

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2009-1066; Directorate Identifier 2009-NM-028-AD; Amendment 39-16284; AD 2010-10-05]

RIN 2120-AA64

Airworthiness Directives; The Boeing Company Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-300, 747SR, and 747SP Series Airplanes

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

ACTION: Final rule.

SUMMARY: The FAA is superseding an existing airworthiness directive (AD), which applies to certain Model 747 airplanes. That AD currently requires repetitive inspections to detect cracking in certain fuselage skin lap joints, and repair if necessary. This new AD expands the inspection area in the existing AD, adds a modification of certain lap joints, and adds certain post-repair inspections of the lap joints. Accomplishing the modification ends the repetitive inspections required by the existing AD for the length of lap joint that is modified. This AD results from a structural review of affected skin lap joints for widespread fatigue damage. We are issuing this AD to prevent fatigue cracking in certain lap joints, which could result in rapid depressurization of the airplane.

DATES: This AD becomes effective June 21, 2010.

The Director of the Federal Register approved the incorporation by reference of certain publications listed in the AD as of June 21, 2010.

On July 13, 1994 (59 FR 30277, June 13, 1994), the Director of the Federal Register approved the incorporation by reference of certain other publications listed in the AD.

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 94-12-04, Amendment 39-8932 (59 FR 30277, June 13, 1994). The existing AD applies to certain Model 747 airplanes. That NPRM was published in the Federal Register on November 18, 2009 (74 FR 59488). That NPRM proposed to continue to require repetitive inspections to detect cracking in certain fuselage skin lap joints, and repair if necessary. That NPRM also proposed to expand the inspection area in the existing AD, add a modification of certain lap joints, and add certain post-repair inspections of the lap joints. That NPRM specified that accomplishing the modification would end the repetitive inspections required by the existing AD for the length of lap joint that is modified.

Comments

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

Request for Certain Clarifications

Boeing asks that we provide the following clarifications:

- Include language in paragraph (c) of the NPRM which specifies that airplanes having line number 629, 635, 637, 650, 666, 667, 673, 675, 683, 713, 750, or 810 are Group 5 airplanes. Boeing states that after Boeing Service Bulletin 747-53A2367, Revision 3, dated January 15, 2009, was released, it was determined that these airplanes do not have a lower lobe air stair door and should have been included in Group 5, not Group 10.

We agree with Boeing's request for the reason provided. The airplane grouping is incorrect in Boeing Alert Service Bulletin 747-53A2367, Revision 2, dated October 30, 2008, and Boeing Service Bulletin 747-53A2367, Revision 3, dated January 15, 2009. Therefore, we have added a new Note 1 after paragraph (c) of this AD to clarify the correct airplane grouping for airplanes having the identified line numbers.

- Change the term "Delegation Option Authorization" (DOA) to "Organization Designation Authorization" (ODA) throughout the NPRM.

We agree. Boeing Commercial Airplanes has received an Organization Designation Authorization (ODA), which replaces the previous designation as a Delegation Option Authorization (DOA) holder. We have changed paragraph (m)(3) of this AD to add delegation of authority to Boeing Commercial Airplanes ODA to approve an alternative method of compliance for any repair required by this AD.

- Change the Discussion section of the NPRM to note that AD 2009-04-16, Amendment 39-15822 (74 FR 8737, February 26, 2009), supersedes AD 2008-10-15, Amendment 39-15522 (73 FR 29042, May 20, 2008). Although we agree that AD 2009-04-16 superseded AD 2008-

10-15, the discussion section of the NPRM is not carried over to this final rule. Therefore, we have made no change to the AD in this regard.

- Change the terminating action language specified in paragraph (j) of the NPRM to add the following at the end of the last sentence in that paragraph: "* * * for a period of 15,000 flight cycles. Additional work is required for continued operation beyond 15,000 flight-cycles after the modification." Boeing states that a post-modification inspection is specified in a note following Table 2 of paragraph 1.E. of Boeing Service Bulletin 747-53A2367, Revision 3, dated January 15, 2009.

We do not agree with Boeing's request. The note following Table 2 of paragraph 1.E. of the service bulletin specifies that additional work is required for continued operation beyond 15,000 flight cycles after the modification, and that Boeing must be contacted for instructions. Considering the compliance time of 30,000 total flight cycles for the modification, and the compliance time for additional work, we have determined that rulemaking on the undefined additional work is not necessary at this time. We will consider future rulemaking once the additional work is defined. We have made no change to the AD in this regard.

- Add a new paragraph (j)(1) to the NPRM to state that at all lap joint areas not covered by the modification required by paragraph (j) of this AD, a lap joint modification must be installed at 35,000 total flight cycles. Boeing states that the NPRM should reflect the structural modification point (SMP) for all lap splices not modified by Boeing Service Bulletin 747-53A2367, Revision 3, dated January 15, 2009, as stated on page 26, section 1.D., Note 7, of that service bulletin.

