation

#### Manufacturer(s):

Rolls-Royce plc (RR)

#### Applicability:

Spey 506-14A engines (see Note 1), all engine serial numbers (ESN), and Spey 555-15 engines, all models, all ESN.

These engines are known to be installed on, but not limited to, BAC One Eleven 200 series, Fokker F28 Mark 1000, Fokker F28 Mark 2000, Fokker F28 Mark 3000 and Fokker F28 Mark 4000 series aeroplanes.

Note 1: Type Certificate EASA.A.188, applicable to BAC One Eleven series 200, 300, 400, 500 and 475 was surrendered on 12 February 2010. As a consequence, in accordance with Regulation (EC) No 216/2008 of the European Parliament and of the Council, BAC One Eleven aeroplanes registered in an EU Member State are no longer eligible for an EASA Certificate of Airworthiness. However, it cannot be excluded that some Spey 506 engines are still in operation outside Europe.



**Reason:**

Based on revised stress analysis and life calculation, Rolls-Royce Deutschland (RRD) determined new provisional life limits for high pressure compressor (HPC) stage 12 rotor discs, Part Number (P/N) EU25917, P/N EU56963, P/N JR10242 and P/N JR18449, reducing the maximum approved life limits currently defined in the RRD Spey 555 Maintenance Manual (MM), Chapter 5-10-1, currently at the revision dated 15 July 2015. The Spey 506-14A MM already contains the applicable life limit.

Failure to replace an affected HPC stage 12 rotor disc before exceeding these limits, could lead to an uncontained engine failure, possibly resulting in damage to, and/or reduced control of, the aeroplane.

To address this potential unsafe condition, RRD issued Alert Non-Modification Service Bulletin (NMSB) Sp72-A1071 to provide instructions to determine (re-calculate) the consumed and remaining service life for each part.

For the reasons described above, this AD requires re-calculation of the service life (consumed and remaining) of the affected HPC stage 12 rotor discs and, depending on the results, implementation of the life limits. It is expected that the affected reduced life limits are introduced into a next revision of the RRD Spey 555 Engine MM.

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

Required as indicated, unless accomplished previously:

Note 2: HPC stage 12 rotor discs having P/N EU25917, P/N EU56963, P/N JR10242 or P/N JR18449, are hereafter collectively referred to as 'affected part' in this AD.

Note 3: RRD Alert NMSB Sp72-A1071 dated 08 December 2016 is hereafter referred to as 'the NMSB' in this AD. RRD Spey 506-14A MM revision dated October 1993 is hereafter referred as 'the applicable MM'

Note 4: For the purpose of this AD, a serviceable part is an affected part (see Note 2 of this AD) that has not exceeded the existing (for Spey 506) or reduced (for Spey 555-15) life limits.

**Consumed Service Life Re-calculation:**

- (1) Within 30 days after the effective date of this AD, for each affected part, accomplish the actions as required by paragraphs (1.1) and (1.2) of this AD, in accordance with the instructions of the NMSB.
  - (1.1) Determine the operational history of the part, whether it has been installed in both Spey 506-14A and Spey 555-15 series engines or was operated in different Spey 555-15 series take-off monitoring procedures.
  - (1.2) If it is determined, as required by paragraph (1.1) of this AD, that the affected part has been installed in both Spey 506-14A and Spey 555-15 series engines or was operated in different Spey 555-15 series take-off monitoring procedures, re-calculate the consumed (and remaining) service life of the affected part, as applicable to engine operation.



- (2) From the effective date of this AD, each time when an affected part is installed in an engine or changes the Spey 555-15 series take-off monitoring procedures, determine the operational history of the part and re-calculate the consumed (and remaining) service life of the affected part in accordance with the instructions of the NMSB.

#### **Life Limit Implementation / Part Replacement:**

- (3) Spey 506-14A engines:

From the effective date of this AD, before the re-calculated service life of the affected part, as required by paragraph (1) or (2) of this AD, exceeds the life limit as defined in the 'applicable MM' or 50 flight cycles (FC) or 30 days after the effective date of this AD, whichever occurs later, replace each affected part with a serviceable part (see Note 4 of this AD) in accordance with the instructions of the NMSB.

- (4) Spey 555-15 series engines:

Initially, within the compliance time as defined in Table 1 of this AD, replace each affected part with a serviceable part (see Note 4 of this AD) in accordance with the instructions of the NMSB.

Table 1 – HPC stage 12 rotor disc Initial Replacement – Spey 555-15 series engines in service

<b>Compliance Time (A or B whichever occurs first)</b>	
A	Before exceeding the threshold(s) ("provisional life limits") defined in the NMSB, as applicable, or 200 FC or 90 days after the effective date of this AD, whichever occurs later
B	Before exceeding the threshold(s) ("maximum approved lives") defined in the NMSB

- (5) All engines:

After the initial replacement as required by paragraph (3) or (4) of this AD, as applicable, replace each affected part with a serviceable part (see Note 4 of this AD), before the part exceeds the applicable life limit, determined as required by paragraph (2) of this AD.

#### **Parts Installation:**

- (6) From the effective date of this AD, installation of a serviceable spare engine on an aeroplane, or release to service of an engine after any shop visit, as applicable, is allowed, provided that, prior to operational use of the engine, it is determined that the installed affected part (see Note 2 of this AD) is a serviceable part (see Note 4 of this AD), and the operational history of the affected engine has been determined, as required by paragraph (2) of this AD.

#### **Ref. Publications:**

RRD Alert NMSB Sp72-A1071 dated 08 December 2016.

RRD Spey 506-14A MM Chapter 5-10-1 revision dated October 1993.

RRD Spey 555 Engine MM 5-10-1 revision dated 15 July 2015.

The use of later approved revisions of these documents is acceptable for compliance with the requirements of this AD.

#### **Remarks:**

1. This Proposed AD will be closed for consultation on 16 January 2017.



2. Enquiries regarding this PAD 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 the requirements in this PAD, please contact:  
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