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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2005-20879; Directorate Identifier 2004-NM-55-AD; Amendment 39-14326; AD 2005-20-29]

RIN 2120-AA64

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

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

ACTION: Final rule.

SUMMARY: The FAA is adopting a new airworthiness directive (AD) for certain Boeing Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-300, 747SP, and 747SR series airplanes. This AD requires repetitive inspections to detect cracks in various areas of the upper deck floor beams, and repair if necessary. This AD results from fatigue testing that revealed severed upper chords of the upper deck floor beams due to fatigue cracking. We are issuing this AD to detect and correct cracking in the upper chords of the upper deck floor beams. Undetected cracking could result in large deflection or deformation of the upper deck floor beams, resulting in damage to wire bundles and control cables for the flight control system, and reduced controllability of the airplane. Multiple adjacent severed floor beams could result in rapid decompression of the airplane.

DATES: This AD becomes effective November 16, 2005.

The Director of the Federal Register approved the incorporation by reference of Boeing Service Bulletin 747-53A2349, Revision 2, dated April 3, 2003; and Boeing Alert Service Bulletin 747-53A2452, dated April 3, 2003; as of November 16, 2005.

On June 27, 2002 (67 FR 36081, May 23, 2002), the Director of the Federal Register approved the incorporation by reference of Boeing Alert Service Bulletin 747-53A2349, Revision 1, dated October 12, 2000.

On June 11, 1993 (58 FR 27927, May 12, 1993), the Director of the Federal Register approved the incorporation by reference of Boeing Service Bulletin 747-53-2349, dated June 27, 1991.

ADDRESSES: You may examine the AD docket on the Internet at <http://dms.dot.gov> or in person at the Docket Management Facility, U.S. Department of Transportation, 400 Seventh Street SW., Nassif Building, room PL-401, Washington, DC.

Contact Boeing Commercial Airplanes, P.O. Box 3707, Seattle, Washington 98124-2207, for service information identified in this AD.

FOR FURTHER INFORMATION CONTACT: Ivan Li, Aerospace Engineer, Airframe Branch, ANM-120S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue, SW., Renton, Washington 98055-4056; telephone (425) 917-6437; fax (425) 917-6590.

SUPPLEMENTARY INFORMATION:

Examining the Docket

You may examine the AD docket on the Internet at <http://dms.dot.gov> or in person at the Docket Management Facility office between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The Docket Management Facility office (telephone (800) 647-5227) is located on the plaza level of the Nassif Building at the street address stated in the ADDRESSES section.

Discussion

The FAA issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to include an AD that would apply to certain Boeing Model 747-100, -100B, 100B SUD, -200B, and -300 series airplanes; and Model 747SP and 747SR series airplanes. That NPRM was published in the Federal Register on April 11, 2005 (70 FR 18327). That NPRM proposed to require repetitive inspections to detect cracks in various areas of the upper deck floor beams, and repair if necessary.

Comments

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

Request To Revise Paragraph (b)

One commenter, the manufacturer, requests that paragraph (b) of the proposed AD be revised to state, "Supersedes AD 2002-10-10, amendment 39-12756 (67 FR 36081, May 23, 2002), paragraphs (a)(1), (d), (e), and (f)." The commenter states that the revision indicates the parts of AD 2002-10-10 that are being superseded by the proposed AD.

We do not agree. This final rule does not supersede AD 2002-10-10. This final rule is a stand-alone AD to address the upper deck floor beam inspections specified in AD 2002-10-10 and the additional upper deck floor beam inspections specified in Boeing Alert Service Bulletin 747-53A2452, dated April 3, 2003. As explained in the "Other Related Rulemaking" section of the proposed AD, we proposed to supersede AD 2002-10-10 with a separate AD that does not include the upper deck floor beam inspections. Consequently, on April 1, 2005, we issued a notice of proposed rulemaking (NPRM), Docket No. FAA-2005-20880, to propose to require repetitive inspections to detect cracks in various areas of the fuselage internal structure, and related investigative/corrective actions if necessary. That NPRM, which would supersede AD 2002-10-10, was published in the Federal Register on April 11, 2005 (70 FR 18332). We have not revised the final rule in this regard.

Request To Revise Note 1

The same commenter requests that Note 1 of the proposed AD be revised to reference paragraph (c) instead of paragraph (b). The commenter states that paragraph (b) was incorrectly referenced.

We agree with the commenter and have revised Note 1 of the final rule accordingly.

