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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

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

**[Docket No. FAA-2016-4227; Directorate Identifier 2016-NM-025-AD; Amendment 39-18439; AD 2016-06-08]**

**RIN 2120-AA64**

#### **Airworthiness Directives; The Boeing Company Airplanes**

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

**ACTION:** Final rule; request for comments.

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**SUMMARY:** We are adopting a new airworthiness directive (AD) for The Boeing Company Model 787-8 and 787-9 airplanes powered by GE GENx engines. This AD requires revising the airplane flight manual to provide the flight crew a new fan ice removal procedure to reduce the likelihood of engine damage due to fan ice shedding. This AD also requires, for certain airplanes, reworking the fan stator module assembly on GE GENx-1B Performance Improvement Program (PIP) 2 engines. This AD was prompted by a recent engine fan blade rub event that caused an in-flight non-restartable power loss. We are issuing this AD to prevent reduced fan tip clearance, which could result in engine damage and a possible in-flight non-restartable power loss of one or both engines.

**DATES:** This AD is effective March 18, 2016.

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of March 18, 2016.

We must receive comments on this AD by May 2, 2016.

**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 General Electric Company, GE Aviation, Room 285, 1 Neumann Way, Cincinnati, OH 45215; phone: 513-552-3272; email: [geae.aoc@ge.com](mailto:geae.aoc@ge.com). You may view this referenced service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue SW., Renton, WA. For information on the availability of this material at the FAA, call 425-227-1221. It is also available on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2016-4227.

### **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-2016-4227; 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 AD, the regulatory evaluation, any comments received, and other information. The street address for the Docket Office (phone: 800-647-5527) is in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

**FOR FURTHER INFORMATION CONTACT:** Sue Lucier, Aerospace Engineer, Propulsion Branch, ANM-140S, FAA, Seattle Aircraft Certification Office (ACO), 1601 Lind Avenue SW., Renton, WA 98057-3356; phone: 425-917-6438; fax: 425-917-6590; email: [Suzanne.Lucier@faa.gov](mailto:Suzanne.Lucier@faa.gov).

### **SUPPLEMENTARY INFORMATION:**

#### **Discussion**

We received a report of a significant GE GENx-1B PIP2 engine fan rub event, apparently caused by partial fan ice shedding and a resulting fan imbalance that in turn caused substantial damage to the engine and an in-flight non-restartable power loss. We continue to investigate this issue with Boeing and GE; however, the engine damage appears to be a result of reduced fan tip clearances common to the GENx-1B PIP2 engine. The other engine on the event airplane was a GENx-1B PIP1 configuration that incurred expected wear and minor damage during the icing event and continued to operate normally. The event occurred in icing conditions at an altitude of 20,000 feet. Reduced fan tip clearance, if not corrected, could result in engine damage and a possible in-flight non-restartable power loss of one or both engines. We are issuing this AD to correct the unsafe condition on these products.

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

We reviewed GE GENx-1B Service Bulletin 72-0309 R00, dated March 11, 2016, which describes procedures for reworking the fan stator module assembly on GENx-1B PIP2 engines. 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**

We are issuing this AD because we 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 accomplishing the actions specified in the GE service information described previously. This AD also requires revising the airplane flight manual (AFM) to provide the flight crew a new fan ice removal procedure to reduce the likelihood of engine damage due to fan ice shedding.

## Interim Action

We consider this AD interim action. The engine manufacturer is currently developing a modification that will address the unsafe condition identified in this AD. Once this modification is developed, approved, and available, we may consider additional rulemaking.

## FAA's Justification and Determination of the Effective Date

An unsafe condition exists that requires the immediate adoption of this AD. The FAA has found that the risk to the flying public justifies waiving notice and comment prior to adoption of this rule because reduced fan tip clearance could result in engine damage and a possible in-flight non-restartable power loss of one or both engines. Therefore, we find that notice and opportunity for prior public comment are impracticable and 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 was not preceded by notice and an opportunity for public comment. However, we invite you to send any written data, views, or arguments about this AD. Send your comments to an address listed under the ADDRESSES section. Include the docket number FAA-2016-4227 and Directorate Identifier 2016-NM-025-AD at the beginning of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of this AD. We will consider all comments received by the closing date and may amend this AD because of those comments.

We will post all comments we receive, without change, to <http://www.regulations.gov>, including any personal information you provide. We will also post a report summarizing each substantive verbal contact we receive about this AD.

## Costs of Compliance

We estimate that this AD affects 34 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
AFM revision	1 work-hour × \$85 per hour = \$85	\$0	\$85	\$2,890.
Rework	40 work-hours × \$85 per hour = \$3,400	0	3,400	3,400 (1 affected airplane).

## **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.

## **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, 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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**2016-06-08 The Boeing Company:** Amendment 39-18439; Docket No. FAA-2016-4227; Directorate Identifier 2016-NM-025-AD.

