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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2019-0459; Product Identifier 2018-NE-36-AD; Amendment 39-19699; AD 2019-15-06]

RIN 2120-AA64

Airworthiness Directives; Engine Alliance Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule; request for comments.

SUMMARY: The FAA is superseding Airworthiness Directive (AD) 2018-22-07 for all Engine Alliance (EA) GP7270, GP7272, and GP7277 model turbofan engines. AD 2018-22-07 required inspection of the stage 6 seal ring for correct installation and inspection of the high-pressure compressor (HPC) stages 2-5 spool for cracks and, depending on the results of the inspections, replacement of the HPC stages 2-5 spool with a part eligible for installation. This AD requires the same inspections but reduces the inspection interval and adds a repetitive inspection and a mandatory terminating action. This AD was prompted by a shop finding of axial cracks in the interstage 5-6 seal teeth of the HPC stages 2-5 spool spacer arm due to an incorrectly installed stage 6 seal ring. The FAA is issuing this AD to address the unsafe condition on these products.

DATES: This AD is effective August 30, 2019.

The Director of the Federal Register approved the incorporation by reference of certain publications listed in this AD as of August 30, 2019.

The FAA must receive any comments on this AD by September 30, 2019.

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: 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 Engine Alliance, 411 Silver Lane, East Hartford, CT, 06118; phone: 800-565-0140; email: help24@pw.utc.com; website: www.engineallianceportal.com. You may view this service information at the FAA, Engine and Propeller Standards 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 on the internet at http://www.regulations.gov by searching for and locating Docket No. FAA-2019-0459.

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-2019-0459; 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 regulatory evaluation, any comments received, and other information. The street address for Docket Operations is listed above. Comments will be available in the AD docket shortly after receipt.

FOR FURTHER INFORMATION CONTACT: Matthew Smith, Aerospace Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: 781-238-7735; fax: 781-238-7199; email: Matthew.C.Smith@faa.gov.

SUPPLEMENTARY INFORMATION:
Discussion

The FAA issued AD 2018-22-07, Amendment 39-19480 (83 FR 66609, December 27, 2018), ("AD 2018-22-07") for all EA GP7270, GP7272, and GP7277 model turbofan engines. AD 2018-22-07 required inspection of the stage 6 seal ring for correct installation and inspection of the HPC stages 2-5 spool for cracks and, depending on the results of the inspections, replacement of the HPC stages 2-5 spool with a part eligible for installation. AD 2018-22-07 resulted from a shop finding of axial cracks in the HPC interstage 5-6 seal teeth of the HPC stages 2-5 spool spacer arm due to an incorrectly installed stage 6 seal ring. The FAA issued AD 2018-22-07 to prevent failure of the HPC interstage 5-6 seal teeth and uncontained release of the HPC stages 2-5 spool.

Actions Since AD 2018-22-07 Was Issued

Since the FAA issued AD 2018-22-07, EA identified additional cracks as a result of inspections required by AD 2018-22-07. After further analysis, EA identified a subpopulation of parts that had the HPC rotor assembly disassembled and reassembled, which require additional inspections. EA subsequently completed a new safety risk assessment and, based on the findings, decided to retain the previous inspections but also add repetitive inspections and an additional in-shop inspection as a terminating action. The in-shop inspections are a terminating action for the engines with HPC stages 2-5 spools identified in paragraph (g)(2) of this AD. The FAA is issuing this AD to address the unsafe condition on these products.

Related Service Information Under 1 CFR Part 51

The FAA reviewed EA Alert Service Bulletin (ASB) EAGP7-A72-395, Revision No. 3, dated June 3, 2019; EA Service Bulletin (SB) EAGP7-72-413, dated February 4, 2019; and EA SB EAGP7-72-398, dated February 4, 2019. EA ASB EAGP7-A72-395 describes procedures for performing a borescope inspection (BSI) of the HPC stages 2-5 spool for cracks, visual inspection of the stage 6 seal ring for correct installation, visual inspection of the HPC interstage 5-6 seal teeth for damage, and removal and replacement of parts if damage is found outside serviceable limits. EA SB EAGP7-72-413 describes procedures for performing a repetitive BSI of the aft and forward HPC interstage 5-6 seal teeth for cracks or missing coating. EA SB EAGP7-72-398 describes procedures

for performing an ECI and dimensional inspection of the HPC stages 2-5 spool interstage 5-6 seal teeth for cracks. 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

The FAA is issuing this AD because it 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.

AD Requirements

This AD requires an initial inspection of the HPC stage 6 seal ring for correct installation and inspection of the HPC stages 2-5 spool for cracks or missing coating. This AD also requires repetitive on-wing inspections for a sub-population of HPT stages 2-5 spools. This AD requires removal and replacement of the HPC stages 2-5 spool if, as the result of any inspection required by this AD, the stage 6 seal ring is found installed incorrectly or the HPC interstage 5-6 seal teeth are found cracked or are missing coating. As terminating action to the repetitive on-wing inspections, this AD requires additional in-shop inspections and replacement of the HPC stages 2-5 spool based on the results of those inspections.

