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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

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

**[Docket No. FAA-2014-1052; Directorate Identifier 2014-NM-140-AD; Amendment 39-18210; AD 2015-15-01]**

**RIN 2120-AA64**

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

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

**ACTION:** Final rule.

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**SUMMARY:** We are superseding Airworthiness Directive (AD) 2004-13-02, which applied to certain The Boeing Company Model 747-100, -200B, and -200F series airplanes. AD 2004-13-02 required repetitive inspections to find discrepancies in the upper and lower skins of the fuselage lap joints, and repair if necessary. This new AD adds post-repair inspections for cracking and corrosion, and repair if necessary; structural modification at the lap joints; and post-modification inspections for cracking and corrosion, and repair if necessary. This AD was prompted by an evaluation by the design approval holder (DAH) that indicates the longitudinal lap joints are subject to widespread fatigue damage (WFD). The actions mandated by this AD are necessary to reach the limit of validity (LOV). We are issuing this AD to detect and correct fatigue cracking in the upper and lower skins of the fuselage lap joints, which could result in sudden fracture and failure of a lap joint and rapid in-flight decompression of the airplane fuselage.

**DATES:** This AD is effective August 28, 2015.

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of August 28, 2015.

**ADDRESSES:** 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, 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-2014-1052.

## **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-2014-1052; 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 address for the Docket Office (phone: 800-647-5527) is Docket 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:** Bill Ashforth, Aerospace Engineer, Airframe Branch, ANM-120S, FAA, Seattle Aircraft Certification Office (ACO), 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 issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to supersede AD 2004-13-02, Amendment 39-13682 (69 FR 35237, June 24, 2004). AD 2004-13-02 applied to certain The Boeing Company Model 747-100, -200B, and -200F series airplanes. The NPRM published in the Federal Register on January 23, 2015 (80 FR 3506). The NPRM was prompted by an evaluation by the DAH that indicates the longitudinal lap joints are subject to WFD. A structural modification at the lap joint, and post-modification repetitive inspections of the skin, existing internal doubler, or splice strap for cracks, and corrective actions if necessary, are necessary to reach the limit of validity (LOV). The NPRM proposed to continue to require repetitive inspections to find discrepancies in the upper and lower skins of the fuselage lap joints, and repair if necessary; and to add post-repair inspections for cracking and corrosion, and repair if necessary; structural modification at the lap joints; and post-modification inspections for cracking and corrosion, and repair if necessary. We are issuing this AD to detect and correct fatigue cracking in the upper and lower skins of the fuselage lap joints, which could result in sudden fracture and failure of a lap joint and rapid in-flight decompression of the airplane fuselage.

### **Comments**

We gave the public the opportunity to participate in developing this AD. The following presents the comments received on the NPRM (80 FR 3506, January 23, 2015) and the FAA's response to each comment.

### **Support for the NPRM (80 FR 3506, January 23, 2015)**

Boeing stated that it concurs with the content of the proposed rule (80 FR 3506, January 23, 2015).

### **Request To Increase Inspection Frequency for Certain Airplanes**

An anonymous commenter expressed an opinion that there may be more reason to check airplanes that are frequently pressurized to a greater than 2.0 per-square-inch (psi) range than those that are not pressurized to that extent. The commenter also asked if there should be a weighted system that requires inspections sooner if an airplane has proportionally more flight cycles in the greater-than-, rather than the less-than-, 2.0-psi differentials.

We do not agree with the commenter's request for different inspection intervals based on pressurization ranges. The proposed inspection intervals were based on airplanes flying in a normal condition, which included full pressurization. In the past, if an operator had documentation substantiating flight cycles of less than 2.0 psi, some of the inspection requirements could be reduced. This reduced inspection requirement was relieving in nature and occurred roughly 10 years ago. We have since determined that fleet findings did not support this relief and have disallowed reduced inspection requirements in future ADs. We have not provided this relief in this AD. We have not changed this final rule in this regard.

### **Request To Increase WFD Rule Applicability**

An anonymous commenter requested a reason why the WFD regulation applies only to Boeing and not to any other airplane manufacturer. The commenter stated that it seems like this type of WFD would be present in more than just Boeing airplanes, and yet the regulation and requirement for inspection seems to single out Boeing. The commenter suggested that it would make sense to consolidate and apply these requirements equally over all the types of airplanes.

We do not agree with the commenter's request. On May 24, 2012, we made effective Amendment 26-6 of 14 CFR 26.21, "Limit of Validity," of the Federal Aviation Regulations (14 CFR 26.21). This regulation required all design approval holders (DAHs) to develop an LOV for affected airplanes, which affected several manufacturers and models (not exclusively Boeing). The LOV is established by means of engineering data that support the structural maintenance program that corresponds to the period of time, stated as a number of total accumulated flight cycles or flight hours or both, during which it is demonstrated that WFD will not occur in the airplane. We have not changed this final rule in this regard.