We do not agree with Boeing's request. Notes in the Description section of a service bulletin are considered informational only. In addition, the subject note specifies modification of all lap joints not covered by the modification specified in Boeing Service Bulletin 747-53A2367. The compliance time specified in that note in Boeing Service Bulletin 747-53A2367, Revision 3, dated January 15, 2009, is 35,000 total flight cycles, and Boeing is not planning to provide engineering drawings for that modification. Modification of those lap joints is not included in this AD. We will consider future rulemaking when modification procedures are available. We have made no change to the AD in this regard.

Explanation of Change Made to This AD

We have changed this AD to identify the legal name of the manufacturer as published in the most recent type certificate data sheet for the affected airplane models.

Conclusion

We reviewed the relevant data, considered the comments received, and determined that air safety and the public interest require adopting the AD with the changes described previously. We also determined that these changes will not increase the economic burden on any operator or increase the scope of the AD.

Explanation of Change to Costs of Compliance

After the NPRM was issued, we reviewed the figures we have used over the past several years to calculate AD costs to operators. To account for various inflationary costs in the airline industry, we find it necessary to increase the labor rate used in these calculations from \$80 per work hour to \$85 per work hour. The cost impact information, below, reflects this increase in the specified hourly rate.

Costs of Compliance

There are 209 airplanes of the affected design in the worldwide fleet. This AD affects about 69 airplanes of U.S. registry.

The actions that are required by AD 94-12-04 and retained in this AD take about 14 work hours per airplane, at an average labor rate of \$85 per work hour. Based on these figures, the estimated cost of the currently required actions is \$1,190 per airplane, per inspection cycle.

The new Area 2 inspections take up to 477 work hours per airplane, depending on airplane configuration, at an average labor rate of \$85 per work hour. Based on these figures, the estimated cost of the new inspections specified in this AD for U.S. operators is up to \$2,797,605, or up to \$40,545 per airplane, per inspection cycle.

The new modification takes about 171 work hours per airplane, at an average labor rate of \$85 per work hour. Required parts cost per airplane will be minimal. Based on these figures, the estimated cost of the new actions specified in this AD for U.S. operators is \$1,002,915, or \$14,535, per airplane.

Authority for This Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, Section 106, describes the authority of the FAA Administrator. Subtitle VII, Aviation Programs, describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701, "General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

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 39-8932 (59 FR 30277, June 13, 1994) and by adding the following new airworthiness directive (AD):



2010-10-05 The Boeing Company: Amendment 39-16284. Docket No. FAA-2009-1066; Directorate Identifier 2009-NM-028-AD.

Effective Date

- (a) This AD becomes effective June 21, 2010.

Affected AD

- (b) This AD supersedes AD 94-12-04, Amendment 39-8932.

Applicability

(c) This AD applies to The Boeing Company Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-300, 747SR, and 747SP series airplanes, certificated in any category, as identified in Boeing Service Bulletin 747-53A2367, Revision 3, dated January 15, 2009.

Note 1: Airplanes having line number 629, 635, 637, 650, 666, 667, 673, 675, 683, 713, 750, or 810 are Group 5 airplanes.

Subject

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

Unsafe Condition

(e) This AD results from a structural review of affected skin lap joints for widespread fatigue damage. The Federal Aviation Administration is issuing this AD to prevent fatigue cracking in certain lap joints, which could result in rapid depressurization 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.

Restatement of Requirements of AD 94-12-04, With Revised Service Information

Repetitive Inspections

(g) For airplanes identified in Boeing Service Bulletin 747-53-2367, dated December 18, 1991: Prior to the accumulation of 22,000 full pressure flight cycles (or, if the external skin panel of an affected lap joint has been replaced, prior to the accumulation of 22,000 full pressure flight cycles since skin replacement), or within 1,000 landings after July 13, 1994 (the effective date of AD 94-12-04), whichever occurs later, perform an external surface high frequency eddy current (HFEC) inspection of the skin around the upper row of fasteners, in accordance with the Accomplishment

Instructions of Boeing Service Bulletin 747-53-2367, dated December 18, 1991; Boeing Service Bulletin 747-53-2367, Revision 1, dated January 27, 1994; Boeing Alert Service Bulletin 747-53A2367, Revision 2, dated October 30, 2008; or Boeing Service Bulletin 747-53A2367, Revision 3, dated January 15, 2009. As of the effective date of this AD, only Revision 3 may be used.

(1) If no crack is found, repeat the inspection thereafter at intervals not to exceed 3,000 full pressure flight cycles until the inspections required by paragraph (h) of this AD are done.

(2) If any crack is found, accomplish paragraphs (g)(2)(i) and (g)(2)(ii) of this AD.

(i) Prior to further flight, perform an open hole HFEC inspection to detect cracking in the upper row fastener holes between the adjacent frames, in accordance with the Accomplishment Instructions of Boeing Service Bulletin 747-53-2367, dated December 18, 1991; Boeing Service Bulletin 747-53-2367, Revision 1, dated January 27, 1994; Boeing Alert Service Bulletin 747-53A2367, Revision 2, dated October 30, 2008; or Boeing Service Bulletin 747-53A2367, Revision 3, dated January 15, 2009. Prior to further flight, repair any crack found, in accordance with a method approved by the Manager, Seattle Aircraft Certification Office (ACO), FAA.

