



## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### 14 CFR Part 39

[Docket No. FAA-2024-0771; Project Identifier AD-2023-01251-E; Amendment 39-22720; AD 2024-06-15]

RIN 2120-AA64

#### Airworthiness Directives; General Electric Company 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 General Electric Company (GE) Model GE90-110B1 and GE90-115B engines. This AD was prompted by a report of an aborted takeoff due to left engine failure caused by liberation of the interstage high-pressure turbine (HPT) rotor seal rim. This AD requires repetitive ultrasonic inspections (USIs) of the interstage HPT rotor seal for cracks and removal from service if necessary. As a mandatory terminating action to the repetitive USIs of the interstage HPT rotor seal, this AD also requires replacement of the interstage HPT rotor seal. The FAA is issuing this AD to address the unsafe condition on these products.

**DATES:** This AD is effective [INSERT DATE 15 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of [INSERT DATE 15 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The FAA must receive comments on this 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 [regulations.gov](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.

*AD Docket:* You may examine the AD docket at [regulations.gov](https://www.regulations.gov) under Docket No. FAA-2024-0771; 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 Docket Operations is listed above.

*Material Incorporated by Reference:*

- For service information identified in this final rule, contact General Electric Company, 1 Neumann Way, Cincinnati, OH 45215; phone: (513) 552-3272; email: [aviation.fleetsupport@ae.ge.com](mailto:aviation.fleetsupport@ae.ge.com); website: [ge.com](https://www.ge.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 (817) 222-5110. It is also available at [regulations.gov](https://www.regulations.gov) under Docket No. FAA-2024-0771.

**FOR FURTHER INFORMATION CONTACT:** Alexander Thickstun, Aviation Safety Engineer, FAA, 2200 South 216th Street, Des Moines, WA 98198; phone: (202) 267-8292; email: [alexander.m.thickstun@faa.gov](mailto:alexander.m.thickstun@faa.gov).

**SUPPLEMENTARY INFORMATION:**

**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 ADDRESSES. Include “FAA-2024-0771Project Identifier AD-2023-01251-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 regulations.gov, including any personal information you provide. The agency will also post a report summarizing each substantive verbal contact received about this final rule.

### **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 AD 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 AD, 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 AD. Submissions containing CBI should be sent to Alexander Thickstun, Aviation Safety Engineer, FAA, 2200 South 216th Street, Des Moines, WA 98198. Any commentary that the FAA receives which is not specifically designated as CBI will be placed in the public docket for this rulemaking.

### **Background**

On October 19, 2019, a The Boeing Company Model 777 airplane, powered by GE Model GE90-115B engines, experienced an engine failure, which resulted in an aborted takeoff. A manufacturer investigation determined that the engine failure was caused by rim liberation of the interstage HPT rotor seal. Additional root cause analysis determined that rim liberation was the result of high cycle fatigue cracks initiating at the interstage seal web holes occurring from atypical intermittent operating conditions with short durations. As a result, the FAA issued Emergency AD 2019-21-51, Amendment 39-19798 (84 FR 64195, November 21, 2019) for certain GE GE90-115B model turbofan engines; Emergency AD 2020-01-55, Amendment 39-19838 (85 FR 8386, February 14,

2020) for certain GE GE90-115B model turbofan engines; and AD 2020-10-04, Amendment 39-21122 (85 FR 27909, May 12, 2020) for all GE GE90-110B1 and GE90-115B model turbofan engines with a certain interstage HPT rotor seal installed to remove affected parts from engines that had accumulated high flight cycles (FCs). Since the FAA issued those three ADs, the affected engines have continued to accumulate FCs, and the manufacturer has identified additional parts for inspection and removal. This condition, if not addressed, could result in uncontained HPT failure, release of high-energy debris, damage to the engine, damage to the airplane, and possible loss of 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 has determined the unsafe condition described previously is likely to exist or develop in other products of the same type design.

### **Related Service Information under 1 CFR Part 51**

The FAA reviewed GE GE90-100 Service Bulletin (SB) 72-0908 R00, dated July 7, 2023. The SB specifies procedures for performing a USI of the interstage HPT rotor seal. 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 ADDRESSES.

### **AD Requirements**

This AD requires repetitive USIs of the interstage HPT rotor seal for cracks and removal from service if necessary. As a mandatory terminating action to the repetitive USIs of the interstage HPT rotor seal, this AD requires replacement of the interstage HPT rotor seal.

### **Interim Action**

The FAA considers this AD to be an interim action. The unsafe condition is still under investigation by the manufacturer and, depending on the results of that investigation, the FAA may consider further rulemaking action.

## **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. 551 *et seq.*) 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 thirty days, upon a finding of good cause.

