

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2010-0552; Directorate Identifier 2009-NM-095-AD; Amendment 39-16464; AD 2010-21-04]

RIN 2120-AA64

Airworthiness Directives; The Boeing Company Model 747-100, 747-200B, and 747-200F Series Airplanes

AGENCY: Federal Aviation Administration (FAA), Department of Transportation (DOT).

ACTION: Final rule.

SUMMARY: The FAA is superseding two existing airworthiness directives (ADs), which apply to certain Model 747-100, 747-200B, and 747-200F series airplanes. The existing ADs currently require inspections to detect fatigue-related skin cracks and corrosion of the skin panel lap joints in the fuselage upper lobe, and repair if necessary. One of the existing ADs, AD 94-12-09, also requires modification of certain lap joints and inspection of modified lap joints. The other AD, AD 90-15-06, requires repetitive detailed external visual inspections of the fuselage skin at the upper lobe skin lap joints for cracks and evidence of corrosion, and related investigative and corrective actions. This AD reduces the maximum interval of the post-modification inspections, and adds post-repair inspection requirements for certain airplanes. This AD results from reports of cracking on modified airplanes. We are issuing this AD to detect and correct fatigue cracking and corrosion in the fuselage upper lobe skin lap joints, which could lead to rapid decompression of the airplane and inability of the structure to carry fail-safe loads.

DATES: This AD becomes effective November 12, 2010.

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in the AD as of November 12, 2010.

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

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 address for the Docket Office (telephone 800-647-5527) is the 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: Ivan Li, Aerospace Engineer, Airframe Branch, ANM-120S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue, SW., Renton, Washington 98057-3356; telephone (425) 917-6437; fax (425) 917-6590.

SUPPLEMENTARY INFORMATION:

Discussion

The FAA issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to include an AD that supersedes AD 90-15-06, Amendment 39-6653 (55 FR 28600, July 12, 1990), and AD 94-12-09, Amendment 39-8937 (59 FR 30285, June 13, 1994). The existing ADs apply to certain Model 747-100, 747-200B, and 747-200F series airplanes. That NPRM was published in the Federal Register on June 22, 2010 (75 FR 35356). That NPRM proposed to continue to require inspections to detect fatigue-related skin cracks and corrosion of the skin panel lap joints in the fuselage upper lobe, and repair if necessary; modification of certain lap joints and inspection of modified lap joints; and repetitive detailed external visual inspections of the fuselage skin at the upper lobe skin lap joints for cracks and evidence of corrosion, and related investigative and corrective actions. That NPRM also proposed to reduce the maximum interval of the post-modification inspections, and adds post-repair inspection requirements for certain airplanes.

Comments

We provided the public the opportunity to participate in the development of this AD. We have considered the comment that has been received on the NPRM.

Request to Correct Typographical Error in Paragraph (l) of the NPRM

Boeing requests that we revise paragraph (l) of the NPRM to change the numeral "1" to the letter "l" to correctly identify the paragraph references.

We agree and have corrected the typographical error accordingly.

Conclusion

We have carefully reviewed the available data, including the comment that has been received, and determined that air safety and the public interest require adopting the AD with the change described previously. We have determined that this change will neither increase the economic burden on any operator nor increase the scope of the AD.

Costs of Compliance

There are about 23 airplanes of the affected design in the worldwide fleet. The following table provides the estimated costs for U.S. operators to comply with this AD.

Estimated Costs

Action	Work hours	Average labor rate per hour	Parts	Cost per airplane	Number of U.S.-registered airplanes	Fleet cost
Inspection (required by AD 94-12-09)	208	\$85	\$0	\$17,680 per inspection cycle	7	\$123,760 per inspection cycle
Modification (required by AD 94-12-09)	8,160	\$85	\$0	\$693,600	7	\$4,855,200
Post-Modification Inspection (required by AD 94-12-09)	56	\$85	\$0	\$4,760 per inspection cycle	7	\$33,320 per inspection cycle

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); and
- (3) 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.