Request To Revise Paragraph (h)(2)

The same commenter requests that the description of the inspection area in paragraph (h)(2) of the proposed AD be revised to remove the reference to the body stations. The commenter believes that the reference to body station (STA) 380 through STA 1100 is an error carried over from AD 2002-10-10. The commenter notes that circle note 1 in Figure 2 of Boeing Alert Service Bulletin 747-53A2349, Revision 1, dated October 12, 2000, specifies that Group 3 airplanes inspect upper deck floor beams from STA 260 to STA 1100.

We agree with the commenter that the reference to STA 380 is in error and that the beginning station should have been cited as STA 260. However, we do not agree that a change to paragraph (h)(2) of the final rule is necessary. Operators will be doing the next inspection in accordance with paragraph (l) of the final rule. Paragraph (l) references Boeing Service Bulletin 747-53A2349, Revision 2, dated April 3, 2003, which specifies an inspection of the upper deck structure from STA 260 through STA 1100. We have not revised the final rule in this regard.

Request To Clarify Applicability of Paragraphs (i)(1) and (i)(2)

The same commenter requests that the applicability of paragraphs (i)(1) and (i)(2) of the proposed AD be clarified. The commenter notes that paragraph (i) of the proposed AD refers to both Boeing Alert Service Bulletin 747-53A2349, Revision 1, dated October 12, 2000; and Boeing Alert Service Bulletin 747-53A2452, dated April 3, 2003. The commenter also points out that paragraphs (i)(1) and (i)(2) of the proposed AD refer to groups for the paragraph applicability but do not specify which service bulletin the groups are defined in. The commenter notes that the correct groups are defined only in Boeing Alert Service Bulletin 747-53A2349, Revision 1.

We agree with the commenter. Boeing Alert Service Bulletin 747-53A2349, Revision 1, defines the groups referenced in paragraphs (i)(1) and (i)(2) of the final rule. We have revised paragraphs (i)(1) and (i)(2) of the final rule accordingly.

Request To Revise Paragraph (j) To Clarify Wording

The same commenter requests that the wording in paragraph (j) of the proposed AD be clarified. The commenter states that "Area 1" referenced in paragraph (j) has a different meaning in Boeing Alert Service Bulletin 747-53A2349, Revision 1, dated October 12, 2000, than it does in Boeing Alert Service Bulletin 747-53A2452, dated April 3, 2003. The commenter suggests replacing the phrase "For Area 1 only" with "For upper deck floor beams only."

We agree with the commenter that "Area 1" is defined differently in the service bulletins. To avoid confusion, we have removed the phrase "For Area 1 only" from paragraph (j) of the final rule.

Request To Revise Inspection Area Specified in Paragraph (l)

The same commenter requests that paragraph (l) of the proposed AD be revised to clarify the inspection area. The commenter states the inspection area of "the horizontal flanges of the upper chord of the upper deck floor beams" specified in paragraph (l) be replaced with "the cab floor and of the upper deck floor beams." The commenter points out that Figure 2 of Boeing Service Bulletin 747-53A2349, Revision 2, dated April 3, 2003, specifies to do an inspection of the upper chord, web, and lower chord of all upper deck floor beams from STA 260 and aft, and an inspection of the cab floor web and its nutplates and cutout locations.

We agree with the commenter because the intent of the inspection specified in paragraph (l) of the final rule is to inspect all of area 1, as specified in Figure 2 of the service bulletin. For clarity, we have revised paragraph (l) of the final rule to specify doing an inspection for cracking of the cab floor and of the upper deck floor beams.

Request To Revise Compliance Time in Paragraph (m)(3)(i)(B)

The same commenter requests that one of the compliance times for the inspection specified in paragraph (m)(3)(i)(B) of the proposed AD be removed. The commenter contends that the inspection is currently required by AD 2002-10-10 at 2,000-flight-cycle intervals; therefore, the compliance time of "within 2,000 flight cycles after the most recent inspection required by paragraph (i) of this AD," is satisfactory. The commenter states that the additional compliance time of "or within 750 flight cycles after the effective date of this AD, whichever is first" is not needed.

We disagree. For the inspection specified in paragraph (m)(3)(i)(B) of the final rule, the compliance time of "Within 2,000 flight cycles after the most recent inspection required by paragraph (i) of this AD, or 750 flight cycles after the effective date of this AD, whichever is first," is required in order to make a transition from doing the inspections in accordance with Boeing Alert Service Bulletin 747-53A2349, Revision 1, dated October 12, 2000, at the 2,000-flight-cycle interval, to doing the inspections in accordance with Boeing Alert Service Bulletin 747-53A2452, dated April 3, 2003, at the 750-flight-cycle interval. We have not revised the final rule in this regard.

