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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. FAA-2020-1174; Project Identifier MCAI-2019-00135-E; Amendment 39-21594; AD 2021-12-07]**

**RIN 2120-AA64**

**Airworthiness Directives; Rolls-Royce Deutschland Ltd & Co KG (Type Certificate Previously Held by Rolls-Royce Deutschland GmbH, Formerly BMW Rolls-Royce GmbH) Turbofan Engines**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final rule.

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**SUMMARY:** The FAA is adopting a new airworthiness directive (AD) for certain Rolls-Royce Deutschland Ltd & Co KG (RRD) BR700-710A1-10, BR700-710A2-20 and BR700-710C4-11 model turbofan engines. This AD was prompted by an investigation by RRD, which revealed a quality escape during the high-pressure turbine (HPT) stage 1 disk rim cooling air hole manufacturing process. This AD requires removing affected HPT disks from service prior to reaching specified compliance times or at the next engine shop visit, whichever occurs first. The FAA is issuing this AD to address the unsafe condition on these products.

**DATES:** This AD is effective August 12, 2021.

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of August 12, 2021.

**ADDRESSES:** For service information identified in this AD, contact Rolls-Royce Deutschland Ltd & Co KG, Eschenweg 11, Dahlewitz 15827, Germany; phone: +49 33 7086 4040; email: [rrd.techhelp@rolls-royce.com](mailto:rrd.techhelp@rolls-royce.com). 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. It is also available at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2020-1174.

#### **Examining the AD Docket**

You may examine the AD docket at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2020-1174; 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 final rule, the mandatory continuing airworthiness information (MCAI), any comments received, and other information. The address for Docket Operations is U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.

**FOR FURTHER INFORMATION CONTACT:** Wego Wang, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7134; fax: (781) 238-7199; email: [wego.wang@faa.gov](mailto:wego.wang@faa.gov).

## **SUPPLEMENTARY INFORMATION:**

### **Background**

The FAA issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 by adding an AD that would apply to certain RRD BR700-710A1-10, BR700-710A2-20 and BR700-710C4-11 model turbofan engines. The NPRM published in the Federal Register on January 21, 2021 (86 FR 6271). The NPRM was prompted by an investigation by RRD, which revealed a quality escape during the HPT stage 1 disk rim cooling air hole manufacturing process. In the NPRM, the FAA proposed to require removing affected HPT disks from service prior to reaching specified compliance times or at the next engine shop visit, whichever occurs first. The FAA is issuing this AD to address the unsafe condition on these products.

The European Union Aviation Safety Agency (EASA), which is the Technical Agent for the Member States of the European Community, has issued EASA AD 2019-0299, dated December 10, 2019 (referred to after this as “the MCAI”), to address the unsafe condition on these products. The MCAI states:

An occurrence was reported of an HPT stage 1 disc burst on an industrial gas turbine engine. Subsequent investigation revealed a quality escape during HPT stage 1 disc rim cooling air hole manufacturing process. A review revealed that 28 HPT stage 1 discs were subject to a similar quality escape, two of which have been recovered and removed from service. The consequence of this manufacturing error is that the affected parts can no longer safely reach their Declared Safe Cyclic Life (DSCL).

This condition, if not corrected, may lead to failure of an affected part, possibly resulting in release of high-energy debris, with consequent damage to, and/or reduced control of, the aeroplane. To address this potentially unsafe condition, RRD issued the NMSB, providing instructions to remove the engine from service for in-shop replacement of the affected part.

For the reasons described above, this [EASA] AD reduces the DSCL for the affected parts, requires identification of the affected parts and removal from service of each affected engine for replacement of the affected part. This [EASA] AD also prohibits (re)installation of affected parts.

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-2020-1174.

## Discussion of Final Airworthiness Directive

### Comments

The FAA received comments from two commenters. The commenters were the Air Line Pilots Association, International (ALPA) and an anonymous commenter. ALPA supported the NPRM without change. The anonymous commenter supported the NPRM but stated their opinion on the estimated costs.

### Request for Rolls-Royce To Share Replacement Part Cost

An anonymous commenter indicated that Rolls-Royce could share the cost of new HPT disks since it was their manufacturing process that caused the defects in the HPT disks.

The FAA does not determine who pays for the costs of an AD. The Estimated Costs paragraph indicates that, according to the manufacturer, all of the costs of this AD may be covered under a manufacturer warranty, thereby reducing the cost impact on affected operators.

### Conclusion

The FAA reviewed the relevant data, considered the comments received, and determined that air safety requires adopting this AD as proposed. Accordingly, the FAA is issuing this AD to address the unsafe condition on these products. Except for minor editorial changes, this AD is adopted as proposed in the NPRM.

### Related Service Information Under 1 CFR Part 51

The FAA reviewed Rolls-Royce Alert Non-Modification Service Bulletin (NMSB) SB-BR700-72-A900659, Revision 1, dated November 5, 2019 (the NMSB). The Alert NMSB provides the part numbers and serial numbers for affected HPT disks, the serial numbers for all engines with an affected HPT disk installed, and instructions for replacement of the affected HPT disk. 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.

