

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2010-0674; Directorate Identifier 2010-NM-012-AD; Amendment 39-16546; AD 2010-26-07]

RIN 2120-AA64

Airworthiness Directives; The Boeing Company Model 747 Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: We are adopting a new airworthiness directive (AD) for the products listed above. This AD requires repetitive inspections for cracking in the body skin around the aft corners of the nose wheel well; for certain airplanes, repetitive inspections for cracking in the skin splice plate at the aft corners of the nose wheel well; and related investigative and corrective actions if necessary. This AD also requires repetitive post-modification inspections for cracking in the body skin and the skin splice plate; for certain airplanes, an inspection for steel cross-shaped doublers on the larger aluminum doublers; and corrective action if necessary. This AD also requires repetitive surface high frequency eddy current (HFEC) inspections of a certain bulkhead outer chord, skin splice plate, and outer chord radius filler for cracking; repetitive detailed inspections for cracking of the bulkhead frame web and body skin; and corrective actions if necessary. This AD provides for optional terminating action for certain repetitive inspections. This AD was prompted by reports of cracking of the fuselage skin and adjacent internal skin splice plate at the left and right nose wheel well aft corners, and the outer chord of the body station (BS) 400 bulkhead. We are issuing this AD to detect and correct cracking of the fuselage skin or splice plate, which, together with cracking of the bulkhead outer chord, could result in large skin cracks and subsequent in-flight rapid decompression of the airplane.

DATES: This AD is effective February 1, 2011.

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in the AD as of February 1, 2011.

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>. You may review copies of the 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 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: Steven Fox, Senior Aerospace Engineer, Airframe Branch, ANM-120S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue, SW., Renton, Washington 98057-3356; telephone (425) 917-6425; fax (425) 917-6590; e-mail: steven.fox@faa.gov.

SUPPLEMENTARY INFORMATION:

Discussion

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to include an airworthiness directive (AD) that would apply to the specified products. That NPRM published in the Federal Register on July 8, 2010 (75 FR 39189). That NPRM proposed to require repetitive inspections for cracking in the body skin around the aft corners of the nose wheel well; for certain airplanes, repetitive inspections for cracking in the skin splice plate at the aft corners of the nose wheel well; and related investigative and corrective actions if necessary. The NPRM also proposed to require repetitive post-modification inspections for cracking in the body skin and the skin splice plate; for certain airplanes, an inspection for steel cross-shaped doublers on the larger aluminum doublers; and corrective action if necessary. The NPRM also proposed to require repetitive surface high frequency eddy current (HFEC) inspections of a certain bulkhead outer chord, skin splice plate, and outer chord radius filler for cracking; repetitive detailed inspections for cracking of the bulkhead frame web and body skin; and corrective actions if necessary. That NPRM also proposed to provide for optional terminating action for certain repetitive inspections.

Comments

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

Request To Revise Paragraph (r) of the NPRM

Boeing requested that we revise paragraph (r) of the NPRM to note that the threshold of the initial inspection, in accordance with Boeing Document No. D6-35022, Volumes 1 and 2 "Supplemental Structural Inspection Document (SSID) for Model 747 Airplanes," Revision G, dated December 2000, Item F-4, remains as given in AD 2004-07-22 R1 (73 FR 1052, January 7, 2008) (A correction to AD 2004-07-22 R1 was published in the Federal Register on February 14, 2008 (73 FR 8589)). Boeing stated that while the inspection method and intervals provided in Boeing Alert Service Bulletin 747-53A2305, Revision 2, dated January 15, 2009, are alternative methods of compliance (AMOCs) to Revision G of the Model 747 SSID, Item F-4, the requirement to comply with the SSID inspection threshold remains as given in AD 2004-07-22 R1.

We disagree with the request to revise paragraph (r) of this AD to include the requested notation. Paragraph (r) of this AD does not provide any indication of change to the initial inspection threshold for the initial inspection according to Revision G of the Model 747 SSID, Item F-4. As the commenter stated, the inspection threshold for Item F-4 remains as given in AD 2004-07-22 R1. Paragraph (b) of this AD also indicates that no other AD is affected by this AD. No change has been made to the AD in this regard.

