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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2020-0679; Project Identifier AD-2020-01060-E; Amendment 39-21197; AD 2020-16-13]

RIN 2120-AA64

Airworthiness Directives; Rolls-Royce Corporation (Type Certificate Previously Held by Allison Engine Company) Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule; request for comments.

SUMMARY: The FAA is adopting a new airworthiness directive (AD) for certain Rolls-Royce Corporation (RRC) AE 3007A, AE 3007A1, AE 3007A1/1, AE 3007A1/2, AE 3007A1/3, AE 3007A1E, AE 3007A1P, and AE 3007A3 model turbofan engines. This AD was prompted by an in-flight shutdown (IFSD) of an engine and subsequent investigation by the manufacturer that revealed a crack in the 3rd-stage compressor wheel. This AD requires replacement of affected 3rd-stage compressor wheels. The FAA is issuing this AD to address the unsafe condition on these products.

DATES: This AD is effective August 14, 2020.

The FAA must receive comments on this AD by September 14, 2020.

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: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

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) 230-1667; email: CMSEindyOSD@rolls-royce.com; internet: www.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.

Examining the AD Docket

You may examine the AD docket on the internet at https://www.regulations.gov by searching for and locating Docket No. FAA-2020-0679; 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 street address for the Docket Operations is listed above.

FOR FURTHER INFORMATION CONTACT: Kyri Zaroyiannis, Aerospace Engineer, Chicago ACO, FAA, 2300 E Devon Ave., Des Plaines, IL 60018; phone: (847) 294-7836; fax: (847) 294-7834; email: kyri.zaroyiannis@faa.gov.

SUPPLEMENTARY INFORMATION:

Background

The FAA learned of an uncommanded IFSD of a RRC AE 3007A1 model turbofan engine installed on an Embraer S.A. ERJ-145 airplane conducting a revenue flight. The manufacturer's investigation of this incident revealed that the IFSD resulted from a low-cycle fatigue crack in the dovetail slot for the blade attachment in the 3rd-stage compressor wheel, causing one 3rd-stage compressor blade to release. The crack initiated in the dovetail slot due to a sharp corner in the wheel slot geometry. The broaching process was identified as the cause and parts from this manufacturing lot require removal from service. This condition, if not addressed, could result in uncontained release of the 3rd-stage compressor wheel, damage to the engine, and damage to the airplane. The FAA is issuing this AD to address the unsafe condition on these products.

FAA's Determination

The FAA is issuing this AD because the agency evaluated all the relevant information and determined the unsafe condition described previously is likely to exist or develop in other products of the same type design.

Related Service Information

The FAA reviewed Rolls-Royce Alert Service Bulletin (ASB) AE 3007A-A-72-446, Revision 2, dated July 28, 2020. The ASB describes procedures for replacing certain 3rd-stage compressor wheels.

AD Requirements

This AD requires replacement of certain 3rd-stage compressor wheels before they accumulate a specified number of cycles.

FAA's Justification for Immediate Adoption and Determination of the Effective Date

Section 553(b)(3)(B) of the Administrative Procedure Act (APA) (5 U.S.C.) authorizes agencies to dispense with notice and comment procedures for rules when the agency, for “good cause,” finds that those procedures are “impracticable, unnecessary, or contrary to the public interest.” Under this

section, an agency, upon finding good cause, may issue a final rule without providing notice and seeking comment prior to issuance. Further, section 553(d) of the APA authorizes agencies to make rules effective in less than 30 days, upon a finding of good cause.

An unsafe condition exists that requires the immediate adoption of this AD without providing an opportunity for public comments prior to adoption. The FAA has found that the risk to the flying public justifies waiving notice and comment prior to adoption of this rule. RRC inspected a RRC AE3007A1 model turbofan engine after it experiences an uncommanded IFSD during a revenue flight on an Embraer ERJ-145 airplane.