Request To Revise Compliance Time in Paragraph (m)(4)(i)(B)

The same commenter requests that one of the compliance times for the inspection specified in paragraph (m)(4)(i)(B) of the proposed AD be removed. The commenter contends that the inspection is currently required by AD 2002-10-10 at 6,000-flight-cycle intervals; therefore, the compliance time of "within 6,000 flight cycles after the most recent inspection required by paragraph (i) of this AD" is satisfactory. The commenter states that the additional compliance time of "or within 3,000 flight cycles after the effective date of this AD, whichever is first" is not needed.

We disagree. For the inspection specified in paragraph (m)(4)(i)(B) of the final rule, the compliance time of "Within 6,000 flight cycles after the most recent inspection required by paragraph (i) of this AD, or 3,000 flight cycles after the effective date of this AD, whichever is first," is required in order to make a transition from doing the inspections in accordance with Boeing Alert Service Bulletin 747-53A2349, Revision 1, dated October 12, 2000, at the 6,000 flight-cycle interval, to doing the inspections in accordance with Boeing Alert Service Bulletin 747-53A2452, dated April 3, 2003, at the 3,000-flight-cycle interval. We have not revised the final rule in this regard.

Request To Clarify Inspection Reference

The same commenter requests that paragraph (m)(4) of the proposed AD be revised to clarify that the open-hole HFEC inspection must be done in accordance with circle note 2a. of Figure 2 of Boeing Alert Service Bulletin 747-53A2349, Revision 1, dated October 12, 2000. The commenter notes that the inspection in paragraph (m)(4) of the proposed AD is for airplanes on which the inspection specified in paragraph (i) of the proposed AD has been done in accordance with the service bulletin, using the open-hole inspection per circle note 2a. or the surface inspection per circle note 2b. of Figure 2.

We partially agree with the commenter. We agree that the previously accomplished open-hole HFEC inspection must be done in accordance with circle note 2a. of Figure 2 of Boeing Alert Service Bulletin 747-53A2349, Revision 1. However we do not agree that it is necessary to revise paragraph (m)(4) of the final rule. The open-hole HFEC inspection specified in Figure 2 of the service bulletin can be done only in accordance with circle note 2a. Paragraph (m)(4) does specify which circle note must be used for the surface HFEC inspection because Figure 2 of the service bulletin specifies that inspection can be done in accordance with circle note 2b. or 2c. We have not revised the final rule in this regard.

Request To Revise Method of Counting Flight Cycles

The same commenter requests that we revise the method of counting flight cycles for paragraphs (l), (m), and (n) of the proposed AD. The commenter suggests that a paragraph be added to allow adjustments to the compliance times if the cabin differential pressure is at 2.0 pounds per square inch (psi) or less. The commenter states that this allowance is consistent with previous requirements for these inspections and is a continuation of the allowance for the upper deck floor beams given in paragraph (f) of AD 2002-10-10. The commenter adds that the fatigue and crack growth behavior at the floor panel holes in the upper chord of the upper deck floor beams, that are the subject of the proposed AD, is caused by tension stresses in the floor beam upper chords. The commenter further states that the tension stresses in the 747 upper deck floor beams are almost entirely the result of reacting loads due to cabin differential pressure. The commenter concludes that it is technically correct not to count flight cycles that have a low cabin differential pressure, and do not significantly contribute to fatigue and crack growth.

We acknowledge the commenter's technical rationale for not counting the pressurization cycles less than 2.0 psi in this final rule. However, we do not agree with the commenter's request for the following reasons:

- There have been several instances of other in-service issues where analytical rationales, similar to that of the commenter, have indicated that pressurization cycles less than 2.0 psi should not be counted. However, when fleet records have been examined, the airplanes engaging in such operations have the same or greater occurrences of crack findings compared with airplanes on which all pressurized flights are counted. As a result, we carefully consider such matters based on all available factors, including individual operators' specific maintenance programs, technical rationale, and fleet experience.
- We have found that such provisions are applicable only to a small number of operators that may not pressurize their airplanes above 2.0 psi in all their flights. We have determined that the best way to handle such circumstances is for operators to request an alternative method of compliance (AMOC) in accordance with paragraph (s) of this AD, rather than by increasing the complexity of the AD by addressing each operator's unique situation.

Request To Clarify Headings for Paragraphs (p) and (q)

The same commenter requests that the headings for paragraphs (p) and (q) of the proposed AD be clarified to indicate that the paragraphs are applicable only to areas 1 and 2. The commenter states that the repairs and modifications specified in Boeing Alert Service Bulletin 747-53A2452, dated April 3, 2003, are applicable only to areas 1 and 2.

