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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2005-20243; Directorate Identifier 2004-NM-153-AD; Amendment 39-14185; AD 2005-14-08]

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 747-100, -200, -300, and 747SP series airplanes. That AD currently requires certain inspections to find missing or alloy-steel taperlock fasteners (bolts) in the diagonal brace underwing fittings, and corrective actions if necessary. For airplanes with missing or alloy-steel fasteners, that AD also mandates replacement of certain fasteners with new fasteners, which constitutes terminating action for certain inspections. This new AD expands the applicability to include additional airplane models and requires a new inspection to determine fastener material and to find missing or broken fasteners, and related investigative/corrective actions if necessary. This AD is prompted by reports indicating that cracked fasteners made of A286 material were found on airplanes that had only fasteners made of A286 material installed in the area common to the diagonal brace underwing fittings. We are issuing this AD to prevent loss of the underwing fitting load path due to missing or damaged alloy-steel or A286 taperlock fasteners, which could result in separation of the engine and strut from the airplane.

DATES: This AD becomes effective August 15, 2005.

The incorporation by reference of Boeing Alert Service Bulletin 747-57A2312, Revision 1, dated April 29, 2004, is approved by the Director of the Federal Register as of August 15, 2005.

On August 1, 2001 (66 FR 34094, June 27, 2001), the Director of the Federal Register approved the incorporation by reference of Boeing Alert Service Bulletin 747-57A2312, dated June 15, 2000.

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

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-2005-20243; the directorate identifier for this docket is 2004-NM-153-AD.

FOR FURTHER INFORMATION CONTACT: Nicholas 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 2001-13-06, amendment 39-12286 (66 FR 34094, June 27, 2001). The existing AD applies to certain Boeing Model 747-100, -200, -300, and 747SP series airplanes. The proposed AD was published in the Federal Register on February 1, 2005 (70 FR 5066), to continue to require the actions required by the existing AD. The proposed AD would also expand the applicability to include additional airplane models and would require a new inspection to determine fastener material and to find missing or broken fasteners, and related investigative/corrective actions 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.

Support for the Proposed AD

One commenter supports the proposed AD.

Request To Increase Initial Inspection Threshold

One commenter requests that we revise paragraph (h)(1) of the proposed AD to increase the initial inspection threshold from 12 months to 18 months after the effective date of the AD for the inspection in that paragraph. The commenter states that this would allow the inspection to be performed during a regularly scheduled C-check.

We agree. Our intent was that the affected fasteners be inspected during a regularly scheduled maintenance visit in which time permits the fuel tank to be opened. We have revised paragraph (h)(1) of this AD to specify a compliance threshold of 18 months after the effective date of the AD.

Request To Clarify Subject Fasteners

One commenter requests that we revise paragraph (h) to clarify that the inspections required by that paragraph apply to the aft-most 10 fasteners in the diagonal brace underwing fitting, not "all fasteners in the diagonal brace underwing fitting," as stated in the proposed AD. We agree and have revised paragraph (h) of this AD accordingly.

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 739 airplanes of the affected design in the worldwide fleet. The following table provides the estimated costs for U.S. operators to comply with this AD, at an average labor rate of \$65 per work hour.

ESTIMATED COSTS					
Action	Work hours	Parts	Cost per airplane	Number of U.S.-registered airplanes	Fleet cost
Detailed and magnetic inspection (required by AD 2001-13-06)	2	None	\$130	60	\$7,800
Detailed and magnetic inspections (new requirement)	3	None	195	140	27,300

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 39-12286 (66 FR 34094, June 27, 2001) 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).

2005-14-08 Boeing: Amendment 39-14185. Docket No. FAA-2005-20243; Directorate Identifier 2004-NM-153-AD.

Effective Date

- (a) This AD becomes effective August 15, 2005.

Affected ADs

- (b) This AD supersedes AD 2001-13-06, amendment 39-12286.

Applicability

(c) This AD applies to 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; as identified in Boeing Alert Service Bulletin 747-57A2312, Revision 1, dated April 29, 2004.

Unsafe Condition

(d) This AD was prompted by reports indicating that cracked fasteners made of A286 material were found on airplanes that had only fasteners made of A286 material installed in the area common to the diagonal brace underwing fittings. We are issuing this AD to prevent loss of the underwing fitting load path due to missing or damaged alloy-steel or A286 taperlock fasteners, which could result in separation of the engine and strut from 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.

Requirements of AD 2001-13-06

Repetitive Inspections

(f) For Boeing Model 747-100, 747-200, 747-300, and 747SP series airplanes equipped with titanium diagonal brace underwing fittings, as identified in Boeing Alert Service Bulletin 747-57A2312, dated June 15, 2000: Within 12 months after August 1, 2001 (the effective date of AD 2001-13-06, amendment 39-12286), do a one-time detailed inspection of the diagonal brace

underwing fitting at the Number 1 and Number 4 engine pylons to find missing taperlock fasteners (bolts), and a magnetic inspection to find alloy-steel fasteners per Part 1 of the Accomplishment Instructions of Boeing Alert Service Bulletin 747-57A2312, dated June 15, 2000; or Revision 1, dated April 29, 2004.