The FAA justifies waiving notice and comment prior to adoption of this rule because no domestic operators use this product. It is unlikely that the FAA will receive any adverse comments or useful information about this AD from any U.S. operator. Accordingly, notice and opportunity for prior public comment are unnecessary, pursuant to 5 U.S.C. 553(b)(3)(B). In addition, for the foregoing reason(s), 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.

## **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 FAA has determined that it has good cause to adopt this rule without prior notice and comment, RFA analysis is not required.

## **Costs of Compliance**

The FAA estimates that this AD affects 0 engines installed on airplanes of U.S. registry.

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

### **Estimated costs**

<b>Action</b>	<b>Labor Cost</b>	<b>Parts Cost</b>	<b>Cost per product</b>	<b>Cost on U.S. operators</b>
Remove interstage HPT rotor seal	100 work-hours x \$85 per hour = \$8,500	\$540,000	\$548,500	\$0

<b>Action</b>	<b>Labor Cost</b>	<b>Parts Cost</b>	<b>Cost per product</b>	<b>Cost on U.S. operators</b>
Perform USI of interstage HPT rotor seal	2 work-hours x \$85 per hour = \$170	\$0	\$170	\$0

### **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, 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.

### **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:

**2024-06-15 General Electric Company:** Amendment 39-22720; Docket No. FAA-2024-0771; Project Identifier AD-2023-01251-E.

#### **(a) Effective Date**

This airworthiness directive (AD) is effective [INSERT DATE 15 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

#### **(b) Affected ADs**

None.

#### **(c) Applicability**

This AD applies to General Electric Company (GE) Model GE90-110B1 and GE90-115B engines with an installed interstage high-pressure turbine (HPT) rotor seal having a part number and serial number listed in Table 1 or Table 2 of GE GE90-100 Service Bulletin (SB) 72-A0908 R00, dated July 7, 2023 (GE SB 72-A0908).

#### **(d) Subject**

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

#### **(e) Unsafe Condition**

This AD was prompted by a report of an aborted takeoff due to left engine failure caused by liberation of the interstage HPT rotor seal rim. The FAA is issuing this AD to prevent failure of the HPT. The unsafe condition, if not addressed, could result in uncontained HPT failure, release of high-energy debris, damage to the engine, damage to the airplane, and possible loss of the airplane.

#### **(f) Compliance**

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

**(g) Required Actions**

(1) Perform an ultrasonic inspection (USI) of the interstage HPT rotor seal in accordance with the Accomplishment Instructions, paragraph 3.B.(2), of GE SB 72-A0908, as follows:

(i) Perform an initial USI before reaching the part cycles since new limit listed in Table 1 or Table 2, as applicable, of GE SB 72-A0908, or within 10 flight cycles after the effective date of this AD, whichever occurs later; and

(ii) Repeat the USI thereafter within every 100 cycles or 175 cycles, as applicable, as listed in Table 1 or Table 2 of GE SB 72-A0908, since the last inspection.

(2) If, during any USI required by paragraph (g)(1)(i) or (ii) of this AD, a non-serviceable indication is found, as defined in paragraph 3.B.(2)(b) of GE SB 72-A0908, before further flight, remove the interstage HPT rotor seal from service.

**(h) Mandatory Terminating Action**

As a terminating action to the repetitive USI required by paragraph (g)(1)(i) or (ii) of this AD, at the next engine shop visit after the effective date of this AD, remove the affected interstage HPT rotor seal from service.

**(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 separation of engine flanges solely for the purposes of transportation of the engine without subsequent maintenance, which does not constitute an engine shop visit.

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

(1) The Manager, AIR-520 Continued Operational Safety 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 AIR-520 Continued Operational Safety Branch, send it to the attention of the person identified in paragraph (k) of this AD and email 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) Additional Information**

For more information about this AD, contact Alexander Thickstun, Aviation Safety Engineer, FAA, 2200 South 216th Street, Des Moines, WA 98198; phone: (202) 267-8292; email: alexander.m.thickstun@faa.gov.

**(l) 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) General Electric Company GE90-100 Service Bulletin 72-0908 R00, dated July 7, 2023.

(ii) [Reserved]

(3) For service information identified in this AD, contact General Electric Company, 1 Newman Way, Cincinnati, OH 45215; phone: (513) 552-3272; email: aviation.fleetsupport@ae.ge.com; website: ge.com.

(4) 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 (817) 222-5110.

(5) You may view this material at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, visit [www.archives.gov/federal-register/cfr/ibr-locations](http://www.archives.gov/federal-register/cfr/ibr-locations) or email [fr.inspection@nara.gov](mailto:fr.inspection@nara.gov).

Issued on March 25, 2024.

Victor Wicklund,  
Deputy Director, Compliance & Airworthiness Division,  
Aircraft Certification Service.

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