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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

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

**[Docket No. FAA-2013-0976; Directorate Identifier 2013-NM-198-AD; Amendment 39-17686; AD 2013-24-12]**

**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 all The Boeing Company Model 747-8 and 747-8F series airplanes. This AD requires repetitive ultrasonic or dye penetrant inspections for cracking of the barrel nuts and bolts, as applicable, on each forward engine mount, and related investigative and corrective actions if necessary. This AD was prompted by a report of cracked barrel nuts found on a forward engine mount. We are issuing this AD to detect and correct cracked barrel nuts on a forward engine mount, which could result in reduced load capacity of the forward engine mount, and could result in separation of an engine under power from the airplane, and consequent loss of control of the airplane.

**DATES:** This AD is effective December 17, 2013.

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of December 17, 2013.

We must receive comments on this AD by January 16, 2014.

**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 AD, contact Boeing Commercial Airplanes, Attention: Data & Services Management, P. O. Box 3707, MC 2H-65, Seattle, WA 98124-2207; telephone 206-544-5000, extension 1; fax 206-766-5680; Internet <https://www.myboeingfleet.com>. You may view this referenced service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue SW., Renton, Washington. For information on the availability of this material at the FAA, call 425-227-1221.

## **Examining the AD Docket**

You may examine the AD docket on the Internet at <http://www.regulations.gov>; 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:** Bill Ashforth, Aerospace Engineer, Airframe Branch, ANM-120S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue SW., Renton, WA 98057-3356; phone: (425) 917-6432; fax: (425) 917-6590; email: [bill.ashforth@faa.gov](mailto:bill.ashforth@faa.gov).

## **SUPPLEMENTARY INFORMATION:**

### **Discussion**

We received a report that during the replacement of the No. 2 engine, an operator conducted a non-destructive test (NDT) inspection of the barrel nuts on the forward engine mount and found cracks on two of the four barrel nuts. The operator also discovered one cracked barrel nut on the No. 1 engine. Boeing did a NDT on the No. 2 engine of a flight test airplane and discovered two barrel nuts with cracks. The barrel nuts are located at the forward end of the strut box and are used to fasten the forward engine mount to the strut. A barrel nut with a crack on one side is still able to carry ultimate load. A crack on both sides of a barrel nut will cause complete failure of the barrel nut. Complete failure of two or more barrel nuts on the same forward engine mount reduces the load capacity of the forward engine mount and could result in separation of an engine from the airplane. Cracked barrel nuts on a forward engine mount, if not detected and corrected, could result in reduced load capacity of the forward engine mount, and could result in separation of an engine under power from the airplane, and consequent loss of control of the airplane.

### **Relevant Service Information**

We reviewed Boeing Alert Service Bulletin 747-71A2329, dated September 27, 2013. For information on the procedures and compliance times, see this service information at <http://www.regulations.gov> by searching for Docket No. FAA-2013-0976.

### **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 service information described previously. This AD also requires sending the inspection results and any cracked bolts and barrel nuts

to the manufacturer. The root cause of the cracking has not been determined and inspection data from the fleet needs to be gathered and analyzed.

The FAA worked in conjunction with industry, under the Airworthiness Directives Implementation Aviation Rulemaking Committee, to enhance the AD system. One enhancement was a new process for annotating which steps in the service information are required for compliance with an AD. Differentiating these steps from other tasks in the service information is expected to improve an owner's/operator's understanding of crucial AD requirements and help provide consistent judgment in AD compliance. The actions specified in the service information described previously include steps that are labeled as "RC" (required for compliance) because these steps have a direct effect on detecting, preventing, resolving, or eliminating an identified unsafe condition.

As noted in the specified service information, steps labeled as "RC" must be done to comply with the AD. However, steps that are not labeled as "RC" are recommended. Those steps that are not labeled as "RC" may be deviated from, done as part of other actions, or done using accepted methods different from those identified in the service information without obtaining approval of an alternative method of compliance (AMOC), provided the steps labeled as "RC" can be done and the airplane can be put back in a serviceable condition. Any substitutions or changes to steps labeled as "RC" will require approval of an AMOC.

