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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. FAA-2017-0164; Product Identifier 2017-NE-06-AD; Amendment 39-19008; AD 2017-17-18]**

**RIN 2120-AA64**

#### **Airworthiness Directives; General Electric Company Turbofan Engines**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final rule.

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**SUMMARY:** We are adopting a new airworthiness directive (AD) for certain General Electric Company (GE) CF34-8 model turbofan engines. This AD was prompted by analysis that resulted in the reduction of the life of the affected fan blades. This AD requires inspections of the affected fan blades until their removal. We are issuing this AD to address the unsafe condition on these products.

**DATES:** This AD is effective October 6, 2017.

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of October 6, 2017.

**ADDRESSES:** For service information identified in this final rule, contact General Electric Company, GE-Aviation, Room 285, 1 Neumann Way, Cincinnati, OH 45215, phone: 513-552-3272; fax: 513-552-3329; email: [gae.aoc@ge.com](mailto:gae.aoc@ge.com). You may view this service information at the FAA, Engine and Propeller Standards Branch, Policy and Innovation Division, 1200 District Avenue, Burlington, MA. For information on the availability of this material at the FAA, call 781-238-7125. It is also available on the internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2017-0164.

#### **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-2017-0164; or in person at the Docket Management Facility 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 address for the Docket Office (phone: 800-647-5527) is Document Management Facility, U.S. Department of

Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.

**FOR FURTHER INFORMATION CONTACT:** John Frost, Aerospace Engineer, FAA, ECO Branch, Compliance and Airworthiness Division, 1200 District Avenue, Burlington, MA 01803; phone: 781-238-7756; fax: 781-238-7199; email: john.frost@faa.gov.

## **SUPPLEMENTARY INFORMATION:**

### **Discussion**

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 by adding an AD that would apply to certain GE CF34-8 model turbofan engines. The NPRM published in the Federal Register on April 14, 2017 (82 FR 17945). The NPRM was prompted by analysis that showed that the stresses in the pinholes, in the affected fan blades, could result in crack initiation at pinhole surfaces beyond 19,000, 19,500, or 25,000 cycles-since-new (CSN), depending on the engine model on which the blade is installed. The NPRM proposed to require initial and repetitive eddy current inspections (ECIs) and removal of affected fan blades before reaching 41,000 CSN. The NPRM also provided an option to repair affected blades, which allows for an additional 28,000 cycles before removal. This condition, if not corrected, could result in failure of the fan blade, uncontained blade release, damage to the engine, and damage to the airplane.

### **Comments**

We gave the public the opportunity to participate in developing this final rule. The following presents the comments received on the NPRM and the FAA's response to each comment.

The Air Line Pilots Association expressed support for the NPRM.

### **Request To Rescind the AD**

Republic Airlines requested that we rescind the AD action. Republic Airlines does not feel that the failure of the blade is an airworthiness issue that should be addressed by this AD. Republic Airlines feels that in the event of a failed blade, the aircraft could continue to a safe flight and landing. The failure would be evident operationally and the crews would take the appropriate steps to return the aircraft and its occupants safely to the closest airport.

We disagree. Based on the analysis that resulted in the reduction of the life of the affected fan blades, the FAA determined an unsafe condition exists based on the extremely high number of forecasted events. We did not change this AD.

### **Request To Change Related Service Information**

J-Air & Horizon Air requested that we mandate the use of specific service bulletins in paragraph (g) of this AD. Paragraph (g) of this AD does not specify an ECI procedure.

We partially agree. We disagree with mandating the use of specific service bulletins in paragraph (g) of this AD because that would preclude the use of other procedures that may be acceptable.

However, we added a statement to compliance paragraph (g) in this AD indicating the GE service documents in which guidance can be found for performing the ECI.

### **Request To Add Repetitive Inspections Intervals**

Horizon Air requested that we provide instructions with regard to the repetitive inspection interval requirements for fan blades that have accumulated an unknown number of CSN.

We agree. We added paragraph (g)(4)(iii) of this AD to mandate a repetitive inspection.

### **Request To Add Terminating Action**

Horizon Air requested that we provide a designated paragraph for terminating action. Although paragraph (h) of this AD provides fan blade, part number (P/N) 4114T31G01, as a repair option, the repair is not specifically given as a means to terminate the repetitive inspections required for fan blade, P/N 4114T15P02.

