



DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2020-1025; Project Identifier MCAI-2020-00757-E]

RIN 2120-AA64

Airworthiness Directives; Rolls-Royce Deutschland Ltd & Co KG (Type Certificate previously held by BMW Rolls-Royce GmbH and BMW Rolls-Royce Aero Engines) Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: The FAA proposes to adopt a new airworthiness directive (AD) for certain Rolls-Royce Deutschland Ltd. & Co KG (RRD) BR700-715A1-30, BR700-715B1-30, and BR700-715C1-30 model turbofan engines. This proposed AD was prompted by reports of HPT stage 1 blades failing in service due to sulphidation and subsequent crack initiation. This proposed AD would require removal and replacement of the HPT stage 1 blade and HPT stage 1 blade damper. The FAA is proposing this AD to address the unsafe condition on these products.

DATES: The FAA must receive comments on this proposed AD by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to <https://www.regulations.gov>. Follow the instructions for submitting comments.
- Fax: (202) 493-2251.
- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12 140, 1200 New Jersey Avenue SE, Washington, DC 20590.
- Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this NPRM, contact Rolls-Royce Deutschland Ltd. & Co KG, Eschenweg 11, 15827 Blankenfelde-Mahlow, Germany; phone: +49 (0) 33 708 6 0; website: <https://www.rolls-royce.com/contact-us.aspx>. You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call (781) 238-7759.

Examining the AD Docket

You may examine the AD docket at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2020-1025; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this NPRM, the mandatory continuing airworthiness information (MCAI), any comments received, and other information. The street address for Docket Operations is listed above.

FOR FURTHER INFORMATION CONTACT: Barbara Caufield, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7146; fax: (781) 238-7199; email: barbara.caufield@faa.gov.

SUPPLEMENTARY INFORMATION:

Comments Invited

The FAA invites you to send any written relevant data, views, or arguments about this proposal AD. Send your comments to an address listed under ADDRESSES. Include “Docket No. FAA-2020-1025; Project Identifier MCAI-2020-00757-E” at the beginning of your comments. The most helpful comments reference a specific portion of the proposal, explain the reason for any recommended change, and include supporting data. The FAA will consider all comments received by the closing date and may amend this NPRM because of those comments.

Except for Confidential Business Information (CBI) as described in the following paragraph, and other information as described in 14 CFR 11.35, the FAA will post all comments received, without change, to <https://www.regulations.gov>, including any

personal information you provide. The agency will also post a report summarizing each substantive verbal contact received about this proposal.

Confidential Business Information

CBI is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to this NPRM contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to this NPRM, it is important that you clearly designate the submitted comments as CBI. Please mark each page of your submission containing CBI as “PROPIN.” The FAA will treat such marked submissions as confidential under the FOIA, and they will not be placed in the public docket of this NPRM. Submissions containing CBI should be sent to Barbara Caufield, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803. Any commentary that the FAA receives which is not specifically designated as CBI will be placed in the public docket for this rulemaking.

Background

The European Aviation Safety Agency (EASA), which is the Technical Agent for the Member States of the European Community, has issued EASA AD 2018-0194, dated September 4, 2018 (referred to after this as “the MCAI”), to address the unsafe condition on these products. The MCAI states:

Occurrences have been reported on RRD BR700-715 engines where certain HP turbine stage 1 blades failed in service.

Investigation of these events showed that these were caused by sulphidation and subsequent crack initiation, due to contamination of the blade shank passing by the blade damper.

This condition, if not corrected, could lead to further HP turbine stage 1 blade failures, possibly resulting in engine in-flight shut-down and consequent reduced control of the aeroplane.

To address this potential unsafe condition, RRD published the NMSB to provide instructions to replace the affected assembly. For the reasons described above, this [EASA] AD requires determination of the engine configuration and, depending on findings, removal of the engine from service to replace the affected assembly.

You may obtain further information by examining the MCAI in the AD docket at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2020-1025.

FAA's Determination

This product has been approved by EASA and is approved for operation in the United States. Pursuant to our bilateral agreement with the European Community, EASA has notified us of the unsafe condition described in the MCAI. The FAA is issuing this NPRM because the agency evaluated all the relevant information provided by EASA and has determined that the unsafe condition described previously is likely to exist or develop in other products of the same type design.

Related Service Information under 1 CFR Part 51

The FAA reviewed RRD BR700 Series Alert Non-Modification Service Bulletin (NMSB) SB-BR700-72-A900640, dated August 31, 2018. The Alert NMSB describes procedures for removing and replacing the HPT stage 1 blade and HPT stage 1 blade damper. This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in ADDRESSES.

Other Related Service Information

The FAA reviewed RRD Service Bulletin (SB) SB-BR700-72-102005, dated March 20, 2018; RRD NMSB SB-BR700-72-900118, dated June 6, 2017; and RRD SB SB-BR700-72-101671, dated January 29, 2010. RRD SB SB-BR700-72-102005, dated March 20, 2018, introduces a new HPT stage 1 blade damper with a front restrictor that reduces the average airflow into the blade shank cavity, thereby reducing deposition of particles in the cavity. RRD NMSB SB-BR700-72-900118, dated June 6, 2017, describes procedures for recording of the serial numbers of the cleaned, crack tested, and examined

HPT stage 1 blades. RRD SB SB-BR700-72-101671, dated January 29, 2010, introduces a redesigned HPT stage 1 blade that improves robustness and stress characteristics.

Proposed AD Requirements in this NPRM

This proposed AD would require removal and replacement of the HPT stage 1 blade and HPT stage 1 blade damper.