Request To Include Alternative Inspection Procedures as AMOCs or To Extend the Grace Period

Japan Airlines (JAL) requested approval of an AMOC for inspections for airplanes that have been previously repaired. JAL stated that 14 of its Model 747-400 airplanes have had repair doublers already installed in the affected areas that deviate from Boeing Alert Service Bulletin 747-53A2305, Revision 2, dated January 15, 2009; therefore, alternative inspection procedures are necessary for the repaired structure. JAL stated that it will have to obtain AMOC approval for each of its 14 airplanes. JAL also stated that since it takes additional work for both JAL and Boeing to obtain the AMOC approval, an exception should be allowed to admit all of the existing repairs as an AMOC for the proposed actions. JAL also proposed the alternative of an approval letter from the FAA for their existing repairs before the effective date of the AD. As an alternative, JAL requested a grace period to allow an extended compliance time for the inspection of previously repaired airplanes.

We disagree with the request for AMOC approval for previously repaired airplanes and for a grace period. An AMOC cannot be included in an AD, because an AMOC can be written for an AD only after the AD is published. Because the repairs previously done on these 14 airplanes can be unique to each airplane and are different from the repair requirements of this AD, each instance will need to be re-evaluated for this AD as an AMOC to ensure continued operational safety. However, under the provisions of paragraph (u) of this AD, after the AD is published we will consider requests for approval of an alternative method of compliance if sufficient data are submitted to substantiate that the previous repairs would provide an acceptable level of safety.

We also disagree with the request to include a grace period. A grace period of 1,500 flight hours from the effective date of this AD was already included in paragraphs (k), (o), and (r) of this AD.

No change has been made to this AD.

Conclusion

We reviewed the relevant data, considered the comments received, and determined that air safety and the public interest require adopting the AD as proposed.

Costs of Compliance

We estimate that this AD affects 160 airplanes of U.S. registry.

We estimate the following costs to comply with this AD:

Table—Estimated Costs

Action	Work hours	Average labor rate per hour	Cost per product	Number of U.S.-registered airplanes	Fleet cost
Inspections: Body Skin and Skin Splice Plate.	1	\$85	\$85	160	\$13,600.

Modification: Groups 1-3 ¹	180	85	15,300	Up to 27	Up to \$413,100.
Modification: Groups 1-3 ²	320	85	27,200	Up to 27	Up to \$734,400.
Modification: Groups 4-8 ³	180	85	15,300	Up to 133	Up to \$2,034,900.
Modification: Groups 4-7 ⁴	40	85	3,400	Up to 44	Up to \$149,600.
Post-Mod LFEC Inspection ⁵	6	85	510	Up to 160	Up to \$81,600.
Inspections: Bulkhead Outer Chord ⁶	4	85	340	Up to 160	Up to \$54,400.

¹ Installation of skin and splice plate doubler for Groups 1-3 airplanes that have not done Boeing Service Bulletin 747-53-2150 or Figure 35 of Section 53-30-03 of the Boeing 747 Structural Repair Manual.

² Installation of skin and splice plate doubler for Groups 1-3 airplanes that have done Boeing Service Bulletin 747-53-2150 or Figure 35 of Section 53- 30-03 of the Boeing 747 Structural Repair Manual.

³ Installation of skin and splice plate doubler for Groups 4-8 airplanes.

⁴ Installation of splice plate doubler for Groups 4-7 airplanes changed before Boeing Alert Service Bulletin 747-53A2305, Revision 2, dated January 15, 2009.

⁵ Inspection for skin cracks around the fasteners at the periphery of the modification doublers.

⁶ Includes inspection of the frame web and body skin.

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):



2010-26-07 The Boeing Company: Amendment 39-16546; Docket No. FAA-2010-0674; Directorate Identifier 2010-NM-012-AD.

Effective Date

- (a) This AD is effective February 1, 2011.

Affected ADs

- (b) None.

Applicability

(c) This AD applies to all The Boeing Company Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-200C, 747-200F, 747-300, 747-400, 747-400D, 747-400F, 747SR, and 747SP series airplanes, certificated in any category.

Subject

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

Unsafe Condition

(e) This AD results from reports of cracking of the fuselage skin and adjacent internal skin splice plate at the left and right nose wheel well aft corners, and the outer chord of the body station (BS) 400 bulkhead. The Federal Aviation Administration is issuing this AD to detect and correct cracking of the fuselage skin or splice plate, which, together with cracking of the bulkhead outer chord, could result in large skin cracks and subsequent in-flight rapid decompression of the airplane.

