



[4910-13-P]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2018-0611; Product Identifier 2018-NE-21-AD]

RIN 2120-AA64

Airworthiness Directives; Rolls-Royce plc Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: We propose to adopt a new airworthiness directive (AD) for all Rolls-Royce plc (RR) Trent 1000-A2, Trent 1000-C2, Trent 1000-D2, Trent 1000-E2, Trent 1000-G2, Trent 1000-H2, Trent 1000-J2, Trent 1000-K2, and Trent 1000-L2 turbofan engine models. This proposed AD was prompted by reports of intermediate-pressure compressor (IPC) rotor seal failures. This proposed AD would require initial and repetitive on-wing borescope inspections (BSI) of affected IPC rotor seals, and removing any cracked parts from service. We are proposing this AD to address the unsafe condition on these products.

DATES: We 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 <http://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 plc, Corporate Communications, P.O. Box 31, Derby, England, DE24 8BJ; phone: 011-44-1332-242424; fax: 011-44-1332-249936; email: corporate.care@rolls-royce.com; Internet: <https://customers.rolls-royce.com/public/rollsroycecare>. You may view this service information at the FAA, Engine & Propeller Standards 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 on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2018-0611; or in person at the Docket Operations office 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), the regulatory evaluation, any comments received, and other information. The address for Docket Operations (phone: 800-647-5527) is listed above. Comments will be available in the AD docket shortly after receipt.

FOR FURTHER INFORMATION CONTACT: Kevin M. Clark, Aerospace Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: 781-238-7088; fax: 781-238-7199; email: kevin.m.clark@faa.gov.

SUPPLEMENTARY INFORMATION:

Comments Invited

We invite you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under the ADDRESSES section. Include “Docket No. FAA-2018-0611; Product Identifier 2018-NE-21-AD” at the beginning of your comments. We specifically invite comments on the overall regulatory,

economic, environmental, and energy aspects of this NPRM. We will consider all comments received by the closing date and may amend this NPRM because of those comments.

We will post all comments we receive, without change, to <http://www.regulations.gov>, including any personal information you provide. We will also post a report summarizing each substantive verbal contact we receive about this NPRM.

Discussion

The European Aviation Safety Agency (EASA), which is the Technical Agent for the Member States of the European Community, has issued EASA AD 2018-0095, dated April 24, 2018 (referred to hereinafter as “the MCAI”), to address the unsafe condition on these products. The MCAI states:

During an engine shop visit, an affected seal was found with cracking at the seal head. Propagation of such cracking may lead to failure, causing secondary impact damage to the IPC module.

This condition, if not detected and corrected, could lead to engine power loss, possibly resulting in reduced control of the aeroplane.

To address this potential unsafe condition, RR published the NMSB, providing instructions for on-wing borescope inspections. RR previously issued NMSB TRENT 1000 72-J353, which contains instructions for in-shop inspections.

For the reasons described above, this [EASA] AD requires repetitive borescope inspections of the front face of the affected seals and, depending on the findings, accomplishment of applicable corrections action(s).

You may obtain further information by examining the MCAI in the AD docket on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2018-0611.

Related Service Information under 1 CFR Part 51

We reviewed RR Non-Modification Service Bulletin (NMSB) Trent 1000 72-J353, Revision 2, dated February 14, 2018; RR Service Bulletin (SB) Trent 1000 72-J704, Initial Issue, dated June 23, 2017; and RR Alert NMSB Trent 1000 72-AJ929, Initial Issue, dated November 23, 2017. RR NMSB Trent 1000 72-J353, Revision 2, dated February 14, 2018, describes procedures for performing BSI of the front and rear face of the IPC rotor seal and defines acceptance and rejection criteria. RR SB Trent 1000 72-J704, Initial Issue, dated June 23, 2017, introduces a revised IPC. RR Alert NMSB Trent 1000 72-AJ929, Initial Issue, dated November 23, 2017, describes procedures for performing BSI of the front face of the IPC rotor seal and defines acceptance and rejection criteria.

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 the ADDRESSES section.

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 and service information referenced above. We are proposing this AD because we evaluated all the relevant information provided by EASA and determined the unsafe condition exists and is likely to exist or develop on other products of the same type design.

Proposed AD Requirements

This proposed AD would require initial and repetitive on-wing BSI of affected IPC rotor seals, and removing any cracked parts from service.

Costs of Compliance

We estimate that this proposed AD affects 28 engines installed on airplanes of U.S. registry.

We estimate the following costs to comply with this proposed AD:

Estimated costs

| Action | Labor cost | Parts cost | Cost per product | Cost on U.S. operators |
|------------------------|--------------------------------------|------------|------------------|------------------------|
| Inspect IPC rotor seal | 7 work-hours X \$85 per hour = \$595 | \$0 | \$595 | \$16,660 |

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.

We are 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.