### **Conclusion**

We reviewed the relevant data, considered the comments received, and determined that air safety and the public interest require adopting this AD as proposed except for minor editorial changes. We have determined that these minor changes:

- Are consistent with the intent that was proposed in the NPRM (80 FR 3506, January 23, 2015) for correcting the unsafe condition; and
- Do not add any additional burden upon the public than was already proposed in the NPRM (80 FR 3506, January 23, 2015).

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

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

We reviewed Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014. The service information describes procedures for inspections and repairs of cracks and corrosion in the skin at lap joints in the fuselage. 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 of this AD.

### **Costs of Compliance**

We estimate that this AD affects 2 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 [actions retained from AD 2004-13-02, Amendment 39-13682 ( <a href="#">69 FR 35237</a> , June 24, 2004)]	5,628 work-hours × \$85 per hour = \$478,380 per inspection cycle	\$0	\$478,380 per inspection cycle	\$956,760 per inspection cycle.
Modification [new action]	Up to 3,764 work-hours × \$85 per hour = \$319,940	\$0	Up to \$319,940	Up to \$639,880.
Post-modification/post-repair inspections [new action]	Up to 3,764 work-hours × \$85 per hour = \$319,940 per inspection cycle	\$0	Up to \$319,940 per inspection cycle	Up to \$639,880 per inspection cycle.

We have received no definitive data that would enable us to provide cost estimates for the on-condition actions specified in this AD.

#### 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

We have determined that 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 removing Airworthiness Directive (AD) 2004-13-02, Amendment 39-13682 (69 FR 35237, June 24, 2004), and adding the following new AD:



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**2015-15-01 The Boeing Company:** Amendment 39-18210; Docket No. FAA-2014-1052; Directorate Identifier 2014-NM-140-AD.

**(a) Effective Date**

This AD is effective August 28, 2015.

**(b) Affected ADs**

This AD replaces AD 2004-13-02, Amendment 39-13682 (69 FR 35237, June 24, 2004).

**(c) Applicability**

This AD applies to The Boeing Company Model 747-100, -200B, and -200F series airplanes, certificated in any category, as identified in Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014.

**(d) Subject**

Air Transport Association (ATA) of America Code 53, Fuselage.

**(e) Unsafe Condition**

This AD was prompted by an evaluation by the design approval holder (DAH) that indicates the longitudinal lap joints are subject to widespread fatigue damage (WFD). We are issuing this AD to detect and correct fatigue cracking in the upper and lower skins of the fuselage lap joints, which could result in sudden fracture and failure of a lap joint and rapid in-flight decompression of the airplane fuselage.

**(f) Compliance**

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

**(g) Inspections for Corrosion, and Corrective Actions**

For airplanes identified as Groups 2 through 14 in Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014: Except as provided by paragraph (1)(3) of this AD, at the applicable time specified in paragraph 1.E., "Compliance," of Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014, do an external low frequency eddy current inspection for corrosion at the upper row of fasteners in the lap joint, and do all applicable corrective actions, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014, except as provided by paragraph (1)(1) of this AD. Do all applicable corrective actions before further flight. Repeat the inspection at the upper row of fasteners in the lap joint thereafter at the applicable intervals specified in paragraph 1.E., "Compliance," of Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014, except as provided by paragraph

(l)(3) of this AD. Accomplishment of a structural modification in accordance with Part 5 of Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014, except as provided by paragraph (l)(1) of this AD, terminates the inspection requirements of this paragraph in the area of the modification only. The actions required by paragraph (j) of this AD are still applicable in the area of the modification.

#### **(h) Inspections for Cracking, and Corrective Actions**

For airplanes identified as Groups 2 through 14 in Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014: Except as provided by paragraph (l)(3) of this AD, at the applicable time specified in paragraph 1.E., "Compliance," of Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014, do an internal medium frequency eddy current inspection for skin cracks at the lower row of fasteners in the lap joint, and do all applicable corrective actions, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014, except as provided by paragraph (l)(1) of this AD. Do all applicable corrective actions before further flight. Repeat the inspection at the lower row of fasteners in the lap joint thereafter at the applicable intervals specified in paragraph 1.E., "Compliance," of Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014, except as provided by paragraph (l)(3) of this AD. Accomplishment of a structural modification in accordance with Part 5 of Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014, except as provided by paragraph (l)(1) of this AD, terminates the inspection requirements of this paragraph in the area of the modification only. The actions required by paragraph (j) of this AD are still applicable in the area of the modification.