We agree with the commenter that the actions specified in paragraphs (p) and (q) of the final rule are applicable only to areas 1 and 2, as specified in the service bulletin. Paragraphs (p) and (q) of the final rule clearly state that the specified actions are for areas 1 and 2, as specified in the service bulletin. For further clarity, we have revised the headings for paragraphs (p) and (q) of the final rule.

Request To Include Effect of AD 2004-07-22 on the Proposed AD

Two commenters request that the proposed AD include the effect of AD 2004-07-22, amendment 39-13566 (69 FR 18250, April 7, 2004), which mandates Boeing Document No. D6-35022, "Supplemental Structural Inspection Document," (SSID) for Model 747 Airplanes, Revision G, dated December 2000. One commenter states that it has done the SSID inspections required by AD 2004-07-22 and that the proposed AD may include inspections already covered by the SSID inspections. The commenter suggests that, to prevent double work, the proposed AD should identify the paragraphs for which SSID inspections are acceptable as an alternate means of compliance (AMOC). The other commenter, the manufacturer, notes that the SSID includes statements that allow the use of

Boeing Service Bulletin 747-53-2349 inspections in lieu of SSID inspections. The commenter notes that because of the proposed AD, there will be a requirement to perform the SSID inspections and the Boeing Service Bulletin 747-53-2349 inspections without an allowance to use the service bulletin inspections as a substitute for the SSID inspections. The commenter also states that SSID items F-19B, F-19I, F-19J, and F-20A are addressed by Boeing Alert Service Bulletin 747-53A2452, dated April 3, 2003 (this service bulletin is referenced as the appropriate source of service information for doing certain inspections in the proposed AD). The commenter suggests that it is better to have an operator use the service bulletin inspections due to the improved level of detailed instructions.

We agree with the commenters that certain inspections done in accordance with Boeing Service Bulletin 747-53-2349 or Boeing Alert Service Bulletin 747-53A2452 may be acceptable as a substitute for corresponding SSID inspections and vice versa, because both inspections cover common areas. However, operators must identify the inspections and substantiate that any substitutions would provide an acceptable level of safety, and we must approve any substitutions. In order to avoid further delay to the inspections required by this final rule, we have not revised the final rule in this regard. Operators may request approval for AMOCs according to paragraph (s) of this final rule. For AD 2004-07-22, operators may request approval for AMOCs according to paragraph (g) of that AD.

Credit for Actions Done in Accordance With AD 2005-06-11

Note 4 of the proposed AD specifies that inspections done in accordance with AD 2000-04-17 are acceptable for compliance with the requirements of paragraph (i) of the proposed AD. On March 9, 2005, we issued AD 2005-06-11, amendment 39-14017 (70 FR 13353, March 21, 2005), which supersedes AD 2000-04-17. Inspections done in accordance with AD 2005-06-11 are also acceptable for compliance with the requirements of paragraph (i) of the final rule. We have revised Note 4 of the final rule accordingly.

Explanation of Change Made to This AD

We have revised the "Alternative Methods of Compliance (AMOCs)" paragraph in this AD to clarify the delegation authority for Authorized Representatives for the Boeing Commercial Airplanes Delegation Option Authorization. We have also simplified paragraphs (g), (k), (o), and (p) of this AD by referring to the "AMOCs" paragraph of this AD for repair methods.

Clarification of AMOC Paragraph

We have revised this final rule to clarify the appropriate procedure for notifying the principal inspector before using any approved AMOC on any airplane to which the AMOC applies.

Conclusion

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

Costs of Compliance

There are about 489 airplanes of the affected design worldwide. This AD will affect about 155 airplanes of U.S. registry.

The actions for the upper deck floor beams that are required by AD 93-08-12, and retained in AD 2002-10-10 and this AD, take about 150 work hours per airplane, at an average labor rate of \$65 per work hour. Based on these figures, the estimated costs of these currently required actions are \$9,750 per airplane, per inspection cycle.

The inspections of the upper deck floor beams that are required by AD 2002-10-10 and retained in this AD take about 255 work hours per airplane, at an average labor rate of \$65 per work hour. Based on these figures, the estimated cost of these currently required inspections is \$16,575 per airplane, per inspection cycle.

