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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

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

**[Docket No. FAA-2021-1071; Project Identifier AD-2021-01055-E; Amendment 39-22044; AD 2022-10-06]**

**RIN 2120-AA64**

#### **Airworthiness Directives; Rolls-Royce Corporation Turboshaft Engines**

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

**ACTION:** Final rule.

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**SUMMARY:** The FAA is superseding Airworthiness Directive (AD) 2017-18-14, which applied to certain Rolls-Royce Corporation (RRC) 250 model turboshaft engines. AD 2017-18-14 required repetitive visual inspections and fluorescent penetrant inspections (FPIs) of the 3rd-stage turbine wheel and removal from service of the 4th-stage turbine wheel. This AD was prompted by in-service turbine blade failures that resulted in the loss of power and engine in-flight shutdowns. This AD requires replacement of the 3rd-stage and 4th-stage turbine wheels. This AD also revises the applicability to include an additional turboshaft engine model. The FAA is issuing this AD to address the unsafe condition on these products.

**DATES:** This AD is effective June 28, 2022.

**ADDRESSES:** For service information identified in this final rule, contact Rolls-Royce Corporation, 450 South Meridian Street, Mail Code NB-01-06, Indianapolis, IN 46225; phone: (317) 230-2720; email: HelicoptCustSupp@Rolls-Royce.com; website: www.rolls-royce.com. You may view this service information at the Airworthiness Products Section, Operational Safety Branch, FAA, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call (817) 222-5110.

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

You may examine the AD docket at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2021-1071; 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, 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:** John Tallarovic, Aviation Safety Engineer, Chicago ACO, FAA, 2300 E Devon Avenue, Des Plaines, IL 60018; phone: (847) 294-8180; email: john.m.tallarovic@faa.gov.

## **SUPPLEMENTARY INFORMATION:**

### **Background**

The FAA issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to supersede AD 2017-18-14, Amendment 39-19023 (82 FR 42443, September 8, 2017), (AD 2017-18-14). AD 2017-18-14 applied to certain RRC 250-C20, -C20B, -C20F, -C20J, -C20R, -C20R/1, -C20R/2, -C20R/4, -C20W, -C300/A1, and -C300/B1 turboshaft engines with either a 3rd-stage turbine wheel, part number (P/N) 23065818, or a 4th-stage turbine wheel, P/N 23055944 or RR30000240, installed. The NPRM published in the Federal Register on January 14, 2022 (87 FR 2365). The NPRM was prompted by in-service turbine blade failures that resulted in the loss of power and engine in-flight shutdowns. Since the FAA issued AD 2017-18-14, the manufacturer redesigned the 3rd-stage turbine wheel. The manufacturer published Rolls-Royce Alert Commercial Engine Bulletin (CEB) CEB A-1428/CEB A-72-4111 (single document), which describes procedures for replacement of the 3rd-stage turbine wheel, P/N 23065818, with the new increased blade fillet 3rd-stage turbine wheel, P/N M250-10473. Additionally, the FAA determined that the RRC 250-C20C (T63-A-720) model turboshaft engine is also susceptible to the unsafe condition. In the NPRM, the FAA proposed to require replacement of the 3rd-stage and 4th-stage turbine wheels. The FAA is issuing this AD to address the unsafe condition on these products.

### **Discussion of Final Airworthiness Directive**

#### **Comments**

The FAA received comments from two commenters. The commenters were an anonymous commenter and RRC. The following presents the comments received on the NPRM and the FAA's response to each comment.

#### **Comments on Part Availability and Costs**

The anonymous commenter stated that RRC does not have the inventory to supply engine shops with the 3rd-stage and 4th-stage turbine wheels proposed for replacement in the NPRM. The commenter requested that RRC provide credit to its customers for unused time on 3rd-stage and 4th-stage turbine wheels and reasoned that customers paid for the full life of the 3rd-stage and 4th-stage turbine wheels, not a partial life, which now requires replacement at full price. The commenter also stated that the part cost estimates in the NPRM for the 3rd-stage and 4th-stage turbine wheels are inaccurate and should indicate an estimated cost of \$22,929.15 and \$18,926.59 to reflect Aviall and Boeing's prices, respectively. The commenter noted that they have found performing FPIs on the 3rd-stage and 4th-stage turbine wheels result in serviceable conditions compared to the previous configurations that were beyond serviceable. The commenter expressed that the proposed requirements in the NPRM would be a financial burden on RRC's customers, considering the current market instability.

The FAA disagrees that the manufacturer will not have sufficient inventory, which would prevent compliance with this AD. Prior to publishing the NPRM, the FAA confirmed with RRC that there would be adequate inventory for operators to replace the 3rd-stage and 4th-stage turbine wheels. In response to this comment, the FAA confirmed with RRC that the 3rd-stage and 4th-stage turbine

wheels are available at a 50% discounted price. Additionally, RRC indicated that suppliers will also provide the discounted price. The FPI of 3rd-stage turbine wheels was an interim action until redesigned parts became available. While FPI reduces the risk of a blade failure, the unsafe condition is addressed by replacing the 3rd-stage turbine wheel with the revised design. The FAA did not change this AD as a result of the comments.

### **Request To Update Service Information**

RRC requested that the FAA revise the Related Service Information paragraph of this AD to reference Rolls-Royce Alert CEB CEB A-1428/CEB A-72-4111 (single document), Revision 2, dated December 8, 2021. RRC reasoned that since the three Rolls-Royce bulletins were submitted to the FAA in support of the NPRM, Rolls-Royce has published Revision 2 of Rolls-Royce Alert CEB CEB A-1428/CEB A-72-4111 (single document).