The manufacturer's inspection discovered a low-cycle fatigue crack in a 3rd-stage compressor wheel that allowed a 3rd-stage compressor blade to release during the flight. The manufacturer traced the cause of the cracked 3rd-stage compressor wheel to a specific machining process that occurred during manufacture of the 3rd-stage compressor wheels. The manufacturer's subsequent investigation discovered multiple 3rd-stage compressor wheels in the affected serial numbered population with similar low-cycle fatigue cracks. The 3rd-stage compressor wheels identified in this AD are unable to remain in service beyond the cycles since new limits listed in paragragh (g) of this AD. As a result of the shortened compliance times established based on the FAA's risk assessment, the FAA has determined that there is insufficient time available to allow for notice and opportunity for prior public comment.

The FAA considers the removal of these 3rd-stage compressor wheels from service to be an urgent safety issue. Exceeding the reduced cycle limits on the 3rd-stage compressor wheels required by this AD could lead to failure of the 3rd-stage compressor wheel and high-energy release of the 3rd-stage compressor wheel, resulting in damage to the engine and damage to the airplane. Accordingly, notice and opportunity for prior public comment are impracticable and contrary to public interest pursuant to 5 U.S.C. 553(b)(3)(B).

In addition, the FAA finds that good cause exists pursuant to 5 U.S.C. 553(d) for making this amendment effective in less than 30 days, for the same reasons the FAA found good cause to forgo notice and comment.

Comments Invited

The FAA invites you to send any written data, views, or arguments about this final rule. Send your comments to an address listed under the ADDRESSES section. Include the docket number FAA-2020-0679 and Project Identifier AD-2020-01060-E at the beginning of your comments. The most helpful comments reference a specific portion of the final rule, 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 final rule 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 FAA will also post a report summarizing each substantive verbal contact received about this final rule.

Confidential Business Information

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 final rule 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 final rule, 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 final rule. Submissions containing CBI should be sent to Kyri Zaroyiannis, Aerospace Engineer, Chicago ACO, FAA, 2300 E. Devon Ave.,

Des Plaines, IL 60018. Any commentary that the FAA receives which is not specifically designated as CBI will be placed in the public docket for this rulemaking.

Regulatory Flexibility Act

The requirements of the Regulatory Flexibility Act (RFA) do not apply when an agency finds good cause pursuant to 5 U.S.C. 553 to adopt a rule without prior notice and comment. Because the FAA has determined that it has good cause to adopt this rule without notice and comment, RFA analysis is not required.

Costs of Compliance

The FAA estimate that this AD affects 4 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
Remove 3rd-stage compressor wheel	40 work-hours × $85 per hour = $3,400	$0	$3,400	$13,600
Replace 3rd-stage compressor wheel	85 work-hours × $85 per hour = $7,225	$32,844	$40,069	$160,276

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 that this AD:

(1) Is not a “significant regulatory action” under Executive Order 12866,

(2) Will not affect intrastate aviation in Alaska, and

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 adding the following new airworthiness directive (AD):

2020-16-13 Rolls-Royce Corporation (Type Certificate previously held by Allison Engine Company): Amendment 39-21197; Docket No. FAA-2020-0679; Project Identifier AD-2020-01060-E.

(a) Effective Date

This AD is effective August 14, 2020.

(b) Affected ADs

None.

(c) Applicability

This AD applies to Rolls-Royce Corporation (RRC) AE 3007A, AE 3007A1, AE 3007A1/1, AE 3007A1/2, AE 3007A1/3, AE 3007A1E, AE 3007A1P, and AE 3007A3 model turbofan engines with a 3rd-stage compressor wheel, part number (P/N) 23084158, and with a serial number listed in Figure 1 to paragraph (c) of this AD.