The new inspections will take about 155 work hours per airplane, at an average labor rate of \$65 per work hour. Based on these figures, the estimated cost of the new actions specified in this AD for U.S. operators is \$1,561,625 or \$10,075 per airplane, 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 adding the following new airworthiness directive (AD):

AIRWORTHINESS DIRECTIVE



Aircraft Certification Service
Washington, DC

U.S. Department
of Transportation
**Federal Aviation
Administration**

We post ADs on the internet at www.faa.gov/aircraft/safety/alerts/

The following Airworthiness Directive issued by the Federal Aviation Administration in accordance with the provisions of Title 14 of the Code of Federal Regulations (14 CFR) part 39, applies to an aircraft model of which our records indicate you may be the registered owner. Airworthiness Directives affect aviation safety and are regulations which require immediate attention. You are cautioned that no person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of the Airworthiness Directive (reference 14 CFR part 39, subpart 39.3).

2005-20-29 Boeing: Amendment 39-14326. Docket No. FAA-2005-20879; Directorate Identifier 2004-NM-55-AD.

Effective Date

- (a) This AD becomes effective November 16, 2005.

Affected ADs

- (b) Related to AD 2002-10-10, amendment 39-12756 (67 FR 36081, May 23, 2002).

Applicability

(c) This AD applies to Boeing Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-300, 747SP, and 747SR series airplanes; certificated in any category; as identified in Boeing Alert Service Bulletin 747-53A2452, dated April 3, 2003.

Unsafe Condition

(d) This AD results from fatigue testing by the manufacturer that revealed severed upper chords of the upper deck floor beams due to fatigue cracking. We are issuing this AD to detect and correct cracking in the upper chords of the upper deck floor beams. Undetected cracking could result in large deflection or deformation of the upper deck floor beams, resulting in damage to wire bundles and control cables for the flight control system, and reduced controllability of the airplane. Multiple adjacent severed floor beams could result in rapid decompression of the airplane.

Compliance

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

Note 1: Paragraphs (f) and (g) of this AD restate the requirements of paragraphs (a) and (c) of AD 2002-10-10. As allowed by the phrase, "unless accomplished previously," if those requirements of AD 2002-10-10 have already been accomplished, this AD does not require that those actions be repeated.

Inspection

(f) Before the accumulation of 22,000 total flight cycles, or within 1,000 flight cycles after June 11, 1993 (the effective date of AD 93-08-12, amendment 39-8559), whichever occurs later, unless accomplished previously within the last 2,000 flight cycles; and thereafter at intervals not to exceed 3,000 flight cycles: Do a detailed inspection to detect cracks in the upper deck floor beams in Sections 41 and 42, in accordance with the Accomplishment Instructions of Boeing Service Bulletin 747-53-2349, dated June 27, 1991; Boeing Alert Service Bulletin 747-53A2349, Revision 1, dated October 12, 2000; or Boeing Service Bulletin 747-53A2349, Revision 2, dated April 3, 2003. After the effective date of this AD, only Boeing Service Bulletin 747-53A2349, Revision 2, dated April 3, 2003, may be used. Continue doing the inspections required by this paragraph until the inspections required by paragraph (h) or (l) of this AD are accomplished.

Repair of Cracks Detected During Paragraph (f) Inspections

(g) Before further flight, repair any cracking detected during the inspections done in accordance with paragraph (f) of this AD, according to a method approved by the Manager, Seattle Aircraft Certification Office (ACO), FAA; or according to data meeting the certification basis of the airplane approved a Boeing Company Designated Engineering Representative (DER) who has been authorized by the Manager, Seattle ACO, to make such findings; or according to a method approved in accordance with the procedures specified in paragraph (s) of this AD.

Note 2: Paragraphs (h), (i), (j), and (k), of this AD restate the requirements of paragraphs (d), (e), (f), and (g), of AD 2002-10-10. As allowed by the phrase, "unless accomplished previously," if those requirements of AD 2002-10-10 have already been accomplished, this AD does not require that those actions be repeated.

Additional Inspections

(h) Before the accumulation of 22,000 total flight cycles, or within 3,000 flight cycles after doing the most recent inspection required by paragraph (f) of this AD, whichever occurs later: Do a detailed inspection to find cracking in the areas specified in paragraph (h)(1) or (h)(2), as applicable, in accordance with Figure 2 of the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2349, Revision 1, dated October 12, 2000; or Boeing Service Bulletin 747-53A2349, Revision 2, dated April 3, 2003. After the effective date of this AD, only Boeing Service Bulletin 747-53A2349, Revision 2, may be used. Repeat the inspection thereafter at intervals not to exceed 3,000 flight cycles. Continue doing the inspection required by this paragraph until the initial inspection required by paragraph (l) of this AD is accomplished. Accomplishment of the inspection in this paragraph terminates the inspections required by paragraph (f) of this AD.

