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[4910-13-P]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2021-0191; Project Identifier AD-2020-01492-E]

RIN 2120-AA64

Airworthiness Directives; Pratt & Whitney Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: The FAA proposes to supersede Airworthiness Directive (AD) 2019-21-11 and AD 2020-07-02. AD 2019-21-11 applies to all Pratt & Whitney (PW) PW1519G, PW1521G, PW1521G-3, PW1521GA, PW1524G, PW1524G-3, PW1525G, PW1525G-3, PW1919G, PW1921G, PW1922G, PW1923G, and PW1923G-A model turbofan engines. AD 2020-07-02 applies to all PW PW1519G, PW1521G, PW1521G-3, PW1521GA, PW1524G, PW1524G-3, PW1525G, and PW1525G-3 model turbofan engines. AD 2019-21-11 requires initial and repetitive borescope inspections (BSIs) of the low-pressure compressor (LPC) rotor 1 (R1) and, depending on the results of the inspections, replacement of the LPC. AD 2020-07-02 requires the removal from service of certain electronic engine control (EEC) full authority digital electronic control (FADEC) software and the installation of a software version eligible for installation. Since the FAA issued AD 2019-21-11 and AD 2020-07-02, the manufacturer developed a new version of EEC FADEC software, which terminates the need for repetitive BSIs of the LPC R1. This proposed AD would continue to require repetitive BSIs of certain LPC R1s until replacement of EEC FADEC software with the updated software. This proposed AD would require a BSI after installation of the updated EEC FADEC software if certain Onboard Maintenance Message fault codes are displayed and meet specified criteria. 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 Pratt & Whitney, 400 Main Street, East Hartford, CT 06118; phone: (800) 565-0140; email: help24@pw.utc.com; website: http://fleetcare.pw.utc.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 at https://www.regulations.gov by searching for and locating Docket No. FAA-2021-0191; 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, any comments received, and other information. The street address for Docket Operations is listed above.

FOR FURTHER INFORMATION CONTACT: Nicholas Paine, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7116; fax: (781) 238-7199; email: nicholas.j.paine@faa.gov.

SUPPLEMENTARY INFORMATION:

Comments Invited

The FAA invites you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under ADDRESSES. Include "Docket No. FAA-2021-0191; Project Identifier AD-2020-01492-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 the proposal 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 we receive about this proposed AD.

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 Nicholas Paine, 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 FAA issued AD 2019-21-11, Amendment 39-19777 (84 FR 57813, October 29, 2019), (AD 2019-21-11) for certain PW PW1519G, PW1521G, PW1521GA, PW1524G, PW1525G, PW1521G-3, PW1524G-3, PW1525G-3, PW1919G, PW1921G, PW1922G, PW1923G, and PW1923G-A model turbofan engines. AD 2019-21-11 was prompted by an in-flight failure and additional findings of cracks in the LPC R1. AD 2019-21-11 requires initial and repetitive BSI of the LPC R1 and, depending on the

results of the BSIs, replacement of the LPC. The agency issued AD 2019-21-11 to prevent failure of the LPC R1.

The FAA issued AD 2020-07-02, Amendment 39-21106 (85 FR 17742, March 31, 2020), (AD 2020-07-02), for all PW PW1519G, PW1521G, PW1521G-3, PW1521GA, PW1524G, PW1524G33, PW1525G, and PW1525G33 model turbofan engines. AD 2020-07-02 was prompted by reports of four in-flight shutdowns due to failure of the LPC R1 and by subsequent findings of cracked LPC R1s during inspections. AD 2020-07-02 requires the removal from service of certain EEC FADEC software and the installation of a software version eligible for installation. The agency issued AD 2020-07-02 to prevent failure of the LPC R1.

Actions Since AD 2019-21-11 and AD 2020-07-02 Were Issued

Since the FAA issued AD 2019-21-11 and AD 2020-07-02, the manufacturer performed further root cause analysis of the LPC R1 failures and determined the need to update the EEC FADEC software to automate rotor speed management and limit the maximum climb and maximum continuous thrust ratings.