We prepared a regulatory evaluation of the estimated costs to comply with this AD and placed it in the AD docket. See the ADDRESSES section for a location to examine the regulatory evaluation.

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 Federal Aviation Administration (FAA) amends § 39.13 by removing Amendment 39-6653 (55 FR 28600, July 12, 1990) and Amendment 39-8937 (59 FR 30285, June 13, 1994) and by adding the following new airworthiness directive (AD):



2010-21-04 The Boeing Company: Amendment 39-16464. Docket No. FAA-2010-0552; Directorate Identifier 2009-NM-095-AD.

Effective Date

(a) This AD becomes effective November 12, 2010.

Affected ADs

(b) This AD supersedes AD 90-15-06, Amendment 39-6653; and AD 94-12-09, Amendment 39-8937.

Applicability

(c) This AD applies to The Boeing Company Model 747-100, 747-200B, and 747-200F series airplanes, certificated in any category, as identified in Boeing Service Bulletin 747-53-2307, Revision 3, dated April 16, 2009.

Subject

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

Unsafe Condition

(e) This AD results from reports of fatigue cracking on modified airplanes. The Federal Aviation Administration is issuing this AD to detect and correct fatigue cracking and corrosion in the fuselage upper lobe skin panel lap joints, which could lead to the rapid decompression of the airplane and the inability of the structure to carry fail-safe loads.

Compliance

(f) You are responsible for having the actions required by this AD performed within the compliance times specified, unless the actions have already been done.

Restatement of Requirements of AD 94-12-09, With Revised Service Information

Inspection

(g) Within 1,000 flight cycles after July 13, 1994 (the effective date of AD 94-12-09), and thereafter at the intervals specified in paragraphs (g)(1), (g)(2), and (g)(3) of this AD, perform inspections at the upper lobe skin panel lap joints in accordance with Boeing Service Bulletin 747-53-2307, Revision 2, dated October 14, 1993; or Revision 3, dated April 16, 2009. After the effective date of this AD, only Revision 3 may be used.

(1) Perform a detailed external visual inspection to detect cracks and evidence of corrosion (bulging skin between fasteners, blistered paint, dished fasteners, popped rivet heads, or loose

fasteners) in accordance with Boeing Service Bulletin 747-53-2307, Revision 2, dated October 14, 1993; or Revision 3, dated April 16, 2009. After the effective date of this AD, only Revision 3 may be used. Repeat that inspection thereafter at intervals not to exceed 2,000 flight cycles until the modification required by paragraph (k) of this AD is accomplished.

(2) Perform a high frequency eddy current (HFEC) inspection to detect cracks in the skin at the upper row of fasteners of the skin panel lap joints forward of body station (BS) 1000 in accordance with Boeing Service Bulletin 747-53-2307, Revision 2, dated October 14, 1993; or Revision 3, dated April 16, 2009. After the effective date of this AD, only Revision 3 may be used. Repeat that inspection thereafter at intervals not to exceed 4,000 flight cycles until the modification required by paragraph (k) of this AD is accomplished.

(3) Perform a HFEC inspection to detect cracks in the skin at the upper row of fastener holes of the skin panel lap joints aft of BS 1480 to 2360 in accordance with Boeing Service Bulletin 747-53-2307, Revision 2, dated October 14, 1993; or Revision 3, dated April 16, 2009. After the effective date of this AD, only Revision 3 may be used.

Repeat that inspection thereafter at intervals not to exceed 6,000 flight cycles until the modification required by paragraph (k) of this AD is accomplished.

(h) If any crack is found during any inspection required by paragraph (g) or (l) of this AD, or if any corrosion is found for which material loss exceeds 10 percent of the material thickness, accomplish paragraphs (h)(1) and (h)(2) of this AD in accordance with Boeing Service Bulletin 747-53-2307, Revision 2, dated October 14, 1993; or Revision 3, dated April 16, 2009. After the effective date of this AD, only Revision 3 may be used.