(1) For Groups 1, 2, 4, and 5 airplanes: Do the inspections of Area 1 (sections 41 and 42 upper deck floor beams), including existing repairs and modifications.

(2) For Group 3 airplanes: Do the inspections of Area 1 (sections 41, 42, and 44 upper deck floor beams from body stations 380 through 1100 inclusive), including existing repairs and modifications.

Note 3: For the purposes of this AD, a detailed inspection is defined as: "An intensive visual examination of a specific structural area, system, installation, or assembly to detect damage, failure, or irregularity. Available lighting is normally supplemented with a direct source of good lighting at intensity deemed appropriate by the inspector. Inspection aids such as mirror, magnifying lenses, etc., may be used. Surface cleaning and elaborate access procedures may be required."

(i) Before the accumulation of 28,000 total flight cycles, or within 3,000 flight cycles after doing the most recent inspection required by paragraph (f) of this AD, whichever occurs later: Do a high frequency eddy current (HFEC) inspection to find cracking of the open holes in the horizontal flanges of the upper chord of the upper deck floor beams in the areas specified in paragraph (i)(1) or (i)(2) of this AD, as applicable, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2349, Revision 1, dated October 12, 2000. Do the inspection in accordance with the "Inspection Alternatives" as specified in Sheet 7 of Figure 2 of the Accomplishment Instructions of the service bulletin. Repeat the applicable inspection at the times specified in the "Repeat Inspection Intervals" in Sheet 7 of Figure 2 of the Accomplishment Instructions of the service bulletin. After the effective date of this AD, Boeing Alert Service Bulletin 747-53A2452, dated April 3, 2003, must be used to perform the inspections required by this paragraph. Repeat the inspections until the requirements of paragraph (m) of this AD are accomplished.

(1) For Group 1, 2, 4, and 5 airplanes, as defined in Boeing Alert Service Bulletin 747-53A2349, Revision 1, dated October 12, 2000: Do the inspections at the applicable locations (BS 380 through BS 780 inclusive for Groups 1, 2, and 4, BS 380 through BS 860 inclusive for Group 5) as specified in Sheet 7 of Figure 2.

(2) For Group 3 airplanes, as defined in Boeing Alert Service Bulletin 747-53A2349, Revision 1, dated October 12, 2000: Do the inspections as specified in Sheet 7 of Figure 2, at the upper deck floor beams from BS 380 through BS 1100 inclusive.

Note 4: HFEC inspections of the left and right sides of the upper deck floor beam at body station 380, between buttock lines 40 and 76, done in accordance with AD 2000-04-17 or AD 2005-06-11, are considered acceptable for compliance with the applicable inspections specified in paragraph (i) of this AD.

Adjustments to Compliance Time: Cabin Differential Pressure

(j) For the purposes of calculating the compliance threshold and repetitive interval for the actions required by paragraphs (h) and (i) of this AD: The number of flight cycles in which cabin differential pressure is at 2.0 pounds per square inch (psi) or less need not be counted when determining the number of flight cycles that have occurred on the airplane, provided that flight cycles with momentary spikes in cabin differential pressure above 2.0 psi are included as full pressure cycles. For this provision to apply, all cabin pressure records must be maintained for each airplane: No fleet-averaging of cabin pressure is allowed.

Repair of Cracks Detected During Paragraph (h) and (i) Inspections

(k) Before further flight, repair any cracking found during the inspections done in accordance with paragraphs (h) and (i) of this AD, in accordance with Boeing Alert Service Bulletin 747-53A2349, Revision 1, dated October 12, 2000. Where the service bulletin specifies to contact Boeing for repair instructions, repair according to a method approved by the Manager, Seattle ACO; or according to a method approved in accordance with the procedures specified in paragraph (s) of this AD.

New Requirements of This AD

Detailed Inspection

(l) Before the accumulation of 22,000 total flight cycles, or within 3,000 flight cycles after the most recent inspection required by paragraph (f) or (h) of this AD, whichever is later: Do a detailed

inspection for cracking of the cab floor and of the upper deck floor beams. Do the inspection in accordance with the Accomplishment Instructions of Boeing Service Bulletin 747-53A2349, Revision 2, dated April 3, 2003. Repeat the inspection thereafter at intervals not to exceed 3,000 flight cycles. Doing the initial inspection required by this paragraph terminates the inspections required by paragraphs (f) and (h) of this AD.

High Frequency Eddy Current (HFEC) Inspection

(m) Do a HFEC inspection for cracking of the horizontal flanges of the upper chord of the upper deck floor beams, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2452, dated April 3, 2003, at the applicable time specified in paragraph (m)(1), (m)(2), (m)(3), or (m)(4) of this AD. Areas 1, 2, and 3, as specified in paragraphs (m) and (n) of this AD, are defined in the service bulletin. Accomplishment of this inspection terminates the inspections required by paragraph (i) of this AD.