The phrase "related investigative actions" is used in this AD. "Related investigative actions" are follow-on actions that (1) are related to the primary actions, and (2) further investigate the nature of any condition found. Related investigative actions in an AD could include, for example, inspections.

In addition, the phrase "corrective actions" is used in this AD. "Corrective actions" are actions that correct or address any condition found. Corrective actions in an AD could include, for example, repairs.

### **Interim Action**

This AD is considered to be interim action. The inspection reports and return of cracked parts that are required by this AD will enable the manufacturer to obtain better insight into the nature, cause, and extent of the cracking, and eventually to develop final action to address the unsafe condition. Once final action has been identified, we might consider further 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 cracked barrel nuts on a forward engine mount could result in reduced load capacity of the forward engine mount, and could result in separation of an engine under power from the airplane and consequent loss of the control of the airplane. 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-2013-0976 and Directorate Identifier 2013-NM-198-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 8 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               |
|-------------|--|------------|------------------------------------|--------------------------------------|
| Inspections | Up to 24 work-hours × \$85 per hour = \$2,040 per inspection cycle | None       | Up to \$2,040 per inspection cycle | Up to \$16,320 per inspection cycle. |

We estimate the following costs to do any necessary replacements that would be required based on the results of the inspection. We have 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 barrel nuts and bolts | 16 × \$85 per hour = \$1,360 | Up to \$480 | Up to \$1,840.   |

According to the manufacturer, some of the costs of this AD may be covered under warranty, thereby reducing the cost impact on affected individuals. We do not control warranty coverage for affected individuals. As a result, we have included all costs in our cost estimate.

### Paperwork Reduction Act

A federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a current valid OMB control number. The control number for the collection of information required by this AD is 2120-0056. The paperwork cost associated with this AD has been detailed in the Costs of Compliance section of this document and includes time for reviewing instructions, as well as completing and reviewing the collection of information. Therefore, all reporting associated with this AD is mandatory. Comments concerning the accuracy of this burden and suggestions for reducing the burden should be directed to the FAA at 800 Independence Ave. SW., Washington, DC 20591. ATTN: Information Collection Clearance Officer, AES-200.

### 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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**2013-24-12 The Boeing Company:** Amendment 39-17686; Docket No. FAA-2013-0976; Directorate Identifier 2013-NM-198-AD.

**(a) Effective Date**

This AD is effective December 17, 2013.

**(b) Affected ADs**

None.

**(c) Applicability**

This AD applies to all The Boeing Company Model 747-8 and 747-8F series airplanes, certificated in any category.

**(d) Subject**

Joint Aircraft System Component (JASC)/Air Transport Association (ATA) of America Code 71, Powerplant.

**(e) Unsafe Condition**

This AD was prompted by a report of cracked barrel nuts found on a forward engine mount. We are issuing this AD to detect and correct cracked barrel nuts on a forward engine mount, which could result in reduced load capacity of the forward engine mount, and could result in separation of an engine under power from the airplane, and consequent loss of control of the airplane.

**(f) Compliance**

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

**(g) Repetitive Inspections and Corrective Actions**

Except as required by paragraph (h)(1) of this AD, at the time specified in paragraph 1.E., "Compliance," of Boeing Alert Service Bulletin 747-71A2329, dated September 27, 2013: Do the inspection specified in paragraph (g)(1) or (g)(2) of this AD, and do all applicable related investigative and corrective actions, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-71A2329, dated September 27, 2013. Do all applicable related investigative and corrective actions before further flight. Repeat the inspection thereafter at the times specified in paragraph 1.E., "Compliance," of Boeing Alert Service Bulletin 747-71A2329, dated September 27, 2013.

(1) Ultrasonic inspection for cracking of the barrel nuts on each forward engine mount, except as required by paragraph (h)(2) of this AD.

(2) Dye penetrant inspection for cracking of the bolts and barrel nuts. Whenever a dye penetrant inspection is done, all the bolts and barrel nuts on that engine mount must be removed and replaced with new or serviceable parts.

#### **(h) Exceptions to Service Information Specifications**

(1) Where Boeing Alert Service Bulletin 747-71A2329, dated September 27, 2013, specifies a compliance time "after the original issue date of this service bulletin," this AD requires compliance within the specified compliance time after the effective date of this AD.