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.

Pre-Modification Inspections

(g) For airplanes in Groups 1 through 3, as identified in Boeing Alert Service Bulletin 747-53A2305, Revision 2, dated January 15, 2009, that have not been modified in accordance with Boeing Service Bulletin 747-53-2150; have not been repaired in accordance with Figure 35 of Section 53-30-03 of Boeing 747 Structural Repair Manual (SRM); and have not been modified in accordance with Boeing Alert Service Bulletin 747-53A2305: Before the accumulation of 3,000 total flight cycles, or within 1,500 flight cycles after the effective date of this AD, whichever occurs later, do an external detailed inspection for cracks in the body skin around the aft corners of the nose wheel well, and skin splice plate at the aft corners of the nose wheel well, in accordance with the

Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2305, Revision 2, dated January 15, 2009.

(h) For airplanes in Groups 1 through 3, as identified in Boeing Alert Service Bulletin 747-53A2305, Revision 2, dated January 15, 2009, that have been modified in accordance with Boeing Service Bulletin 747-53-2150; or repaired in accordance with Figure 35 of Section 53-30-03 of Boeing 747 SRM: Within 6,000 flight cycles after doing the modification or repair, or within 1,500 flight cycles after the effective date of this AD, whichever occurs later, do an external detailed inspection for cracks in the body skin around the aft corners of the nose wheel well, and skin splice plate at the aft corners of the nose wheel well, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2305, Revision 2, dated January 15, 2009.

(i) For airplanes in Groups 4 through 7, as identified in Boeing Alert Service Bulletin 747-53A2305, Revision 2, dated January 15, 2009, that have not been modified in accordance with Boeing Alert Service Bulletin 747-53A2305: Prior to the accumulation of 3,000 total flight cycles, or within 1,500 flight cycles after the effective date of this AD, whichever occurs later, do an external detailed inspection for cracks in the body skin around the aft corners of the nose wheel well, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2305, Revision 2, dated January 15, 2009.

(j) For airplanes in Groups 4 through 7, as identified in Boeing Alert Service Bulletin 747-53A2305, Revision 2, dated January 15, 2009, that have been modified in accordance with Boeing Service Bulletin 747-53-2305, dated June 27, 1991; or Revision 1, dated May 22, 1997: Within 1,000 flight cycles after the effective date of this AD, do a one-time external general visual inspection for steel cross-shaped doublers, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2305, Revision 2, dated January 15, 2009. If no cross-shaped doublers are installed, within 1,500 flight cycles after the effective date of this AD, install cross-shaped doublers, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2305, Revision 2, dated January 15, 2009.

(k) For airplanes in Group 8, as identified in Boeing Alert Service Bulletin 747-53A2305, Revision 2, dated January 15, 2009: Prior to the accumulation of 3,000 total flight cycles, or within 1,500 flight cycles after the effective date of this AD, whichever occurs later, do an external detailed inspection for cracks in the body skin around the aft corners of the nose wheel well, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2305, Revision 2, dated January 15, 2009.

(l) If no crack is found during any inspection required by paragraph (g), (h), (i), or (k) of this AD, repeat the applicable inspection specified in paragraph (g), (h), (i), or (k) of this AD thereafter at intervals not to exceed 1,500 flight cycles, until the modification specified in paragraph (n) of this AD is accomplished.

(m) If any crack is found during any inspection required by paragraph (g), (h), (i), (k), or (l) of this AD, before further flight, modify the aft corners of the nose wheel well by installing modification doublers and doing all applicable related investigative and corrective actions, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2305, Revision 2, dated January 15, 2009, except as required by paragraph (t) of this AD.

Optional Terminating Action

(n) Modification of the aft corners of the nose wheel well by installing modification doublers and doing all applicable related investigative and corrective actions, in accordance with the

Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2305, Revision 2, dated January 15, 2009, terminates the repetitive inspections required by paragraph (l) of this AD for the modified side only. Where Boeing Alert Service Bulletin 747-53A2305, Revision 2, dated January 15, 2009, specifies to contact Boeing for appropriate action, repair using a method approved in accordance with the procedures specified in paragraph (u) of this AD.

