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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2004-19538; Directorate Identifier 2003-NM-99-AD; Amendment 39-14098; AD 2005-10-21]

RIN 2120-AA64

Airworthiness Directives; Boeing Model 747 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 Boeing Model 747 airplanes. That AD currently requires inspections to detect cracks in the front spar pressure bulkhead chord, and repair if necessary. This new AD requires repetitive high frequency eddy current (HFEC) inspections of the body station (BS) 1000 bulkhead chord for cracks, repetitive detailed inspections of the bathtub fittings, if installed, for cracks, and corrective action if necessary. Initiation of the new inspections ends the inspections of the existing AD. This AD also revises the applicability of the existing AD to include additional airplanes. This AD is prompted by reports of cracks in the BS 1000 bulkhead chord. We are issuing this AD to detect and correct fatigue cracks in the BS 1000 bulkhead chord, which, if not repaired before they reach critical length, could result in the failure of the adjacent structure and skin and lead to in-flight depressurization of the airplane.

DATES: This AD becomes effective June 23, 2005.

The incorporation by reference of Boeing Alert Service Bulletin 747-53A2471, dated March 27, 2003; and Boeing Service Bulletin 747-53-2064, Revision 4, including Addendum, dated September 23, 1983; as listed in the regulations; is approved by the Director of the Federal Register as of June 23, 2005.

ADDRESSES: For service information identified in this AD, contact Boeing Commercial Airplanes, P.O. Box 3707, Seattle, Washington 98124-2207. You can examine this information 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.

Docket: The AD docket contains the proposed AD, comments, and any final disposition. You can 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 U.S. Department of Transportation, 400 Seventh Street SW., room PL-401, Washington, DC. This docket number is FAA-2004-19538; the directorate identifier for this docket is 2003-NM-99-AD.

FOR FURTHER INFORMATION CONTACT: Nick Kusz, Aerospace Engineer, Airframe Branch, ANM-120S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue, SW., Renton, Washington 98055-4056; telephone (425) 917-6432; fax (425) 917-6590.

SUPPLEMENTARY INFORMATION: The FAA proposed to amend part 39 of the Federal Aviation Regulations (14 CFR part 39) with an AD to supersede AD 90-09-09, amendment 39-6586 (55 FR 17928, April 30, 1990), for certain Boeing Model 747 airplanes (a correction of that AD was published in the Federal Register on May 21, 1990 (55 FR 20894)). That action, published in the Federal Register on November 5, 2004 (69 FR 64517), proposed to require inspections to detect cracks in the front spar pressure bulkhead chord, and repair if necessary (the actions previously required by AD 90-09-09). That action also proposed to require repetitive high frequency eddy current inspections of the body station 1000 bulkhead chord for cracks, repetitive detailed inspections of the bathtub fittings, if installed, for cracks, and corrective action, if necessary.

Comments

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

Request To Clarify Paragraph (h); Meaning of "All" Actions

One commenter states that, as the proposed rule is currently written, operators would be required to replace all bathtub fittings if cracks are found at just one fitting. The operator points out that the referenced service bulletin states that operators replace only the items that are found to be cracked. However, the commenter points out that paragraph (h) of the proposed rule specifies that the corrective action must be taken by accomplishing "all" the actions specified in the accomplishment instructions of the service bulletin. The commenter states that a literal review and interpretation of paragraph (h) and the service bulletin could lead operators to the conclusion that all four bathtub fittings must be replaced if only one is found to be cracked.

We agree. The intent of the proposed rule was not to require operators to replace all fittings in the event that only one is found cracked. However, it is important to note that the 6,000-cycle post-modification inspection threshold is valid only if the chord is replaced along with all bathtub fittings that correspond to the side of the airplane (left or right) in which the chord was replaced. We have added a note to paragraph (h) of this final rule and revised (k) of the final rule to reflect this change. We have re-numbered the notes in the final rule accordingly.

Request To Remove Replacement Requirement

One commenter requests that we remove the requirement to replace the bathtub fittings in order to be eligible for the 6,000-cycle post-modification threshold after the chord replacement. The commenter gives several reasons for this request: There have been no reports of cracked bathtub fittings; the replacement bathtub fittings are the same material, in some cases, as the original fittings; and bathtub fittings must be removed for chord replacement, thereby allowing thorough inspections of the fittings.

We disagree. Although the commenter states otherwise, we have received reports of cracked bathtub fittings. In addition, the fact that the replacement fittings are of the same material as the original fittings does not mean that the fittings should not be replaced. Moreover, replacing all fittings, not just the damaged ones, is necessary in order to apply the 6,000-cycle post-modification threshold. Operators still have the option to replace only those bathtub fittings with detected cracking, and to continue with the 3,000-cycle inspection interval. No change to the final rule is necessary in this regard.