(1) Prior to further flight, repair any crack or corrosion found, in accordance with Boeing Service Bulletin 747-53-2307, Revision 2, dated October 14, 1993; or Revision 3, dated April 16, 2009. After the effective date of this AD, only Revision 3 may be used.

(2) Within 18 months after accomplishing the repair, accomplish the "full" modification described in Boeing Service Bulletin 747-53-2307, Revision 2, dated October 14, 1993; or Revision 3, dated April 16, 2009; for the remainder of any skin panel lap joint in which a crack is found, or in which corrosion is found that exceeds 10 percent of the material thickness, in accordance with Boeing Service Bulletin 747-53-2307, Revision 2, dated October 14, 1993; or Revision 3, dated April 16, 2009. After the effective date of this AD, only Revision 3 may be used.

(i) If no crack is found during any inspection required by paragraph (g) of this AD, but corrosion is found for which the material loss does not exceed 10 percent of the material thickness: Accomplish the actions specified in paragraphs (i)(1) and (i)(2) of this AD for the entire affected skin panel lap joint, in accordance with Boeing Service Bulletin 747-53-2307, Revision 2, dated October 14, 1993; or Revision 3, dated April 16, 2009. After the effective date of this AD, only Revision 3 may be used.

(1) Within 500 flight cycles after accomplishing the inspection during which the corrosion was found, and thereafter at intervals not to exceed 500 flight cycles until the "full" modification required by paragraph (i)(2) of this AD is accomplished: Perform a HFEC inspection to detect cracks of the corroded skin panel lap joint, in accordance with Boeing Service Bulletin 747-53-2307, Revision 2, dated October 14, 1993; or Revision 3, dated April 16, 2009. After the effective date of this AD, only Revision 3 may be used.

(2) Within 36 months after accomplishing the inspection during which the corrosion was found: Accomplish the "full" modification, in accordance with Boeing Service Bulletin 747-53-2307, Revision 2, dated October 14, 1993; or Revision 3, dated April 16, 2009. After the effective date of this AD, only Revision 3 may be used.

(j) The inspections required by paragraph (g) of this AD shall be performed by removing the paint and using an approved chemical stripper; or by ensuring that each fastener head is clearly visible.

(k) Except as provided in paragraph (m) of this AD, prior to the accumulation of 20,000 total flight cycles, or within the next 1,000 flight cycles after July 13, 1994, whichever occurs later: Accomplish the modification described in Boeing Service Bulletin 747-53-2307, Revision 2, dated October 14, 1993; or Revision 3, dated April 16, 2009; as a "full" modification of the skin panel lap joints at the locations specified in paragraphs (k)(1) and (k)(2) of this AD, as applicable, in accordance with Boeing Service Bulletin 747-53-2307, Revision 2, dated October 14, 1993; or Revision 3, dated April 16, 2009. After the effective date of this AD, only Revision 3 may be used. Accomplishment of this modification terminates the repetitive inspection requirements of paragraph (g) of this AD.

(1) For airplane line numbers 001 through 058, inclusive: Modify the skin panel lap joints at Stringer 12 (left and right), station 520 to 1,000; and Stringer 19 (left and right), station 520 to 740.

(2) For airplane line numbers 59 through 200, inclusive: Modify the skin panel lap joints at Stringer 12 (left and right), station 740 to 1,000; and Stringer 19 (left and right), station 520 to 740.

(l) For all airplanes: Perform an external HFEC inspection to detect skin cracks of any modified skin panel lap joints at the times specified in paragraphs (l)(1), (l)(2), and (l)(3) of this AD, as applicable, in accordance with Boeing Service Bulletin 747-53-2307, Revision 2, dated October 14, 1993; or Revision 3, dated April 16, 2009. As of the effective date of this AD, only Revision 3 may be used. Repeat that inspection thereafter at intervals not to exceed 3,000 flight cycles, except as required by paragraph (n) of this AD.

(1) For skin panel lap joints on which the "full" modification has been accomplished: Within 10,000 flight cycles after accomplishment of that modification.

(2) For skin panel lap joints on which the "optional" (partial) modification has been accomplished: Within 7,000 flight cycles after accomplishment of that modification.