Costs of Compliance

The FAA estimates that this AD, if adopted as proposed, would affect 222 engines installed on airplanes of U.S. registry. The agency estimates that the service life of both the HPT stage 1 blade and HPT stage 1 blade damper are 5.5 years. Based on this life estimate, the agency is providing an estimated annual cost to replace these parts.

The FAA estimates the following costs to comply with this proposed AD:

Estimated costs

Action	Labor Cost	Parts Cost	Cost per product	Annualized Cost on U.S. operators
Replace HPT stage 1 blade and HPT stage 1 blade damper	20 work-hours x \$85 per hour = \$1,700	\$692,000	\$693,700	\$28,000,524

The FAA has included all known costs in its cost estimate. According to the manufacturer, however, all of the costs of this proposed AD may be covered under warranty, thereby reducing the cost impact on affected operators.

Authority for This Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: General requirements. Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority

because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

The FAA determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify this proposed regulation:

- (1) Is not a “significant regulatory action” under Executive Order 12866,
- (2) Would not affect intrastate aviation in Alaska, and
- (3) Would not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

The Proposed Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. The FAA amends § 39.13 by adding the following new airworthiness directive:

Rolls-Royce Deutschland Ltd & Co KG (Type Certificate previously held by BMW Rolls-Royce GmbH and BMW Rolls-Royce Aero Engines): Docket No. FAA-2020-1025; Project Identifier MCAI-2020-00757-E.

(a) Comments Due Date

The FAA must receive comments on this airworthiness directive (AD) by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

None.

(c) Applicability

This AD applies to all Rolls-Royce Deutschland Ltd. & Co KG (Type Certificate previously held by BMW Rolls-Royce GmbH and BMW Rolls-Royce Aero Engines) BR700-715A1-30, BR700-715B1-30, and BR700-715C1-30 model turbofan engines with high-pressure turbine (HPT) stage 1 blade, part number (P/N) BRH17133, BRH19984, BRH20011, BRH20237, BRH20351, FW35594, FW45914, FW64379, or FW75735, and with HPT stage 1 blade damper, P/N BRH10943, BRH20353, or FW45770, installed.

(d) Subject

Joint Aircraft System Component (JASC) Code 7250, Turbine Section.

(e) Unsafe Condition

This AD was prompted by reports of HPT stage 1 blades failing in service due to sulphidation and subsequent crack initiation. The FAA is issuing this AD to prevent failure of the HPT stage 1 blade. The unsafe condition, if not addressed, could result in the release of the HPT stage 1 blade, failure of the engine, in-flight shutdown, and loss of the airplane.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Required Actions

(1) For affected engines that have not operated exclusively under the Hawaiian Flight Mission:

(i) Before exceeding 10,000 flight cycles (FCs) since the first installation of an affected HPT stage 1 blade, or within 50 FCs after the effective date of this AD, whichever occurs later, remove the affected HPT stage 1 blade and the affected HPT stage 1 blade damper from service and replace with parts eligible for installation using the Accomplishment Instructions, paragraph 3.R. to T., of RRD Alert Non-Modification Service Bulletin (NMSB) SB-BR700-72-A900640, dated August 31, 2018 (“NMSB SB-BR700-72-A900640”).

(ii) If an HPT stage 1 blade has been cleaned and examined before the effective date of this AD using RRD NMSB SB-BR700-72-900118, dated June 6, 2017, within 1,500 FCs from the last cleaning and examination, or within 10 FCs after the effective date of this AD, whichever occurs later, remove the affected HPT stage 1 blade and affected HPT stage 1 blade damper from service and replace with parts eligible for installation using Accomplishment Instructions, paragraph 3.R. to T., of RRD NMSB SB-BR700-72-A900640.

(2) For affected engines operated exclusively under the Hawaiian Flight Mission:

(i) At the next change of the flight mission after the effective date of this AD, replace the affected HPT stage 1 blade and affected HPT stage 1 blade damper in accordance with paragraphs (g)(1)(i) and (ii) of this AD.

(ii) [Reserved]

(h) Installation Prohibition

After the effective date of this AD, do not install any HPT stage 1 blade, P/N BRH17133, BRH19984, BRH20011, BRH20237, BRH20351, FW35594, FW45914, FW64379, or FW75735, with any HPT stage 1 blade damper, P/N BRH10943, BRH20353, or FW45770, in any engine.

(i) Definitions

(1) For the purpose of this AD, “parts eligible for installation” are an HPT stage 1 blade, P/N FW75735, installed with HPT stage 1 blade damper, P/N KH82098.

(2) For the purpose of this AD, the “Hawaiian Flight Mission” are flights operated by Hawaiian Airlines.

(j) Alternative Methods of Compliance (AMOCs)

(1) The Manager, ECO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the certification office, send it to the attention of the person identified in Related Information. You may email your request to: ANE-AD-AMOC@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(k) Related Information

(1) For more information about this AD, contact Barbara Caufield, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7146; fax: (781) 238-7199; email: barbara.caufield@faa.gov.

(2) Refer to European Aviation Safety Agency (EASA) AD 2018-0194, dated September 4, 2018, for more information. You may examine the EASA AD in the AD docket at <https://www.regulations.gov> by searching for and locating it in Docket No. FAA-2020-1025.

(3) For service information identified in this AD, contact Rolls-Royce Deutschland Ltd. & Co KG, Eschenweg 11, 15827 Blankenfelde-Mahlow, Germany; phone: +49 (0) 33 708 6 0; website: <https://www.rolls-royce.com/contact-us.aspx>. You may view this referenced service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call (781) 238-7759.

Issued on November 6, 2020.

Lance T. Gant, Director,
Compliance & Airworthiness Division,
Aircraft Certification Service.

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