FAA's Determination

The FAA is issuing this NPRM after determining that the unsafe condition described previously is likely to exist or develop on other products of the same type design.

Related Service Information

The FAA reviewed Pratt & Whitney Service Bulletin (SB) PW1000G-A-72-00-0125-00A-930A-D, Issue No. 002, dated October 24, 2019; Pratt & Whitney SB PW1000G-A-72-00-0075-00B-930A-D, Issue No. 003, dated October 24, 2019; Pratt & Whitney SB PW1000G-A-73-00-0044-00A-930A-D, Issue No. 004, dated February 23, 2021; and Pratt & Whitney SB PW1000G-A-73-00-0023-00B-930A-D, Issue No. 002, dated February 22, 2021. The FAA also reviewed Section PW1000G-A-72-00-00-02A-0B5A-A of Pratt & Whitney Engine Maintenance Manual (EMM), Issue No. 016, dated January 15, 2021; and Section PW1000G-A-72-31-00-00A-312A-D of Pratt & Whitney EMM, Issue No. 016, dated January 11, 2021.

Pratt & Whitney SBs PW1000G-A-72-00-0125-00A-930A-D, Issue No. 002, dated October 24, 2019, and PW1000G-A-72-00-0075-00B-930A-D, Issue No. 003, dated October 24, 2019, specify procedures for performing initial and repetitive BSI of certain LPC R1s. Pratt & Whitney SB PW1000G-A-73-00-0044-00A-930A-D, Issue No. 004, dated February 23, 2021, specifies procedures for replacing or modifying the EEC to incorporate EEC FADEC software version V2.11.10.4. Pratt & Whitney SB PW1000G-A-73-00-0023-00B-930A-D, Issue No. 002, dated February 22, 2021, specifies procedures for replacing or modifying the EEC to incorporate EEC FADEC software version V9.5.6.7.

Section PW1000G-A-72-00-00-02A-0B5A-A of Pratt & Whitney EMM, Issue No. 016, dated January 15, 2021, specifies procedures for inspecting the engine for possible engine damage after receiving notification of an N1 or N2 overspeed operation. Section PW1000G-A-72-31-00-00A-312A-D of Pratt & Whitney EMM, Issue No. 016, dated January 11, 2021, specifies procedures for performing a BSI of the LPC.

Proposed AD Requirements in this NPRM

This proposed AD would retain certain requirements of AD 2019-21-11 and none of the requirements of AD 2020-07-02. This proposed AD would continue to require a BSI of certain LPC R1s for damage and cracks and, depending on the results of the BSI, replacement of the LPC R1. This proposed AD would continue to require repetitive BSIs of certain LPC R1s until replacement of the EEC FADEC software with the updated software. This proposed AD would also require a BSI of the LPC R1 after installation of the updated EEC FADEC software if certain Onboard Maintenance Message fault codes are displayed and meet specified criteria.

Interim Action

The FAA considers that this proposed AD would be an interim action. If final corrective action is later identified, the FAA might consider additional rulemaking.

Costs of Compliance

The FAA estimates that this AD, if adopted as proposed, would affect 94 engines installed on airplanes of U.S. registry.

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

Estimated costs

Action	Labor Cost	Parts Cost	Cost per product	Cost on U.S. operators
Replace EEC FADEC software	2 work-hours x $85 per hour = $170	$0	$170	$15,980
BSI per inspection cycle	2 work-hours x $85 per hour = $170	$0	$170	$15,980

On-condition costs

Action	Labor Cost	Parts Cost	Cost per product
Replace LPC R1	40 work-hours x per $85 hour = $3,400	$156,000	$159,000
BSI of the LPC R1 if Onboard Maintenance Message fault codes are displayed	2 work-hours x $85 per hour = $170	$0	$170

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

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 that the 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:

a. Removing Airworthiness Directive 2019-21-11, Amendment 39-19777 (84 FR 57813, October 29, 2019); and Airworthiness Directive AD 2020-07-02, Amendment 39-21106 (85 FR 17742, March 31, 2020); and

b. Adding the following new airworthiness directive:

Pratt & Whitney: Docket No. FAA-2021-0191; Project Identifier AD-2020-01492-E.