(3) For skin panel lap joints having deep countersink fasteners located at Section 42 on which the "full" modification, as described in Boeing Service Bulletin 747-53-2307, dated December 21, 1989, has been accomplished: Within 5,000 flight cycles after accomplishment of that modification.

(m) In lieu of the "full" modification required by paragraph (k) of this AD, the "optional" (partial) modification described in Boeing Service Bulletin 747-53-2307, Revision 2, dated October 14, 1993; or Revision 3, dated April 16, 2009; may be accomplished for skin panels that have an outer thickness of 0.090 inches or less, and that do not have any cracks, corrosion, or an existing structural repair on the skin panel lap joint. After the effective date of this AD, only Revision 3 may be used. The "optional" (partial) modification shall not be accomplished at deep countersink fastener locations. Accomplishment of this modification terminates the repetitive inspection requirements of paragraph (g) of this AD.

New Requirements of This AD

Post-Modification Inspection at Reduced Intervals

(n) Repeat the inspection required by paragraph (l) of this AD at the earlier of the times specified in paragraphs (n)(1) and (n)(2) of this AD. Thereafter, repeat the inspection at intervals not to exceed 1,000 flight cycles.

(1) Within 3,000 flight cycles after the last inspection done in accordance with paragraph (l) of this AD.

(2) Within 1,000 flight cycles after the last inspection done in accordance with paragraph (l) of this AD or 500 flight cycles after the effective date of this AD, whichever occurs later.

Post-Repair Inspection for External Doubler Repair

(o) For all airplanes: Do an internal surface HFEC inspection for cracking of the skin at any external doubler repairs greater than 40 inches in length (in the horizontal direction) within 1,000 flight cycles after the effective date of this AD, in accordance with the Accomplishment Instructions of Boeing Service Bulletin 747-53-2307, Revision 3, dated April 16, 2009. Thereafter, perform that inspection at intervals not to exceed 3,000 flight cycles.

(p) If any cracking is found during any inspection required by paragraph (o) of this AD, repair in accordance with the Accomplishment Instructions of Boeing Service Bulletin 747-53-2307, Revision 3, dated April 16, 2009.

Alternative Methods of Compliance (AMOCs)

(q)(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. Send information to ATTN: Ivan Li, Aerospace Engineer, Airframe Branch, ANM-120S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue, SW., Renton, Washington 98057-3356; telephone (425) 917-6437; fax (425) 917-6590. Or, e-mail information to 9-ANM-Seattle-ACO-AMOC-Requests@faa.gov.

(2) To request a different method of compliance or a different compliance time for this AD, follow the procedures in 14 CFR 39.19. Before using any approved AMOC on any airplane to which the AMOC applies, notify your principal maintenance inspector (PMI) or principal avionics inspector (PAI), as appropriate, or lacking a principal inspector, your local Flight Standards District Office. The AMOC approval letter must specifically reference this AD.

(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 an Authorized Representative for the Boeing Commercial Airplanes Organization Designation Authorization who 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 previously in accordance with AD 90-15-06, Amendment 39-6653; and AD 94-12-09, Amendment 39-8937; are approved as AMOCs for the corresponding provisions of this AD.

Material Incorporated by Reference

(r) You must use Boeing Service Bulletin 747-53-2307, Revision 3, dated April 16, 2009, to do the actions required by this AD, unless the AD specifies otherwise. If you accomplish the optional actions specified by this AD, you must use Boeing Service Bulletin 747-53-2307, Revision 3, dated April 16, 2009, to perform those actions, unless the AD specifies otherwise.

(1) The Director of the Federal Register approved the incorporation by reference of this service information under 5 U.S.C. 552(a) and 1 CFR part 51.

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

(3) You may review copies of the 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.

(4) You may also review copies of the 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/code_of_federal_regulations/ibr_locations.html.

Issued in Renton, Washington, on September 23, 2010.
Ali Bahrami,
Manager, Transport Airplane Directorate,
Aircraft Certification Service.