This AD is issued in accordance with authority delegated by the Executive Director, Aircraft Certification Service, as authorized by FAA Order 8000.51C. In accordance with that order, issuance of ADs is normally a function of the Compliance and Airworthiness Division, but during this transition period, the Executive Director has delegated the authority to issue ADs applicable to engines, propellers, and associated

appliances to the Manager, Engine and Propeller Standards Branch, Policy and Innovation Division.

Regulatory Findings

We 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) Is not a “significant rule” under the DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979),
- (3) Will not affect intrastate aviation in Alaska, and
- (4) 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 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 (AD):

Rolls-Royce plc: Docket No. FAA-2018-0611; Product Identifier 2018-NE-21-AD.

(a) Comments Due Date

We must receive comments 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 plc (RR) Trent 1000-A2, Trent 1000-C2, Trent 1000-D2, Trent 1000-E2, Trent 1000-G2, Trent 1000-H2, Trent 1000-J2, Trent 1000-K2, and Trent 1000-L2 turbofan engine models with intermediate-pressure compressor (IPC) rotor seal, part number (P/N) KH77674, installed.

(d) Subject

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

(e) Unsafe Condition

This AD was prompted by reports of IPC rotor seal failures. We are issuing this AD to prevent an IPC rotor seal failure. The unsafe condition, if not addressed, could result in failure of the IPC rotor seal, loss of engine thrust control, and reduced control of the airplane.

(f) Compliance

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

(g) Required Actions

(1) Perform an on-wing borescope inspection (BSI) of the IPC rotor seal using paragraph 3, Accomplishment Instructions, of RR Alert Non-Modification Service Bulletin (NMSB) Trent 1000 72-AJ929, Initial Issue, dated November 23, 2017, as follows:

(i) For engines with an IPC rotor seal with 300 cycles since new (CSN) or more as of the effective date of this AD, perform a BSI before the IPC rotor seal accumulates 400 flight cycles (FC) after the effective date of this AD.

(ii) For engines with an IPC rotor seal with less than 300 CSN as of the effective date of this AD, perform a BSI before the IPC rotor seal accumulates 300 CSN or within 100 FC after the effective date of this AD, whichever is later.

(iii) For engines that were modified to incorporate RR Service Bulletin (SB) Trent 1000 72-J704, Initial Issue, dated June 23, 2017, before the effective date of this AD, perform a BSI before the IPC rotor seal accumulates 400 FC since the shop visit modification or before the next flight, whichever occurs later.

(2) Repeat the on-wing BSI at intervals in accordance with Figure 2 of RR Alert NMSB Trent 1000 72-AJ929, Initial Issue, dated November 23, 2017.

(3) An in-shop inspection in accordance with paragraph 3, Accomplishment Instructions, of RR NMSB Trent 1000 72-J353, Revision 2, dated February 14, 2018, may be substituted for an on-wing BSI as required by paragraphs (g)(1) and (2) of this AD, within the compliance times specified by paragraphs (g)(1) and (2) of this AD.

(4) If a crack is found on the front face of the seal that is at or beyond the rejection limits specified in Figures 1, 2, and 3 of RR Alert NMSB Trent 1000 72-AJ929, Initial Issue, dated November 23, 2017, replace the IPC rotor seal with a part eligible for installation before further flight.

(h) Operating Prohibition

After the effective date of this AD, do not operate an aircraft that has two engines installed that are both required by this AD to complete either the 50 FC interval inspections or the single 100 FC fly-on period as specified in Figures 1, 2, and 3 of RR Alert NMSB Trent 1000 72-AJ929, Initial Issue, dated November 23, 2017.

(i) Non-Required Action

No reporting requirement contained within any of the Alert NMSBs referenced in paragraphs (g)(1), (2), and (3) of this AD are required by this AD.

(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 ECO Branch, send it to the attention of the person identified in paragraph (k)(1) of this AD. 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 Kevin M. Clark, Aerospace Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: 781-238-7088; fax: 781-238-7199; email: kevin.m.clark@faa.gov.

(2) Refer to European Aviation Safety Agency (EASA) AD 2018-0095, dated April 24, 2018, for more information. You may examine the MCAI in the AD docket on the Internet at <http://www.regulations.gov> by searching for and locating it in Docket No. FAA-2018-0611.

(3) For service information identified in this proposed AD, contact Rolls-Royce plc, Corporate Communications, P.O. Box 31, Derby, England, DE24 8BJ; phone: 011-44-1332-242424; fax: 011-44-1332-249936; email: corporate.care@rolls-royce.com; Internet: <https://customers.rolls-royce.com/public/rollsroycecare>. You may view this referenced service information at the FAA, Engine & Propeller Standards Branch, 1200

District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call 781-238-7759.

Issued in Burlington, Massachusetts, on July 30, 2018.

Robert J. Ganley,
Manager, Engine and Propeller Standards Branch,
Aircraft Certification Service.

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