Request To Revise Cost Estimate

One commenter, an airplane operator having no technical objections, requests that the cost estimate be recalculated to include the work hours necessary for access and restoration. The commenter states that access and restoration can require up to 24 work hours for each airplane, and that such tasks do not occur frequently enough to warrant leaving them out of the cost estimate.

We disagree. In establishing the requirements of all ADs, we typically do not include incidental costs such as the time required to gain access and close up, planning time, or the time needed for other administrative actions. Because incidental costs may vary significantly from operator to operator, they are almost impossible to calculate. The work hours that are needed to accomplish the actions required by this AD represent the time necessary to perform only the actions actually required by this AD (that is, the inspection). No change to the final rule is necessary in this regard.

Explanation of Changes Made to the Proposed AD

We have revised the subject heading to identify model designations as published in the most recent type certificate data sheet for the affected models.

Boeing has received a Delegation Option Authorization (DOA). We have revised paragraph (l) of the final rule to delegate the authority to approve an alternative method of compliance for any repair required by this AD to the Authorized Representative for the Boeing DOA Organization.

We have also revised paragraph (i) of the final rule to allow any crack in the subject area to be repaired according to data that conform to the airplane's type certificate and that are approved by an Authorized Representative for the Boeing DOA Organization whom we have authorized to make such findings.

Conclusion

We have carefully reviewed the available data, including the comments that have been submitted, 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 1,350 Model 747 series airplanes worldwide of the affected design. This AD affects about 245 airplanes of U.S. registry.

The actions that are required by AD 90-09-09 and retained in this AD take about 84 work hours per airplane, at an average labor rate of \$65 per work hour. We estimate 102 airplanes of U.S. registry are affected by AD 90-09-09. Based on these figures, the estimated cost of the currently required actions is \$556,920, or \$5,460 per airplane, per inspection cycle.

The new inspections take about 14 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 \$222,950, or \$910 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. 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 FAA amends § 39.13 by removing amendment 39-6586 (55 FR 17928, April 30, 1990), corrected at 55 FR 20894, May 21, 1990, and 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"

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).

2005-10-21 Boeing: Amendment 39-14098. Docket No. FAA-2004-19538; Directorate Identifier 2003-NM-99-AD.

Effective Date

- (a) This AD becomes effective June 23, 2005.

Affected ADs

- (b) This AD supersedes AD 90-09-09, amendment 39-6586 (55 FR 20894, May 21, 1990).

Applicability

- (c) This AD applies to Boeing Model 747 series airplanes, line numbers 1 through 1307 inclusive, 1309 through 1312 inclusive, and 1314; certificated in any category.

Unsafe Condition

- (d) This AD was prompted by reports of cracks in the body station (BS) 1000 bulkhead chord. We are issuing this AD to detect and correct fatigue cracks in the BS 1000 bulkhead chord, which, if not repaired before they reach critical length, could result in the failure of the adjacent structure and skin and lead to in-flight depressurization 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.

Restatement of Requirements of AD 90-09-09

- (f) For airplanes listed in Boeing Service Bulletin 747-53-2064, Revision 4, dated September 23, 1983, that have not been modified in accordance with Boeing Service Bulletin 747-53-2064, dated July 25, 1972: Within the next 1,000 landings after October 15, 1984 (the effective date of AD 84-18-06, amendment 39-4912), or prior to the accumulation of 10,000 landings, whichever occurs later, and thereafter at intervals not to exceed 7,000 landings, conduct a high frequency eddy current (HFEC) inspection of the chord to detect cracks between stringers S-37 and S-39 at the chord radius, heel, and flanges adjacent to the fastener holes identified for inspection in Boeing Service Bulletin 747-53-2064, Revision 4, dated September 23, 1983. If cracks are found in the pressure bulkhead chord, accomplish the repair in accordance with the service bulletin before further flight. Repair of cracks along the chord radius under 5 inches in length, or across a chord flange that have not severed

the chord flange, may be deferred 1,000 landings by stop drilling and reinspecting for crack progression every 200 landings using HFEC. If crack progression is found, repair in accordance with the service bulletin prior to further flight. Inspections are to continue at intervals not to exceed 7,000 landings after repair.

(g) For airplanes listed in Boeing Service Bulletin 747-53-2064, Revision 4, dated September 23, 1983, that have been modified in accordance with Boeing Service Bulletin 747-53-2064, dated July 25, 1972: Within the next 1,000 landings after October 15, 1984, or prior to the accumulation of 10,000 landings after the modification, whichever is later, and thereafter at intervals not to exceed 10,000 landings, conduct an HFEC inspection to detect cracks in the front spar pressure bulkhead lower chord heel from stringers S-37 to S-39, and conduct an ultrasonic inspection to detect cracks in the fuselage skin originating at the indicated fastener holes beneath the forward drag splice fitting flanges, in accordance with the service bulletin. If any cracks are found, repair in accordance with Boeing Service Bulletin 747-53-2064, Revision 4, dated September 23, 1983, before further flight. Inspections are to continue at intervals not to exceed 10,000 landings after repair.