Post-Modification Repetitive Inspections

(o) For airplanes on which the modification specified in Boeing Alert Service Bulletin 747-53A2305, Revision 2, dated January 15, 2009, has been done: At the applicable time specified in paragraph (o)(1) or (o)(2) of this AD, do an external low frequency eddy current inspection for skin cracks around the fasteners at the periphery of the modification doublers, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2305, Revision 2, dated January 15, 2009.

(1) For airplanes on which the edge row fastener holes common to the external modification doublers have been zero-timed in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2305, Revision 2, dated January 15, 2009: Within 15,000 flight cycles after accomplishing the modification, or within 1,500 flight cycles after the effective date of this AD, whichever occurs later.

(2) For airplanes on which the edge row fastener holes common to the external modification doublers have not been zero-timed in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2305, Revision 2, dated January 15, 2009: Prior to the accumulation of 15,000 total flight cycles, or within 1,500 flight cycles after the effective date of this AD, whichever occurs later.

(p) If no cracking is found during the inspection required by paragraph (o) of this AD, repeat the inspection specified in paragraph (o) of this AD thereafter at intervals not to exceed 1,500 flight cycles.

(q) If any cracking is found during any inspection required by paragraph (o) or (p) of this AD, before further flight, repair using a method approved in accordance with the procedures specified in paragraph (u) of this AD.

Body Station (BS) 400 Bulkhead Outer Chord Inspection

(r) For all airplanes: At the latest of the times specified in paragraphs (r)(1), (r)(2), and (r)(3) of this AD, do a surface HFEC inspection for cracking in the BS 400 bulkhead outer chord, skin splice plate, and outer chord radius filler; and a detailed inspection for cracking of the bulkhead frame web and body skin; in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2305, Revision 2, dated January 15, 2009. If no cracking is found during any inspection, repeat the inspection one time within 6,000 flight cycles, and thereafter at intervals not to exceed 3,000 flight cycles.

(1) Before the accumulation of 20,000 total flight cycles.

(2) Within 3,000 flight cycles after doing the HFEC inspection required by AD 2004-07-22 R1, Amendment 39-15326, for structural significant item (SSI) F-4B of the Boeing Document No. D6-35022, "Supplemental Structural Inspection Document (SSID) for Model 747 Airplanes," Revision G, dated December 2000.

(3) Within 1,500 flight cycles after the effective date of this AD.

(s) If any cracking is found during any inspection required by paragraph (r) of this AD, before further flight, repair in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2305, Revision 2, dated January 15, 2009, except as required by paragraph (t) of

this AD. Within 6,000 flight cycles after doing the repair, do the inspections specified in paragraph (r) of this AD, and repeat the inspections thereafter at intervals not to exceed 3,000 flight cycles.

Service Bulletin Exception

(t) If any cracking is found during any inspection required by this AD, and Boeing Alert Service Bulletin 747-53A2305, Revision 2, dated January 15, 2009, specifies to contact Boeing for appropriate action: Before further flight, repair the crack using a method approved in accordance with the procedures specified in paragraph (u) of this AD.

Alternative Methods of Compliance (AMOCs)

(u)(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: Steven Fox, Senior Aerospace Engineer, Airframe Branch, ANM-120S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue SW., Renton, Washington 98057-3356; telephone (425) 917-6425; fax (425) 917-6590. Information may be e-mailed 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 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.

Related Information

(v) For more information about this AD, contact Steven Fox, Senior Aerospace Engineer, Airframe Branch, ANM-120S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue, SW., Renton, Washington 98057-3356; telephone (425) 917-6425; fax (425) 917-6590; e-mail: steven.fox@faa.gov.

Material Incorporated by Reference

(w) You must use Boeing Alert Service Bulletin 747-53A2305, Revision 2, dated January 15, 2009, to do the actions required by this AD, unless the AD specifies otherwise. The optional actions, if accomplished, shall be done in accordance with Boeing Alert Service Bulletin 747-53A2305, Revision 2, dated January 15, 2009.

(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 an NARA facility, 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 December 13, 2010.
Ali Bahrami,
Manager, Transport Airplane Directorate,
Aircraft Certification Service.