(1) For airplanes that have not been inspected in accordance with the requirements of paragraph (f), (h), or (i) of this AD:

(i) For Area 1: Before the accumulation of 22,000 total flight cycles, or within 1,000 flight cycles after the effective date of this AD, whichever is later.

(ii) For Area 2: Before the accumulation of 28,000 total flight cycles.

(iii) For Area 3: Before the accumulation of 22,000 total flight cycles, or within 1,000 flight cycles after the effective date of this AD, whichever is later.

(2) For airplanes that have been inspected in accordance with the requirements of paragraph (f) or (h) of this AD, but not in accordance with the requirements of paragraph (i) of this AD:

(i) For Area 1: Before the accumulation of 22,000 total flight cycles, or within 3,000 flight cycles after the most recent inspection required by paragraph (f) or (h) of this AD, whichever is later.

(ii) For Area 2: Before the accumulation of 28,000 total flight cycles, or within 3,000 flight cycles after the most recent inspection required by paragraph (f) or (h) of this AD, whichever is later.

(iii) For Area 3: Before the accumulation of 22,000 total flight cycles, or within 3,000 flight cycles after the most recent inspection required by paragraph (f) or (h) of this AD, whichever is later.

(3) For airplanes on which a surface HFEC inspection of the horizontal flanges of the upper chord of the upper deck floor beams, as required by paragraph (i) of this AD, was accomplished, and the surface HFEC inspection was accomplished from below the upper deck floor beams as specified by Figure 2, circle note 2c., of Boeing Alert Service Bulletin 747-53A2349, Revision 1, dated October 12, 2000:

(i) For Area 1: At the later of the times specified in paragraphs (m)(3)(i)(A) and (m)(3)(i)(B) of this AD.

(A) Before the accumulation of 22,000 total flight cycles.

(B) Within 2,000 flight cycles after the most recent inspection required by paragraph (i) of this AD, or 750 flight cycles after the effective date of this AD, whichever is first.

(ii) For Area 2: Before the accumulation of 28,000 total flight cycles, or within 2,000 flight cycles after the most recent inspection required by paragraph (i) of this AD, whichever is later.

(iii) For Area 3: Before the accumulation of 22,000 total flight cycles, or within 3,000 flight cycles after the most recent inspection required by paragraph (f) or (h) of this AD, whichever is later.

(4) For airplanes on which either a surface or open-hole HFEC inspection of the horizontal flanges of the upper chord of the upper

deck floor beams, as required by paragraph (i) of this AD has been accomplished, and the surface HFEC inspection was accomplished from above and below the upper deck floor beams, as specified by Figure 2, circle note 2b., of Boeing Alert Service Bulletin 747-53A2349, Revision 1, dated October 12, 2000:

(i) For Area 1: At the later of the times specified in paragraphs (m)(4)(i)(A) and (m)(4)(ii)(B) of this AD.

(A) Before the accumulation of 22,000 total flight cycles.

(B) Within 6,000 flight cycles after the most recent inspection required by paragraph (i) of this AD, or within 3,000 flight cycles after the effective date of this AD whichever is first.

(ii) For Area 2: Before the accumulation of 28,000 total flight cycles, or within 6,000 flight cycles after the most recent inspection required by paragraph (i) of this AD, whichever is later.

(iii) For Area 3: Before the accumulation of 22,000 total flight cycles, or within 3,000 flight cycles after the most recent inspection required by paragraph (f) or (h) of this AD, whichever is latest.

Repetitive Inspections

(n) Except as required by paragraphs (o), (p), and (q) of this AD, repeat the inspections required by paragraph (m) of this AD at intervals not to exceed those specified in paragraphs (n)(1), (n)(2), and (n)(3) of this AD:

(1) For Area 1: 3,000 flight cycles if an open-hole HFEC inspection was accomplished, or 750 flight cycles if a surface HFEC inspection was accomplished.

(2) For Area 2: 6,000 flight cycles if an open-hole HFEC inspection was accomplished, or 2,000 flight cycles if a surface HFEC inspection was accomplished.

(3) For Area 3: 3,000 flight cycles.