We disagree. This AD requires repetitive inspections only for fan blade, P/N 4114T15P02. Therefore, once a fan blade is repaired to P/N 4114T31G01, a repetitive inspection is not required. We did not change this AD.

### **Request To Update Service Information**

Horizon Air requested that all references to GE Alert Service Bulletin (ASB) CF34-8E SB 72-A0115, R03 be revised to R04.

We agree. We revised this AD to refer to the latest service information revision and date.

### **Conclusion**

We reviewed the relevant data, considered the comments received, and determined that air safety and the public interest require adopting this final rule with the changes described previously and minor editorial changes. We have determined that these minor changes:

- Are consistent with the intent that was proposed in the NPRM for correcting the unsafe condition; and
- Do not add any additional burden upon the public than was already proposed in the NPRM.

We also determined that these changes will not increase the economic burden on any operator or increase the scope of this final rule.

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

We reviewed GE ASB CF34-8C SB 72-A0137, Revision 5 (R05), dated June 15, 2016. This ASB identifies an approved inspection method and provides the procedures necessary for calculating the adjusted CSN for the initial inspection of CF34-8C fan blades.

We also reviewed CF34-8E ASB 72-A0060, Revision 5 (R05), dated June 15, 2016. This ASB identifies an approved inspection method and provides the procedures necessary for calculating the adjusted CSN for the initial inspection of CF34-8E fan blades.

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.

### **Other Related Service Information**

We reviewed GE ASBs CF34-8E SB 72-A0115, R04, dated December 9, 2016; and CF34-8C SB 72-A0225, R03, dated December 9, 2016. These ASBs describe procedures for repairing fan blade, part number (P/N) 4114T15P02 to P/N 4114T31G01, with the installation of a bushing in the pinholes.

### **Costs of Compliance**

We estimate that this AD affects 1,986 engines installed on airplanes of U.S. registry. We estimate the following costs to comply with this AD:

### Estimated Costs

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Initial ECI Inspection	4 work-hours × \$85 per hour = \$340	\$0	\$340	\$675,240
Replacement of fan blade (prorated annual cost)	0 work-hours × \$85 per hour = \$0	5,460	5,460	10,843,560

### 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

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) Is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979),
- (3) Will not affect intrastate aviation in Alaska to the extent that it justifies making a regulatory distinction, 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.

### Adoption of 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):



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**2017-17-18 General Electric Company:** Amendment 39-19008; Docket No. FAA-2017-0164;  
Product Identifier 2017-NE-06-AD.

**(a) Effective Date**

This AD is effective October 6, 2017.

**(b) Affected ADs**

None.

**(c) Applicability**

This AD applies to General Electric Company (GE) CF34-8C1, CF34-8C5, CF34-8C5A1, CF34-8C5B1, CF34-8C5A2, CF34-8C5A3, CF34-8E2, CF34-8E2A1, CF34-8E5, CF34-8E5A1, CF34-8E5A2, CF34-8E6 and CF34-8E6A1 engines, including engines marked on the engine data plate as CF34-8C5B1/B, CF34-8C5/B, CF34-8C5A1/B, CF34-8C5A2/B, CF34-8C5/M, CF34-8C5A1/M, CF34-8C5A2/M, CF34-8C5A3/B, or CF34-8C5B1/M, with a fan blade, part number (P/N) 4114T15P02 or P/N 4114T31G01, installed.

**(d) Subject**

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

**(e) Unsafe Condition**

This AD was prompted by analysis that resulted in the reduction of the life of the affected fan blades. We are issuing this AD to prevent failure of the fan blade, uncontained blade release, damage to the engine, and damage to the airplane.

**(f) Compliance**

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

**(g) Eddy Current Inspections (ECIs)**

(1) For CF34-8C1, CF34-8C5B1, CF34-8C5B1/B and CF34-8E2 engines with fan blade, P/N 4114T15P02, installed:

(i) Perform an initial ECI of the fan blade pinhole prior to the fan blade accumulating 25,000 cycles-since-new (CSN); and

(ii) Repeat this inspection within every 3,000 cycles thereafter.