**(a) Effective Date**

This AD is effective March 18, 2016.

**(b) Affected ADs**

None.

**(c) Applicability**

This AD applies to The Boeing Company Model 787-8 and 787-9 airplanes, certificated in any category, powered by General Electric (GE) GENx engines.

**(d) Subject**

Air Transport Association (ATA) of America Code 72, Engines.

**(e) Unsafe Condition**

This AD was prompted by a recent engine fan blade rub event that caused an in-flight non-restartable power loss. We are issuing this AD to prevent reduced fan tip clearance, which could result in engine damage and a possible in-flight non-restartable power loss of one or both engines.

**(f) Compliance**

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

**(g) Revision of Airplane Flight Manual (AFM): Certificate Limitations**

Within 7 days after the effective date of this AD, revise the Certificate Limitations chapter of the applicable Boeing 787 AFM to include the statement provided in figure 1 to paragraph (g) of this AD. This may be done by inserting a copy of this AD into the AFM.

**Figure 1 to Paragraph (g) of This AD**

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**Engine Operational Limits**

*Cold Weather Operations Fan Ice Removal*

In order to avoid possible fan damage and engine failure, when in icing conditions above 12,500 feet MSL, the flight crew must comply with the Cold Weather Operations Additional Fan Ice Removal procedure contained in the Operating Procedures chapter of this manual.

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## **(h) AFM Revision: Operating Procedures**

Within 7 days after the effective date of this AD, revise the Operating Procedures chapter of the Boeing 787 AFM to include the statement provided in figure 2 to paragraph (h) of this AD. This may be done by inserting a copy of this AD into the AFM.

### **Figure 2 to Paragraph (h) of This AD**

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#### **Cold Weather Operations**

##### **Additional Fan Ice Removal Procedure**

This procedure is required when in icing conditions above 12,500 feet MSL, by the Engine Operational Limits Cold Weather Operations Fan Ice Removal limitation contained in the Certificate Limitations chapter of this manual. The language below shall not be modified.

During flight in icing conditions (EAI EICAS indication showing) with N1 settings below 85%, or when fan icing is suspected due to high engine vibration, the fan blades must be cleared of any ice. Do the following procedure every 5 minutes on both engines, one engine at a time: Increase to a minimum of 85% N1 momentarily, then resume normal operation.

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## **(i) Rework**

For airplanes with two engines with engine serial numbers listed in paragraph 1.A., "Effectivity," of GE GENx-1B Service Bulletin 72-0309 R00, dated March 11, 2016: On or before March 25, 2016, rework the fan stator module assembly of one of the engines, in accordance with paragraphs 3.A.(1)(b), 3.B., or 3.C. of the Accomplishment Instructions of GE GENx-1B Service Bulletin 72-0309 R00, dated March 11, 2016.

## **(j) Parts Installation Limitation**

As of March 25, 2016, no person may operate an airplane that has two engines with engine serial numbers listed in paragraph 1.A., "Effectivity," of GE GENx-1B Service Bulletin 72-0309 R00, dated March 11, 2016, unless at least one engine has been reworked in accordance with paragraph 3.A.(1)(b), 3.B., or 3.C. of the Accomplishment Instructions of GE GENx-1B Service Bulletin 72-0309 R00, dated March 11, 2016.

## **(k) Reporting Provisions**

Although GE GENx Service Bulletin GENx-1B 72-0309 R00, dated March 11, 2016, specifies reporting certain tip clearance measurements to GE, this AD does not require any report.

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

(1) The Manager, Seattle Aircraft Certification Office (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 ACO, send it to the attention of the person identified in paragraph (m) of this AD. Information may be emailed to: 9-ANM-Seattle-ACO-AMOC-Requests@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) An AMOC that provides an acceptable level of safety may be used for any repair, modification, or alteration required by this AD if it is approved by the Boeing Commercial Airplanes Organization Designation Authorization (ODA) that has been authorized by the Manager, Seattle ACO, to make those findings. To be approved, the repair method, modification deviation, or alteration deviation must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

**(m) Related Information**

For more information about this AD, contact Sue Lucier, Aerospace Engineer, Propulsion Branch, ANM-140S, FAA, Seattle ACO, 1601 Lind Avenue SW., Renton, WA 98057-3356; phone: 425-917-6438; fax: 425-917-6590; email: Suzanne.Lucier@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) GE GENx-1B Service Bulletin 72-0309 R00, dated March 11, 2016.

(ii) Reserved.

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

(4) You may view this service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue SW., Renton, WA. For information on the availability of this material at the FAA, call 425-227-1221.

(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 Renton, Washington, on March 14, 2016.

Michael Kaszycki,  
Acting Manager, Transport Airplane Directorate,  
Aircraft Certification Service.