Note 2: Guidance on repairing cracking can be found in Chapter 53-30-03 of the Boeing 747 Structural Repair Manual.

(ii) Repeat the inspection required by paragraph (g) of this AD thereafter at intervals not to exceed 3,000 full pressure flight cycles until the inspections required by paragraph (h) of this AD are done.

New Requirements of This AD

Repetitive Inspections/Investigative and Corrective Actions

(h) For all airplanes: Do initial and repetitive HFEC inspections for cracks of lap joints in Sections 41, 42, 44, and 46, by doing all the actions, including all applicable related investigative and corrective actions, specified in the Accomplishment Instructions of Boeing Service Bulletin 747-53A2367, Revision 3, dated January 15, 2009, except as provided by paragraph (l) of this AD. Do the inspections at the applicable times specified in paragraph 1.E. of Boeing Service Bulletin 747-53A2367, Revision 3, dated January 15, 2009, except as required by paragraph (k) of this AD. Do all applicable related investigative and corrective actions before further flight. Accomplishing the inspections required by this paragraph ends the repetitive inspections required by paragraph (g) of this AD. Do the actions required by paragraph (h) of this AD until the modification required by paragraph (j) of this AD is done.

(i) For areas on which a lap joint repair was installed and the repair doubler is greater than or equal to 40 inches long: Do initial and repetitive internal HFEC inspections for cracks, as required by paragraph (h) of this AD, by doing all the applicable actions, including applicable corrective actions, specified in the Accomplishment Instructions of Boeing Service Bulletin 747-53A2367, Revision 3, dated January 15, 2009, except as provided by paragraph (l) of this AD. Do the inspection and corrective actions at the times specified in paragraph 1.E. of Boeing Service Bulletin 747-53A2367, Revision 3, dated January 15, 2009, except as required by paragraph (k) of this AD.

Terminating Action

(j) Before the accumulation of 30,000 total flight cycles or within 3,000 flight cycles after the effective date of this AD, whichever occurs later: Modify the applicable lap joints in Sections 41 and 42 by doing all the actions specified in the Accomplishment Instructions of Boeing Service Bulletin 747-53A2367, Revision 3, dated January 15, 2009, except as required by paragraph (l) of this AD. Accomplishing this modification terminates the repetitive inspection requirements of this AD for the length of lap joint that is modified.

Exceptions to Boeing Service Bulletin 747-53A2367, Revision 3, Dated January 15, 2009

(k) Where Boeing Service Bulletin 747-53A2367, Revision 3, dated January 15, 2009, specifies compliance times "from the date on the original issue of this service bulletin [12/18/91]," this AD requires compliance within the specified compliance time after July 13, 1994 (the effective date of AD 94-12-04). Where Boeing Service Bulletin 747-53A2367, Revision 3, dated January 15, 2009, specifies compliance times "after the date on Revision 2 of this service bulletin [10/30/08]," this AD requires compliance within the specified compliance time after the effective date of this AD.

(l) Where Boeing Service Bulletin 747-53A2367, Revision 3, dated January 15, 2009, specifies to contact Boeing for repair or modification instructions: Before further flight, repair or modify using a method approved in accordance with the procedures specified in paragraph (m) of this AD.

Alternative Methods of Compliance (AMOCs)

(m)(1) The Manager, Seattle ACO, 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 ACO, 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 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 previously in accordance with AD 94-12-04 are approved as alternative methods of compliance with the corresponding requirements of this AD.

Material Incorporated by Reference

(n) You must use the service information specified in Table 1 of this AD, as applicable, to do the actions required by this AD, unless the AD specifies otherwise.

Table 1 – All material incorporated by reference

Document	Revision	Date
Boeing Alert Service Bulletin 747-53A2367	2	October 30, 2008
Boeing Service Bulletin 747-53-2367	Original	December 18, 1991
Boeing Service Bulletin 747-53-2367	1	January 27, 1994
Boeing Service Bulletin 747-53A2367	3	January 15, 2009

(1) The Director of the Federal Register approved the incorporation by reference of the Boeing service information specified in Table 2 of this AD under 5 U.S.C. 552(a) and 1 CFR part 51.

Table 2 – New material incorporated by reference

Document	Revision	Date
Boeing Alert Service Bulletin 747-53A2367	2	October 30, 2008
Boeing Service Bulletin 747-53A2367	3	January 15, 2009

(2) The Director of the Federal Register previously approved the incorporation by reference of the Boeing service information contained in Table 3 of this AD on July 13, 1994 (59 FR 30277, June 13, 1994).

Table 3 – Material previously incorporated by reference

Document	Revision	Date
Boeing Service Bulletin 747-53-2367	Original	December 18, 1991
Boeing Service Bulletin 747-53-2367	1	January 27, 1994

(3) 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>.

(4) 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.

(5) 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 April 27, 2010.

Ali Bahrami,
Manager, Transport Airplane Directorate,
Aircraft Certification Service.