FAA's Justification and Determination of the Effective Date

No domestic operators use this product. Therefore, the FAA finds good cause that notice and opportunity for prior public comment are unnecessary. In addition, for the reason stated above, the FAA finds that good cause exists for making this amendment effective in less than 30 days.

Comments Invited

This AD is a final rule that involves requirements affecting flight safety, and the FAA did not provide you with notice and an opportunity to provide your comments before it becomes effective. However, 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-2019-0459 and product identifier 2018-NE-36-AD at the beginning of your comments. The FAA specifically invites comments on the overall regulatory, economic, environmental, and energy aspects of this final rule. The FAA will consider all comments received by the closing date and may amend this final rule because of those comments.

The FAA will post all comments received, without change, to http://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.

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 estimates that this AD affects zero 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
Initial BSI	4 work-hours × $85 per hour = $340	$0	$340	$0
Repetitive BSI	3 work-hours × $85 per hour = $255	0	255	0
In-shop terminating action	6 work-hours × $85 per hour = $510	0	510	0

The FAA estimates the following costs to do any necessary replacements that would be required based on the results of the inspection. The FAA has no way of determining the number of aircraft that might need these replacements:

On-Condition Costs

Action	Labor cost	Parts cost	Cost per product
Replacement of HPC stages 2-5 spool	8 work-hours × $85 per hour = $680	$346,540	$347,220

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.

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

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, and

(2) Will not affect intrastate aviation in Alaska.

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 part 39 of the Federal Aviation Regulations (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 removing Airworthiness Directive (AD) 2018-22-07, Amendment 39-19480 (83 FR 66609, December 27, 2018) and adding the following new AD:

2019-15-06 Engine Alliance: Amendment 39-19699; Docket No. FAA-2019-0459; Product Identifier 2018-NE-36-AD.

(a) Effective Date

This AD is effective August 30, 2019.

(b) Affected ADs

This AD replaces AD 2018-22-07, Amendment 39-19480 (83 FR 66609, December 27, 2018).

(c) Applicability

This AD applies to all Engine Alliance (EA) GP7270, GP7272, and GP7277 model turbofan engines.

(d) Subject

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

(e) Unsafe Condition

This AD was prompted by a shop finding of axial cracks in the interstage 5-6 seal teeth of the high-pressure compressor (HPC) stages 2-5 spool spacer arm due to an incorrectly installed stage 6 seal ring. The FAA is issuing this AD to prevent failure of the HPC interstage 5-6 seal teeth and uncontained HPC stages 2-5 spool release. The unsafe condition, if not addressed, could result in an uncontained release of the HPC stages 2-5 spool, 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 all HPC stages 2-5 spools, perform an initial borescope inspection (BSI) of the HPC stage 6 seal ring position:

(i) Borescope inspect the HPC stage 6 seal ring location in accordance with the Accomplishment Instructions, paragraph 1.F, of EA Alert Service Bulletin (ASB) EAGP7-A72-395, Revision No. 3, dated June 3, 2019, and within the compliance times specified in Table 1 to paragraph (g)(1) of this AD or within 230 engine cycles after the effective date of this AD, whichever occurs first. If the HPC stage 6 seal ring is installed incorrectly, remove the HPC stages 2-5 spool from service within 50 engine cycles and replace with a part eligible for installation, and correct the location of the stage 6 seal ring.

(ii) Borescope inspect the HPC interstage 5-6 seal tooth forward and aft face for cracks and missing coating in accordance with the Accomplishment Instructions, paragraphs 2.C and 2.E, of EA ASB EAGP7-A72-395, Revision No. 3, dated June 3, 2019, and within the compliance times specified in Table 1 to paragraph (g)(1) of this AD or within 230 engine cycles after the effective date of this AD, whichever occurs first.

(A) If the coating is missing on the HPC interstage 5-6 seal tooth forward or aft face, thereafter, repeat the BSI required by paragraph (g)(1)(ii) of this AD for cracks within every 150 engine cycles since you performed the last BSI.

(B) If cracks are found in the HPC interstage 5-6 seal tooth forward or aft face, remove the HPC stages 2-5 spool from service and replace with a part eligible for installation before further flight.

Table 1 to Paragraph (g)(1)–Compliance Times

Cycles since new (CSN) on HPC stages 2-5 spool as of January 11, 2019 (the effective date of AD 2018-22-07)	Complete the inspection
2,499 or less	Within 900 engine cycles after January 11, 2019, but not to exceed 2,850 CSN.
2,500 to 3,499	Within 350 engine cycles after January 11, 2019, but not to exceed 3,600 CSN.
3,500 or more	Within 100 engine cycles after January 11, 2019.

(2) For HPC stages 2-5 spools listed in Table 1 of Appendix A of EA SB EAGP7-72-413, dated February 4, 2019, perform the following repetitive on-wing inspections:

(i) Borescope inspect the HPC interstage 5-6 seal tooth forward and aft face for cracks and missing coating in accordance with the Accomplishment Instructions, paragraphs 1.E. and 1.G., of EA SB EAGP7-72-413, dated February 4, 2019, within 300 engine cycles after completion of the initial inspection required by paragraph (g)(1)(ii) of this AD. If the engine has already accumulated more than 200 engine cycles since the inspection required by paragraph (g)(1)(ii) of this AD, perform this BSI of the HPC interstage 5-6 seal tooth forward and aft face within the next 100 engine cycles after the effective date of this AD, but before exceeding 500 engine cycles since the last inspection required by paragraph (g)(1)(ii) of this AD.