(2) Where Appendix B of Boeing Alert Service Bulletin 747-71A2329, dated September 27, 2013, states alternate instruments and transducers can be used, this AD requires that only equivalent instruments and transducers can be used.

(3) Where Appendix A of Boeing Alert Service Bulletin 747-71A2329, dated September 27, 2013, states to record flight hours and flight cycles, record the flight hours and flight cycles on the airplane and the flight hours and flight cycles for each engine since change or removal.

#### **(i) Reporting and Sending Parts**

After any inspection required by paragraph (g) of this AD: Submit a report of the inspection results (both positive and negative), and return all cracked bolts and barrel nuts, at the applicable time specified in paragraph (i)(1) or (i)(2) of this AD. The report must include the information requested in Appendix A of Boeing Alert Service Bulletin 747-71A2329, dated September 27, 2013, except as required by paragraph (h)(3) of this AD. Both the report and all cracked bolts and barrel nuts must be sent to the address specified in Appendix A of Boeing Alert Service Bulletin 747-71A2329, dated September 27, 2013.

(1) For airplanes on which an ultrasonic inspection was done and no cracking was found, do the required actions at the time specified in paragraph (i)(1)(i) or (i)(1)(ii) of this AD, as applicable.

(i) If the inspection was done on or after the effective date of this AD: Submit the report within 10 days after the inspection.

(ii) If the inspection was done before the effective date of this AD: Submit the report within 10 days after the effective date of this AD.

(2) For airplanes on which a dye penetrant inspection was done, do the required actions at the time specified in paragraph (i)(2)(i) or (i)(2)(ii) of this AD, as applicable.

(i) If the inspection was done on or after the effective date of this AD: Submit the report and return all cracked bolts and barrel nuts within 10 days after replacing the bolts and barrel nuts with new or serviceable bolt and barrel nuts in accordance with Part 2 of the Accomplishment Instructions of Boeing Alert Service Bulletin 747-71A2329, dated September 27, 2013.

(ii) If the inspection was done before the effective date of this AD: Submit the report and return all cracked bolts and barrel nuts within 10 days after the effective date of this AD.

#### **(j) Paperwork Reduction Act Burden Statement**

A federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a current valid OMB Control Number. The OMB Control Number for this information collection is 2120-0056. Public reporting for this collection of information is estimated to be approximately 5 minutes per response, including the time for reviewing instructions, completing and reviewing the collection of information. All responses to this collection of information are mandatory. Comments concerning the accuracy of this burden and suggestions for reducing the burden should be directed to the FAA at: 800 Independence Ave. SW., Washington, DC 20591, Attn: Information Collection Clearance Officer, AES-200.

### **(k) 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 (1) 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 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. For a repair method to be approved, the repair must meet the certification basis of the airplane and the approval must specifically refer to this AD.

(4) If the service information contains steps that are labeled as "RC" (Required for Compliance), those steps must be done to comply with this AD; any steps that are not labeled as "RC" are recommended. Those steps that are not labeled as "RC" may be deviated from, done as part of other actions, or done using accepted methods different from those identified in the specified service information without obtaining approval of an AMOC, provided the steps labeled as "RC" can be done and the airplane can be put back in a serviceable condition. Any substitutions or changes to steps labeled as "RC" require approval of an AMOC.

### **(l) Related Information**

For more information about this AD, contact Bill Ashforth, Aerospace Engineer, Airframe Branch, ANM-120S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue SW., Renton, WA 98057-3356; phone: (425) 917-6432; fax: (425) 917-6590; email: bill.ashforth@faa.gov.

### **(m) 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) Boeing Alert Service Bulletin 747-71A2329, dated September 27, 2013.

(ii) Reserved.

(3) For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Data & Services Management, P. O. Box 3707, MC 2H-65, Seattle, WA 98124-2207; telephone 206-544-5000, extension 1; fax 206-766-5680; Internet <https://www.myboeingfleet.com>.

(4) You may view this service information at FAA, Transport Airplane Directorate, 1601 Lind Avenue SW., Renton, Washington. 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 November 19, 2013.

Jeffrey E. Duven,  
Manager, Transport Airplane Directorate,  
Aircraft Certification Service.