#### **(i) Structural Modification**

For airplanes identified as Groups 2 through 14 in Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014: At the applicable time specified in paragraph 1.E., "Compliance," of Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014, except as provided by paragraph (l)(2) of this AD, do a structural modification at the lap joints, and all applicable corrective actions, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014, except as provided by paragraph (l)(1) of this AD. Do all applicable corrective actions before further flight. Accomplishment of the structural modification required by this paragraph terminates the inspections required by paragraphs (g), (h), and (k) of this AD in the area of the modification only. The actions required by paragraph (j) of this AD are still applicable in the area of the modification.

#### **(j) Post-Modification Inspections and Corrective Actions**

For airplanes on which the actions required by paragraph (i) of this AD have been done: At the applicable time specified in paragraph 1.E., "Compliance," of Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014, except as provided by paragraph (l)(2) of this AD, do an internal high frequency eddy current (HFEC) inspection for cracks of the skin or existing internal doublers, and an open-hole HFEC inspection for splice strap cracks, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014. If any cracking is found, before further flight, repair using a method approved in accordance with the procedures specified in paragraph (n) of this AD. Repeat the inspections of the skin, internal doublers, and splice straps thereafter at the applicable intervals specified in paragraph 1.E., "Compliance," of Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014.

### **(k) Post-Repair Inspections and Corrective Actions**

For airplanes with any new or existing external doubler repair accomplished at a lap joint and the repair doubler length is 40 inches or longer: At the applicable time specified in paragraph 1.E., "Compliance," of Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014, except as provided by paragraph (l)(2) of this AD, do an internal HFEC inspection for cracking or corrosion of the repairs, and do all applicable corrective actions, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014, except as provided by paragraph (l)(1) of this AD. Do all applicable corrective actions before further flight. Repeat the inspection of external doubler repairs accomplished at lap joints thereafter at the applicable intervals specified in paragraph 1.E., "Compliance," of Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014. Accomplishment of a structural modification in accordance with Part 5 of Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014, except as provided by paragraph (l)(1) of this AD, terminates the inspection requirements of this paragraph in the area of the modification only. The actions required by paragraph (j) of this AD are still applicable in the area of the modification.

### **(l) Exceptions**

(1) If, during any action required by this AD, Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014, specifies to contact Boeing for an inspection or modification procedure, or repair instructions: Before further flight, do the inspection, or modification, or repair using a method approved in accordance with the procedures specified in paragraph (n) of this AD.

(2) Where Paragraph 1.E., "Compliance," of Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014, specifies a compliance time "after the Revision 2 date of this service bulletin," this AD requires compliance within the specified compliance time after the effective date of this AD.

(3) For the compliance threshold and repetitive interval calculations for inspections required by paragraphs (g) and (h) of this AD, the provisions specified in paragraphs (l)(3)(i) and (l)(3)(ii) of this AD apply regarding differential pressure.

(i) For inspections done before the effective date of this AD: Flight cycles in which the cabin differential pressure was at 2.0 pounds-per-square-inch (psi) or less need not be counted in the flight-cycle determination, provided that flight cycles with momentary spikes in cabin differential pressure above 2.0 psi were included as full pressure flight cycles. For this provision to apply, all cabin pressure records must have been maintained for each airplane. No fleet-averaging of cabin pressure is allowed.

(ii) For inspections done on or after the effective date of this AD: All flight cycles must be counted, regardless of differential pressure.

### **(m) Credit for Previous Actions**

This paragraph provides credit for actions required by paragraphs (g) and (h) of this AD, if those actions were performed before the effective date of this AD using the service information identified in paragraph (m)(1) or (m)(2) of this AD.

(1) Boeing Alert Service Bulletin 747-53A2463, dated March 7, 2002, including Appendices A, B, and C, dated March 7, 2002, which was incorporated by reference in AD 2004-13-02, Amendment 39-13682 (69 FR 35237, June 24, 2004).

(2) Boeing Alert Service Bulletin 747-53A2463, Revision 1, dated April 16, 2009, which is not incorporated by reference in this AD.



## **(n) 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 (o)(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) AMOCs approved for AD 2004-13-02, Amendment 39-13682 (69 FR 35237, June 24, 2004), are approved as AMOCs for the corresponding provisions of paragraphs (g) and (h) of this AD.

## **(o) Related Information**

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

(2) Service information identified in this AD that is not incorporated by reference is available at the addresses specified in paragraphs (p)(3) and (p)(4) of this AD.

## **(p) 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 747-53A2463, Revision 2, dated June 16, 2014.

(ii) Reserved.

(3) For Boeing 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, 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 July 10, 2015.

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