The FAA agrees. The FAA has updated the Related Service Information paragraph of this AD to reference Rolls-Royce Alert CEB CEB A-1428/CEB A-72-4111 (single document), Revision 2, dated December 8, 2021.

### **Conclusion**

The FAA reviewed the relevant data, considered any comments received, and determined that air safety requires adopting the AD as proposed. Accordingly, the FAA is issuing this AD to address the unsafe condition on these products. Except for minor editorial changes, and any other changes described previously, this AD is adopted as proposed in the NPRM. None of the changes will increase the economic burden on any operator.

### **Related Service Information**

The FAA reviewed Rolls-Royce Alert CEB CEB A-1428/CEB A-72-4111 (single document), Revision 2, dated December 8, 2021. This Alert CEB describes procedures for replacing the 3rd-stage turbine wheel, P/N 23065818, with the new increased blade fillet 3rd-stage turbine wheel, P/N M250-10473.

The FAA reviewed Rolls-Royce Alert CEB CEB-A-1422/CEB-A-72-4108 (single document), Original Issue, dated September 13, 2017. This Alert CEB describes procedures for replacing 4th-stage turbine wheel, P/N 23055944, with the new increased blade fillet 4th-stage turbine wheel, P/N M250-10445.

The FAA also reviewed Rolls-Royce Alert Service Bulletin (SB) RR300-A-72-024, Original Issue, dated September 13, 2017. This Alert SB describes procedures for replacing the 4th-stage turbine wheel, P/N RR30000240, with the new increased blade fillet 4th-stage turbine wheel, P/N RR30000494.

### **Costs of Compliance**

The FAA estimates that this AD affects 3,769 engines installed on helicopters of U.S. registry. The FAA estimates that 3,041 3rd-stage turbine wheels and 3,769 4th-stage turbine wheels will require replacement.

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 3rd-stage turbine wheel, P/N 23065818	3 work-hours × \$85 per hour = \$255	\$11,170	\$11,425	\$34,743,425 (3,041 engines).
Replace 4th-stage turbine wheel, P/N 23055944 or RR30000240	3 work-hours × \$85 per hour = \$255	8,928	9,183	\$34,610,727 (3,769 engines).

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

The FAA has determined that 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 that 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.

### 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:

- a. Removing Airworthiness Directive 2017-18-14, Amendment 39-19023 (82 FR 42443, September 8, 2017); and
- b. Adding the following new airworthiness directive:



**2022-10-06 Rolls-Royce Corporation:** Amendment 39-22044; Docket No. FAA-2021-1071; Project Identifier AD-2021-01055-E.

**(a) Effective Date**

This airworthiness directive (AD) is effective June 28, 2022.

**(b) Affected ADs**

This AD replaces AD 2017-18-14, Amendment 39-19023 (82 FR 42443, September 8, 2017).

**(c) Applicability**

This AD applies to Rolls-Royce Corporation (RRC) 250-C20, 250-C20B, 250-C20C (T63-A-720), 250-C20F, 250-C20J, 250-C20R, 250-C20R/1, 250-C20R/2, 250-C20R/4, 250-C20W, 250-C300/A1, and 250-C300/B1 model turboshaft engines with either a 3rd-stage turbine wheel, part number (P/N) 23065818, or a 4th-stage turbine wheel, P/N 23055944 or RR30000240, installed.

**(d) Subject**

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

**(e) Unsafe Condition**

This AD was prompted by in-service turbine blade failures that resulted in the loss of power and engine in-flight shutdowns. The FAA is issuing this AD to prevent failure of the 3rd-stage and 4th-stage turbine blades. The unsafe condition, if not addressed, could result in damage to the engine and damage to the aircraft.

**(f) Compliance**

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

**(g) Required Actions**

- (1) Within 1,775 hours since last visual inspection and fluorescent penetrant inspection (FPI), or at the next engine shop visit, whichever occurs first after the effective date of this AD, remove:
  - (i) 3rd-stage turbine wheel, P/N 23065818, and replace with a part eligible for installation.
  - (ii) 4th-stage turbine wheel, P/N 23055944, and replace with a part eligible for installation.
- (2) Within 2,025 hours since last visual inspection and FPI, or at the next engine shop visit, whichever occurs first after the effective date of this AD, remove 4th-stage turbine wheel, P/N RR30000240, and replace with a part eligible for installation.

## **(h) Definitions**

(1) For this purpose of this AD, an “engine shop visit” is the induction of an engine into the shop for maintenance in which the turbine module is separated from the exhaust collector, the gas-producer-support is separated from the power-turbine-support, or there is separation of pairs of major mating engine flanges, except that the separation of engine flanges solely for the purposes of transportation without subsequent engine maintenance does not constitute an engine shop visit.

(2) For the purpose of this AD, a “part eligible for installation” is a 3rd-stage turbine wheel or 4th-stage turbine wheel that does not have a P/N listed in the Applicability, paragraph (c), of this AD.

## **(i) Special Flight Permit**

A special flight permit may be issued in accordance with 14 CFR 21.197 and 21.199 to permit a one-time non-revenue ferry flight to operate the airplane to a maintenance facility where the engine can be removed from service. This ferry flight must be performed with only essential flight crew.

## **(j) Alternative Methods of Compliance (AMOCs)**

(1) The Manager, Chicago ACO, 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 paragraph (k) of this AD.

(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**

For more information about this AD, contact John Tallarovic, Aviation Safety Engineer, Chicago ACO, FAA, 2300 E Devon Avenue, Des Plaines, IL 60018; phone: (847) 294-8180; email: john.m.tallarovic@faa.gov.

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

None.

Issued on May 3, 2022.

Lance T. Gant,

Director, Compliance & Airworthiness Division, Aircraft Certification Service.

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