### Costs of Compliance

The FAA estimates that this AD affects 21 engines installed on airplanes of U.S. registry. The FAA estimates the following costs to comply with this AD:

| Estimated Costs  |                                            |            |                  |                        |
|------------------|--------------------------------------------|------------|------------------|------------------------|
| Action           | Labor cost                                 | Parts cost | Cost per product | Cost on U.S. operators |
| Replace HPT disk | 20 work-hours × \$85 per hour<br>= \$1,700 | \$550,000  | \$551,700        | \$11,585,700           |

The FAA has included all known costs in its cost estimate. According to the manufacturer, however, all of the costs of this 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**

This AD will not have federalism implications under Executive Order 13132. This AD will 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 AD:

- (1) Is not a “significant regulatory action” under Executive Order 12866,
- (2) Will not affect intrastate aviation in Alaska, and
- (3) Will 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.

## **Adoption of the Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 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:



## **AIRWORTHINESS DIRECTIVE**

[www.faa.gov/aircraft/safety/alerts/](http://www.faa.gov/aircraft/safety/alerts/)  
[www.gpoaccess.gov/fr/advanced.html](http://www.gpoaccess.gov/fr/advanced.html)

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**2021-12-07 Rolls-Royce Deutschland Ltd & Co KG (Type Certificate previously held by Rolls-Royce Deutschland GmbH, formerly BMW Rolls-Royce GmbH):** Amendment 39-21594; Docket No. FAA-2020-1174; Project Identifier MCAI-2019-00135-E.

### **(a) Effective Date**

This AD is effective August 12, 2021.

### **(b) Affected ADs**

None.

### **(c) Applicability**

This AD applies to Rolls-Royce Deutschland Ltd & Co KG (RRD) (Type Certificate previously held by Rolls-Royce Deutschland GmbH, formerly BMW Rolls-Royce GmbH) BR700-710A1-10, BR700-710A2-20 and BR700-710C4-11 model turbofan engines with a high-pressure turbine (HPT) stage 1 disk having a part number and serial number listed in Planning Information, paragraph 1.A., of Rolls-Royce Alert Non-Modification Service Bulletin (NMSB) SB-BR700-72-A900659, Revision 1, dated November 5, 2019, installed.

### **(d) Subject**

Joint Aircraft System Component (JASC) Code 7230, Turbine Engine Compressor Section.

### **(e) Unsafe Condition**

This AD was prompted by an investigation by RRD, which revealed a quality escape during the HPT stage 1 disk rim cooling air hole manufacturing process. The FAA is issuing this AD to prevent failure of the HPT stage 1 disk. The unsafe condition, if not addressed, could result in the release of high-energy debris, damage to the airplane, and reduced control of the airplane.

### **(f) Compliance**

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

### **(g) Required Actions**

Before the affected HPT stage 1 disk exceeds 2,840 flight cycles (FCs) since new, or within 60 days after the effective date of this AD, whichever occurs later, but not to exceed 8 years after the effective date of this AD if using FCs, remove the affected HPT stage 1 disk from service and replace with a part eligible for installation. Guidance on replacing the HPT stage 1 disk can be found in the Accomplishment Instructions, paragraph 3.B., of Rolls-Royce Alert Non-Modification Service Bulletin (NMSB) SB-BR700-72-A900659, Revision 1, dated November 5, 2019.

## **(h) Installation Prohibition**

After the effective date of this AD, do not install any affected HPT stage 1 disk onto any engine.

## **(i) Definition**

For the purpose of this AD, a “part eligible for installation” is an HPT stage 1 disk that is not listed in paragraph 1.A. of Rolls-Royce Alert NMSB SB-BR700-72-A900659, Revision 1, dated November 5, 2019.

## **(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 Wego Wang, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7134; fax: (781) 238-7199; email: wego.wang@faa.gov.

(2) Refer to European Union Aviation Safety Agency (EASA) AD 2019-0299, dated December 10, 2019, for more information. You may examine the EASA AD in the AD docket on at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2020-1174.

## **(l) Material Incorporated by Reference**

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless the AD specifies otherwise.

(i) Rolls-Royce Alert Non-Modification Service Bulletin SB-BR700-72-A900659, Revision 1, dated November 5, 2019.

(ii) [Reserved]

(3) For service information identified in this AD, contact Rolls-Royce Deutschland Ltd & Co KG, Eschenweg 11, Dahlewitz 15827, Germany; phone: +49 33 7086 4040; email: rrd.techhelp@rolls-royce.com.

(4) You may view this service information at 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.

(5) You may view this service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, email: [fedreg.legal@nara.gov](mailto:fedreg.legal@nara.gov), or go to: <https://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued on June 14, 2021.

Gaetano A. Sciortino,

Deputy Director for Strategic Initiatives, Compliance & Airworthiness Division, Aircraft  
Certification Service.

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