(a) Comments Due Date

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

(b) Affected ADs

This AD replaces AD 2019-21-11 Amendment 39-19777 (84 FR 57813, October 29, 2019); and AD 2020-07-02, Amendment 39-21106 (85 FR 17742, March 31, 2020).

(c) Applicability

This AD applies to Pratt & Whitney (PW) PW1519G, PW1521G, PW1521G-3, PW1521GA, PW1524G, PW1524G-3, PW1525G, PW1525G-3, PW1919G, PW1921G, PW1922G, PW1923G, and PW1923G-A model turbofan engines.

(d) Subject

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

(e) Unsafe Condition

This AD was prompted by reports of in-flight shutdowns due to failure of the low-pressure compressor (LPC) rotor 1 (R1) and by subsequent findings of cracked LPC R1s during inspection. The FAA is issuing this AD to prevent failure of the LPC R1. The unsafe condition, if not addressed, could result in uncontained release of the LPC R1, damage to the engine, damage to the airplane, and loss of control of the airplane.

(f) Compliance

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

(g) Required Actions

(1) Except for those model turbofan engines identified in paragraph (g)(2) of this AD, perform a borescope inspection (BSI) of the LPC R1 for damage and cracks as follows:

(i) For engines that have accumulated fewer than 300 flight cycles since new (CSN), perform a BSI within 50 flight cycles (FCs) from October 29, 2019 (the effective date of AD 2019-19-11), or before further flight, whichever occurs later.

(ii) For engines that have accumulated fewer than 300 FCs since installation of V2.11.7 or V2.11.8 electronic engine control (EEC) full authority digital electronic control (FADEC) software, perform a BSI within 50 FCs from October 29, 2019, or before further flight, whichever occurs later.

(iii) Thereafter, at intervals not to exceed 50 FCs until the engine accumulates 300 flight CSN or accumulates 300 FCs since the installation of V2.11.7 or V2.11.8 EEC FADEC software, whichever occurs later, repeat the BSI for damage and cracks.

(iv) Perform the BSI required by paragraphs (g)(1)(i) through (iii) of this AD at the following LPC R1 locations:

(A) The blade tip;

(B) The leading edge;

(C) The leading edge fillet to rotor platform radius; and

(D) The airfoil convex side root fillet to rotor platform radius.

(2) For any affected PW model turbofan engine installed as a "zero time spare," except for PW1519G, PW1521GA, PW1919G, and PW1922G model turbofan engines, within 15 FCs from the effective date of this AD, and thereafter at intervals not to exceed 15 FCs until the engine accumulates 300 flight CSN, perform a BSI of the LPC R1 for damage and cracks at the locations in paragraph (g)(1)(iv) of this AD.

(3) Based on the results of the BSIs required by paragraphs (g)(1) and (2) of this AD, before further flight, remove and replace the LPC R1 if:

(i) There is damage on an LPC R1 that exceeds serviceable limits; or

(ii) Any crack in the LPC R1 exists.

Note 1 to paragraph (g)(3): Guidance on determining the serviceable limits in paragraph (g)(3) of this AD can be found in PW Service Bulletin (SB) PW1000G-A-72-00-0125-00A-930A-D, Issue No. 002, dated October 24, 2019, and PW SB PW1000G-A-72-00-0075-00B-930A-D, Issue No. 003, dated October 24, 2019.

(4) For PW PW1519G, PW1521G, PW1521G-3, PW1521GA, PW1524G, PW1524G-3, PW1525G, and PW1525G-3 model turbofan engines, within 120 days from the effective date of this AD, remove the EEC FADEC software if the version is earlier than EEC FADEC software version V2.11.10.4 and install EEC FADEC software that is eligible for installation.