(A) If the coating is found missing on the HPC interstage 5-6 seal tooth forward or aft face during the BSI, thereafter, repeat the BSI required by paragraph (g)(2)(i) of this AD for cracks within every 150 engine cycles since last BSI required by paragraph (g)(2)(i).

(B) If cracks are found in the HPC interstage 5-6 seal tooth forward or aft face during the BSI, remove the HPC stages 2-5 spool from service and replace with a part eligible for installation before further flight.

(ii) Thereafter, repeat the BSI required by paragraph (g)(2)(i) of this AD at intervals not exceeding 300 engine cycles since the last BSI.

(h) Mandatory Terminating Action for HPC Stages 2-5 Spools Identified in Paragraph (g)(2) of This AD

As a terminating action to the on-wing repetitive BSI required by paragraph (g)(2) of this AD, at the next engine shop visit after the effective date of this AD, perform the following inspections and, if necessary, replacement of any HPC stages 2-5 spools listed in Table 1 of Appendix A of EA SB EAGP7-72-413, dated February 4, 2019.

(1) Visually inspect for the location of the HPC stage 6 seal ring in accordance with the Accomplishment Instructions, paragraph 1, of EA SB EAGP7-72-398, dated February 4, 2019. If the

seal ring is found to be installed incorrectly, remove the HPC stages 2-5 spool and the HPC stage 6 seal ring from service and replace with parts eligible for installation.

(2) Perform an eddy current inspection (ECI) of the HPC interstage 5-6 seal teeth on the HPC stages 2-5 spool in accordance with Accomplishment Instructions, paragraph 2, of EA SB EAGP7-72-398, dated February 4, 2019. If there are ECI indications, as defined in paragraph 2 of EA SB EAGP7-72-398, remove the HPC stages 2-5 spool from service and replace with a part eligible for installation.

(3) Dimensionally inspect the diameter of the middle tooth of the HPC interstage 5-6 seal teeth on eight equally spaced points of the HPC stages 2-5 spool in accordance with the Accomplishment Instructions, paragraph 3, of EA SB EAGP7-72-398, dated February 4, 2019. If the average diameter is larger than the "expected diameter," as defined in the Accomplishment Instructions, Figure 4 and Figure 5, of EA SB EAGP7-72-398, dated February 4, 2019, remove the HPC stages 2-5 spool from service and replace with a part eligible for installation.

(i) Definition

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 case flanges, except for the following situations, which do not constitute an engine shop visit:

(1) Separation of engine flanges solely for the purposes of transportation of the engine without subsequent maintenance.

(2) Separation of engine flanges solely for the purpose of replacing the fan or propulsor without subsequent engine maintenance.

(j) No Reporting Requirement

The reporting requirements in the Accomplishment Instructions, paragraphs 1 and 2 of EA SB EAGP7-72-398, dated February 4, 2019, are not required by this AD.

(k) Credit for Previous Actions

You may take credit for any of the initial inspections required by paragraph (g)(1) of this AD if you performed the initial inspection before the effective date of this AD using EA ASB EAGP7-A72-395, Revision No. 2, dated August 2, 2018. The repetitive inspections required by paragraph (g)(1) of this AD are still required if the HPC stage 6 seal ring position is installed incorrectly or the HPC interstage 5-6 seal tooth forward or aft face is cracked or missing coating as determined by the initial BSI required by paragraph (g)(1).

(l) 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 paragraph (m) 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.

(3) AMOCs approved for AD 2018-22-07, Amendment 39-19480 (83 FR 66609, December 27, 2018) are approved as AMOCs for paragraph (g)(1) of this AD.

(m) Related Information

For more information about this AD, contact Matthew Smith, Aerospace Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: 781-238-7735; fax: 781-238-7199; email: Matthew.C.Smith@faa.gov.

(n) 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) Engine Alliance (EA) Alert Service Bulletin EAGP7-A72-395, Revision No. 3, dated June 3, 2019.

(ii) EA Service Bulletin (SB) EAGP7-72-413, dated February 4, 2019.

(iii) EA SB EAGP7-72-398, dated February 4, 2019.

(3) For EA service information identified in this AD, contact Engine Alliance, 411 Silver Lane, East Hartford, CT 06118; phone: 800-565-0140; email: help24@pw.utc.com; website: www.engineallianceportal.com.

(4) You may view this service information at FAA, Engine and Propeller Standards 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, call 202-741-6030, or go to: http://www.archives.gov/federal-register/cfr/ibr-locations.html.

Issued in Burlington, Massachusetts, on August 2, 2019.
Karen M. Grant,
Acting Manager, Engine and Propeller Standards Branch,
Aircraft Certification Service.