New Requirements of This AD

Initial Inspections

(h) At the later of the times specified in paragraph (h)(1), (h)(2), or (h)(3) of this AD: Except as provided by paragraph (i) of this AD, perform an HFEC inspection of BS 1000 bulkhead chord for cracks, a detailed inspection of the bathtub fittings, if installed, for cracks, and corrective action, as applicable, by accomplishing all the actions specified in the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2471, dated March 27, 2003. Any applicable corrective action must be done before further flight. Corrective actions include replacing only those bathtub fittings that are found to be cracked. Accomplishment of the HFEC and detailed inspections required by this paragraph ends the requirements of paragraphs (f) and (g) of this AD.

Note 1: The 6,000-cycle post-modification inspection threshold in paragraph (k) of this AD is valid only if the chord is replaced along with all bathtub fittings corresponding to the side of the airplane (left or right) in which the chord was replaced.

Note 2: For the purposes of this AD, a detailed inspection is "an intensive examination of a specific item, installation, or assembly to detect damage, failure, or irregularity. Available lighting is normally supplemented with a direct source of good lighting at an intensity deemed appropriate. Inspection aids such as mirrors, magnifying lenses, etc., may be necessary. Surface cleaning and elaborate procedures may be required."

(1) Prior to the accumulation of 10,000 total flight cycles.

(2) Within 18 months after the effective date of this AD.

(3) For airplanes on which the repair (i.e., chord replacement) has been accomplished in accordance with Boeing Service Bulletin 747-53-2362, dated March 26, 1992, or in accordance with paragraph (f) or (g) of this AD (i.e., per Boeing Service Bulletin 747-53-2064, Revision 4, dated September 23, 1983): Within 3,000 flight cycles after the replacement was accomplished.

Note 3: Repairs (i.e., chord replacement) accomplished prior to the effective date of this AD in accordance with Boeing Service Bulletin 747-53-2064, Revision 1, dated May 18, 1973; Revision 2, dated February 22, 1974; Revision 3, dated September 13, 1974; Revision 5, dated July 23, 1987; or Revision 6, dated June 22, 1989; are also considered to be applicable to the inspection threshold specified in paragraph (h)(3) of this AD.

(i) If any crack is found during any inspection required by paragraph (h) of this AD, and Boeing Alert Service Bulletin 747-53A2471, dated March 27, 2003, specifies contacting Boeing for additional information: Before further flight, repair 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 by an Authorized Representative for the Boeing 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 reference this AD.

Repetitive Inspections

(j) Except as provided by paragraph (k) of this AD, repeat the inspections required by paragraph (h) of this AD thereafter at intervals not to exceed 3,000 flight cycles.

(k) For the side of the airplane on which the chord and all corresponding bathtub fittings for that side of the airplane (left or right) were replaced in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2471, dated March 27, 2003: Repeat the inspections required by paragraph (h) of this AD within 6,000 flight cycles after accomplishing replacement of the chord and bathtub fittings. Thereafter repeat the inspections at intervals not to exceed 3,000 flight cycles.

Alternative Methods of Compliance (AMOC)

(1)(1) In accordance with 14 CFR 39.19, the Manager, Seattle ACO, FAA, is authorized to approve AMOCs for this AD.

(2) AMOCs, approved previously in accordance with AD 90-09-09, amendment 39-6586, are approved as AMOCs to paragraph (f) or (g) of this AD, as applicable.

(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 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 approval must specifically refer to this AD.

Material Incorporated by Reference

(m) You must use Boeing Alert Service Bulletin 747-53A2471, dated March 27, 2003; and Boeing Service Bulletin 747-53-2064, Revision 4, including Addendum, dated September 23, 1983; as applicable, to perform the actions that are required by this AD, unless the AD specifies otherwise. The Director of the Federal Register approves the incorporation by reference of this document in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. For copies of the service information, contact Boeing Commercial Airplanes, P.O. Box 3707, Seattle, Washington 98124-2207.

You may view the AD docket at the Docket Management Facility, U.S. Department of Transportation, 400 Seventh Street SW, room PL-401, Nassif Building, Washington, DC. To review copies of the service information, go 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.

Issued in Renton, Washington, on May 11, 2005.

Jeffrey E. Duven,

Acting Manager, Transport Airplane Directorate, Aircraft Certification Service.

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