Repair of Cracking Detected During Paragraph (l), (m), and (n) Inspections

(o) Before further flight, repair any cracking found during any inspection required by paragraph (l), (m), or (n) of this AD in accordance with Boeing Alert Service Bulletin 747-53A2452, dated April 3, 2003. Repairs done in accordance with this service bulletin terminates the requirements of paragraphs (l), (m), and (n) of this AD for the repaired area only. Where the service bulletin specifies to contact Boeing for repair instructions, repair according to a method approved by the Manager, Seattle ACO; or according to a method approved in accordance with the procedures specified in paragraph (s) of this AD.

After-Repair Inspections in Areas 1 and 2

(p) At the applicable new inspection thresholds specified in Figure 1 of Boeing Alert Service Bulletin 747-53A2452, dated April 3, 2003, perform the after-repair inspections for cracking in Areas 1 and 2, as specified in the service bulletin. Where the service bulletin specifies a threshold after the date of the service bulletin, use that same threshold after the effective date of this AD. Perform the after-repair inspections by accomplishing all of the applicable actions specified in the alert service bulletin. Repair any cracking found during any inspection required by this paragraph, according to a method approved by the Manager, Seattle ACO; or according to a method approved in accordance with the procedures specified in paragraph (s) of this AD. Any cracking found during any inspection must be repaired before further flight. Repeat the inspections of Areas 1 and 2 thereafter at intervals not to exceed 3,000 flight cycles.

Optional Preventative Modification in Areas 1 and 2

(q) If no cracking was found during the open-hole HFEC inspections required by paragraph (m) or (n) of this AD, repairing or modifying Areas 1 and 2, as defined in Figure 1 of Boeing Alert Service Bulletin 747-53A2452, dated April 3, 2003, in accordance with the service bulletin, defers the repetitive inspections required by paragraph (n) of this AD, and establishes new inspection methods, thresholds, and repetitive inspection intervals for the repaired or modified area. The new

inspection thresholds and intervals are specified in Figure 1 of the service bulletin. Where the service bulletin specifies a threshold after the date of the service bulletin, use that same threshold after the effective date of this AD.

Inspections Done Previously

(r) Doing the inspections required by paragraphs (m) and (n) of this AD before the effective date of this AD, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2349, Revision 1, dated October 12, 2000, is acceptable for compliance with the corresponding actions required by this AD.

Alternative Methods of Compliance (AMOCs)

(s)(1) The Manager, Seattle ACO, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19.

(2) Before using any AMOC approved in accordance with 14 CFR 39.19 on any airplane to which the AMOC applies, notify the appropriate principal inspector in the FAA Flight Standards 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 an Authorized Representative for the Boeing Commercial Airplanes Delegation Option Authorization Organization 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) Alternative methods of compliance and FAA-approved repairs, approved previously in accordance with AD 2002-10-10 are approved as AMOCs for the corresponding actions required by this AD.

Material Incorporated by Reference

(t) You must use the service bulletins specified in Table 1 of this AD, as applicable, to perform the actions that are required by this AD, unless the AD specifies otherwise.

(1) The Director of the Federal Register approves the incorporation by reference of Boeing Service Bulletin 747-53A2349, Revision 2, dated April 3, 2003; and Boeing Alert Service Bulletin 747-53A2452, dated April 3, 2003; in accordance with 5 U.S.C. 552(a) and 1 CFR part 51.

(2) The Director of the Federal Register previously approved the incorporation by reference of Boeing Alert Service Bulletin 747-53A2349, Revision 1, dated October 12, 2000, as of June 27, 2002 (67 FR 36081, May 23, 2002).

(3) The Director of the Federal Register previously approved the incorporation by reference of Boeing Service Bulletin 747-53-2349, dated June 27, 1991, as of June 11, 1993 (58 FR 27927, May 12, 1993).

(4) Contact Boeing Commercial Airplanes, P.O. Box 3707, Seattle, Washington 98124-2207, for a copy of this service information. You may review copies at the Docket Management Facility, U.S. Department of Transportation, 400 Seventh Street SW., room PL-401, Nassif Building, Washington, DC; on the Internet at <http://dms.dot.gov>; or at the National Archives and Records Administration (NARA). For information on the availability of this material at the NARA, call (202) 741-6030, or go to http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.

TABLE 1.—MATERIAL INCORPORATED BY REFERENCE

Service bulletin	Revision level	Date
Boeing Alert Service Bulletin 747-53A2349	1	October 12, 2000
Boeing Alert Service Bulletin 747-53A2452	Original	April 3, 2003.
Boeing Service Bulletin 747-53-2349	Original	June 27, 1991.
Boeing Service Bulletin 747-53A2349	2	April 3, 2003.

Issued in Renton, Washington, on September 28, 2005.

Ali Bahrami,

Manager, Transport Airplane Directorate, Aircraft Certification Service.

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