Figure 1 to Paragraph (c) – Serial Numbers of Affected P/N 23084158 3rd-stage Compressor Wheels

L343502	L343540	L343546	L343547	L343548	L343549	L343550
L343551	L343552	L343553	L343557	L343558	L343559	L343560
L343562	L343564	L343565	L343566	L343567	L343568	L343569
L343570	L343571	L343572	L343573	L343574	L343575	L343576
L343577	L343578	L343579	L343580	L343581	L343582	L343583
L343584	L343585	L343586	L343587	L343588	L343589	L343590
L343591	L343592	L343593	L343594	L343595	L343596	L343597
L343598	L343599	L343600	L343601	L343602	L343603	

(d) Subject

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

(e) Unsafe Condition

This AD was prompted by an in-flight shutdown of an engine during a revenue flight and subsequent investigation by the manufacturer that revealed a crack in the 3rd-stage compressor

wheel. The FAA is issuing this AD to prevent failure of the 3rd-stage compressor wheel. The unsafe condition, if not addressed, could result in an uncontained release of the 3rd-stage compressor wheel, damage to the engine, and damage to the airplane.

(f) Compliance

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

(g) Required Actions

(1) For AE 3007A, AE 3007A1, AE 3007A1/1, AE 3007A1/2, AE 3007A1/3, AE 3007A1P, and AE 3007A3 model turbofan engines, prior to the 3rd-stage compressor wheel accumulating the cycles listed in Table 1 to paragraph (g)(1) of this AD or before further flight, whichever occurs later after the effective date of this AD, remove the affected 3rd-stage compressor wheel and replace with a part eligible for installation.

Table 1 to Paragraph (g)(1) – Compliance Time for Removal of 3rd-Stage Compressor Wheel on AE 3007A, AE 3007A1, AE 3007A1/1, AE 3007A1/2, AE 3007A1/3, AE 3007A1P, and AE 3007A3 Model Turbofan Engines

Cycles Since New (CSN) on the 3rd-Stage Compressor Wheel as of April 14, 2020	Remove Prior to Accumulating (in cycles) After the Effective Date of this AD
12,300 or more	25
10,000 to 12,299	200
8,000 to 9,999	500
6,600 to 7,999	1,000
Fewer than 6,600	Before accumulating 7,600 CSN or at the next engine shop visit after the effective date of this AD, whichever occurs first.

(2) For AE 3007A1E model turbofan engines, prior to the 3rd-stage compressor wheel accumulating the cycles listed in Table 2 to paragraph (g)(2) of this AD or before further flight, whichever occurs later after the effective date of this AD, remove the affected 3rd-stage compressor wheel and replace with a part eligible for installation.

Table 2 to Paragraph (g)(2) – Compliance Time for Removal of 3rd-Stage Compressor Wheel on AE 3007A1E Model Turbofan Engines

CSN on the 3rd Stage Compressor Wheel as of April 14, 2020	Remove Prior to Accumulating (in cycles) After the Effective Date of this AD
7,000 or more	25
4,100 to 6,999	200
Fewer than 4,100	Before reaching 5,100 CSN or at the next engine shop visit after the effective date of this AD, whichever occurs first.

(h) Definitions

(1) For the purpose of this AD, a part eligible for installation is a 3rd-stage compressor wheel that does not have a P/N and a serial number listed in the Applicability, paragraph (c) of this AD.

(2) For the purpose of this AD, an "engine shop visit" is the induction of an engine into the shop for maintenance involving the separation of pairs of major mating engine flanges, except that the separation of engine flanges solely for the purposes of transportation of the engine without subsequent engine maintenance does not constitute an engine shop visit.

(i) Special Flight Permit

(1) Special flight permits, as described in Section 21.197 and Section 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199), are subject to the requirements of paragraph (i)(1)(i) of this AD.

(i) Operators may perform a one-time non-revenue ferry flight to a location where the engine can be removed from service. This ferry flight must be performed with only essential flight crew.

(ii) [Reserved]

(2) [Reserved]

(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 Kyri Zaroyiannis, Aerospace Engineer, Chicago ACO, FAA, 2300 E Devon Ave., Des Plaines, IL 60018; phone: (847) 294-7836; fax: (847) 294-7834; email: kyri.zaroyiannis@faa.gov.

(l) Material Incorporated by Reference

None.

Issued on July 28, 2020.

Gaetano A. Sciortino,

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

[FR Doc. 2020-16680 Filed 7-28-20; 4:15 pm]