(2) For CF34-8C5, CF34-8C5/B, CF34-8C5A1, CF34-8C5A1/B, CF34-8C5A2, CF34-8C5A2/B, CF34-8E2A1, CF34-8E5, CF34-8E5A1, CF34-8E6 and CF34-8E6A1 engines with fan blade, P/N 4114T15P02, installed:

(i) Perform an initial ECI of the fan blade pinhole prior to the fan blade accumulating 19,500 CSN; and

(ii) Repeat this inspection within every 3,000 cycles thereafter, until the fan blade has accumulated 25,000 CSN, then repeat the inspection every 1,500 cycles thereafter.

(3) For CF34-8C5/M, CF34-8C5A1/M, CF34-8C5A2/M, CF34-8C5A3, CF34-8C5A3/B, CF34-8C5B1/M, and CF34-8E5A2 engines with fan blade, P/N 4114T15P02, installed:

(i) Perform an initial ECI of the fan blade pinhole prior to the fan blade accumulating 19,000 CSN; and

(ii) Repeat this inspection within every 3,000 cycles thereafter, until the fan blade has accumulated 25,000 CSN, then repeat the inspection every 1,500 cycles thereafter.

(4) For any affected engine with a fan blade, P/N 4114T15P02, installed, where the CSN of the fan blade is unknown on the effective date of this AD:

(i) Assume the blade has accumulated 25,000 CSN on the effective date of this AD; and

(ii) Inspect the blade prior to installation or within 500 cycles after the effective date of this AD, whichever is earlier.

(iii) Repeat this inspection based on the intervals of the new engine installation, as specified in paragraph (g) of this AD.

(5) If a fan blade is moved from one affected engine model to another affected model after the initial ECI:

(i) Perform an additional ECI of the blade prior to installation in the new model; and

(ii) Repeat this inspection based on the intervals of the new engine installation, as specified in paragraph (g) of this AD.

(6) If a fan blade, P/N 4114T15P02, has been used on more than one engine model prior to the initial ECI, use Appendix A of GE Alert Service Bulletin (ASB) CF34-8C SB 72-A0137, R05, dated June 15, 2016, or Appendix A of GE ASB CF34-8E SB 72-A0060, R05, dated June 15, 2016, to calculate the new cycle limit for the initial inspection of that fan blade.

(7) Guidance on performing the ECI can be found in GE Service Bulletins GE ASB CF34-8C SB 72-A0137, R05, dated June 15, 2016, or GE ASB CF34-8E SB 72-A0060, R05, dated June 15, 2016.

#### **(h) Fan Blade Removal**

(1) For any affected engine with a fan blade, P/N 4114T15P02, installed, remove the blade from service or repair to P/N 4114T31G01 prior to the blade accumulating 41,000 CSN.

(2) For any affected engine with a fan blade, P/N 4114T31G01, installed, remove the blade from service prior to the blade accumulating 28,000 cycles since installation of the pinhole bushing.

#### **(i) Alternative Methods of Compliance (AMOCs)**

(1) The Manager, FAA, ECO Branch, Compliance and Airworthiness Division, 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 (i)(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.

## **(j) Related Information**

(1) For more information about this AD, contact John Frost, Aerospace Engineer, FAA, ECO Branch, Compliance and Airworthiness Division, 1200 District Avenue, Burlington, MA 01803; phone: 781-238-7756; fax: 781-238-7199; email: john.frost@faa.gov.

(2) GE ASB CF34-8E SB 72-A0115, R04, dated December 9, 2016, and GE ASB CF34-8C SB 72-A0225, R03, dated December 9, 2016, can be obtained from GE using the contact information in paragraph (k)(3) of this AD.

## **(k) 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 (GE) Alert Service Bulletin (ASB) CF34-8C SB 72-A0137, Revision 5 (R05), dated June 15, 2016.

(ii) GE ASB CF34-8E SB 72-A0060, Revision 5 (R05), dated June 15, 2016.

(3) For General Electric Company service information identified in this AD, contact General Electric Company, GE-Aviation, Room 285, 1 Neumann Way, Cincinnati, OH 45215, phone: 513-552-3272; fax: 513-552-3329; email: geae.aoc@ge.com.

(4) You may view this service information at FAA, Engine and Propeller Standards Branch, Policy and Innovation Division, 1200 District Avenue, Burlington, MA. For information on the availability of this material at the FAA, call 781-238-7125.

(5) You may view this service information 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 29, 2017.

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