(5) For PW PW1919G, PW1921G, PW1922G, PW1923G, and PW1923G-A model turbofan engines, within 120 days of the effective date of this AD, remove the

EEC FADEC software if the version is earlier than EEC FADEC software version V9.5.6.7 and install EEC FADEC software that is eligible for installation.

(6) For PW PW1519G, PW1521G, PW1521G-3, PW1521GA, PW1524G, PW1524G-3, PW1525G, and PW1525G-3 model turbofan engines with EEC FADEC software version V2.11.10.4 or later installed, within 15 FCs after receipt of Onboard Maintenance Message fault code 7100F0029 or 7100F0030, perform a BSI of the LPC R1 for damage and cracks at the locations in paragraph (g)(1)(iv) of this AD if the fault code is displayed on the "Active Failure Messages" and meets the following criteria:

(i) N1 Exceedance is above 95.2%;

(ii) N1 Exceedance occurred above 29,100 feet; and

(iii) N1 Exceedance occurs for a duration of 40 seconds (15 seconds of cockpit display) or more during any flight.

Note 2 to paragraph (g)(6): Guidance on determining the N1 Exceedance duration can be found in PW Section PW1000G-A-72-00-00-02A-0B5A-A of PW Engine Maintenance Manual (EMM), Issue No. 016, dated January 15, 2021.

Note 3 to paragraph (g)(6): Guidance on performing the BSI can be found in PW Section PW1000G-A-72-31-00-00A-312A-D of PW EMM, Issue No. 016, dated January 11, 2021.

(7) As the result of the BSI of the LPC R1 required by paragraph (g)(6) of this AD, before further flight, remove and replace the LPC R1 if:

(i) There is damage on an LPC R1 that exceeds serviceable limits; or

(ii) Any crack in the LPC R1 exists.

(h) Terminating Actions

(1) For PW1519G, PW1521G, PW1521G-3, PW1521GA, PW1524G, PW1524G-3, PW1525G, and PW1525G-3 model turbofan engines, the installation of EEC FADEC software required by paragraph (g)(4) of this AD terminates the repetitive BSI requirements of paragraphs (g)(1) and (2) of this AD.

(2) For PW1919G, PW1921G, PW1922G, PW1923G, and PW1923G-A model turbofan engines, the installation of EEC FADEC software required by paragraph (g)(5)

of this AD terminates the repetitive BSI requirements of paragraphs (g)(1) and (2) of this AD.

(i) Installation Prohibition

After the effective date of this AD, do not install EEC FADEC software earlier than version V2.11.10.4 or version V9.5.6.7 onto any engine identified in paragraph (c) of this AD.

(j) Definitions

(1) For the purpose of this AD, a "zero time spare" is an engine that had zero flight hours time-in-service when it was installed on an airplane after the airplane had entered service.

(2) For the purpose of this AD, "EEC FADEC software that is eligible for installation" is EEC FADEC software version V2.11.10.4 or later for PW1519G, PW1521G, PW1521G-3, PW1521GA, PW1524G, PW1524G-3, PW1525G, PW1525G-3 model turbofan engines and EEC FADEC software version V9.5.6.7 or later for PW1919G, PW1921G, PW1922G, PW1923G, and PW1923G-A model turbofan engines.

(k) 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.

(3) AMOCs approved for AD 2019-21-11 (84 FR 57813, October 29, 2019) are approved as AMOCs for the corresponding provisions of this AD except for paragraphs (g)(1)(i) through (iv) and (g)(3)(i) and (ii) of this AD.

(l) Related Information

(1) For more information about this AD, contact Nicholas Paine, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7116; fax: (781) 238-7719; email: nicholas.j.paine@faa.gov.

(2) For service information identified in this AD, contact Pratt & Whitney, 400 Main Street, East Hartford, CT, 06118; phone: (800) 565-0140; email: help24@pw.utc.com; website: http://fleetcare.pw.utc.com. 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 March 18, 2021.

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

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