Note 1: 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 mirror, magnifying lenses, etc., may be necessary. Surface cleaning and elaborate procedures may be required.”

(1) If no alloy-steel fasteners are found and no fasteners are missing, no further action is required by this paragraph.

(2) If any alloy-steel fasteners are found or any fasteners are missing, before further flight, do an ultrasonic inspection of the alloy-steel fasteners to find damage per Part 2 of the Accomplishment Instructions of the service bulletin.

(i) If no damaged alloy-steel fasteners are found, and no fasteners are missing: Repeat the ultrasonic inspection thereafter at intervals not to exceed 18 months until accomplishment of the terminating action required by paragraph (g) of this AD.

(ii) If any damaged alloy-steel fasteners are found, or any fasteners are missing: Before further flight, do an ultrasonic inspection of all 10 aft fasteners (including non-alloy steel) per Part 2 of the Accomplishment Instructions of the service bulletin. Before further flight, replace damaged and missing fasteners with new fasteners per Part 3 of the Accomplishment Instructions of the service bulletin, except as provided by paragraph (l) of this AD. Thereafter, repeat the inspection of the remaining alloy-steel fasteners at intervals not to exceed 18 months until accomplishment of the terminating action required by paragraph (g) or the optional terminating action specified in paragraph (m) of this AD.

Terminating Action

(g) For Boeing Model 747-100, 747-200, 747-300, and 747SP series airplanes equipped with titanium diagonal brace underwing fittings, as identified in Boeing Alert Service Bulletin 747-57A2312, dated June 15, 2000: Within 48 months after August 1, 2001, do the actions required by paragraphs (g)(1) and (g)(2), or (g)(3) of this AD, per Boeing Alert Service Bulletin 747-57A2312, dated June 15, 2000; or Revision 1, dated April 29, 2004. Accomplishment of the actions specified in this paragraph constitutes terminating action for the repetitive inspection requirements of paragraph (f) of this AD.

(1) Perform an open-hole high frequency eddy current (HFEC) inspection to detect cracks, corrosion, or damage at the bolt hole locations of the aft 10 taperlock fasteners in the diagonal brace underwing fitting at the Number 1 and Number 4 engine pylons per Part 3 of the Accomplishment Instructions of the service bulletin. If any cracking is detected, before further flight, perform applicable corrective actions per the service bulletin, except as provided by paragraph (l) of this AD.

(2) Before further flight: Replace all 10 aft taperlock fasteners with new, improved fasteners per Part 3 of the Accomplishment Instructions of the service bulletin.

(3) Do an ultrasonic inspection to find damaged fasteners per Part 2 of the Accomplishment Instructions of the service bulletin. Before further flight, replace all damaged non-alloy steel and all alloy-steel fasteners with new fasteners per Part 3 of the Accomplishment Instructions of the service bulletin. Do an open-hole HFEC inspection before installation of the new fasteners; if any cracking, corrosion, or damage is found, before further flight, perform applicable corrective actions per the service bulletin, except as provided by paragraph (l) of this AD.

New Requirements of This AD

Inspection for Missing/Broken Fasteners and to Determine Material Type

(h) For the aft 10 taperlock fasteners in the diagonal brace underwing fitting at the Number 1 and Number 4 engine pylons: Perform the inspections in paragraphs (h)(1) and (h)(2) of this AD, as applicable.

(1) For airplanes not identified in paragraph (f) of this AD: Within 18 months after the effective date of this AD, perform a detailed inspection to ensure that all fasteners are installed and unbroken, and a magnetic inspection to detect alloy-steel fasteners, in accordance with Part 1 of the Accomplishment Instructions of Boeing Alert Service Bulletin 747-57A2312, Revision 1, dated April 29, 2004.

(2) For all airplanes: Before the initial inspection threshold specified in Section 1.E., Table 1, of Boeing Alert Service Bulletin 747-57A2312, Revision 1, dated April 29, 2004; or within 18 months after the effective date of this AD; whichever is later; perform detailed and magnetic inspections, as applicable, to detect A286 fasteners in the diagonal brace underwing fitting at the Number 1 and Number 4 engine pylons, as specified in Part 1 of the Accomplishment Instructions of Boeing Alert Service Bulletin 747-57A2312, Revision 1, dated April 29, 2004. For the purposes of this AD, an A286 fastener is any fastener to which the magnet is not attracted, and which cannot be conclusively determined to be BACB30NX (TI material) or BACB30US (Inconel material) fasteners.

Ultrasonic Inspection for Damage

(i) For all alloy-steel or A286 fasteners identified during the inspections in accordance with paragraph (h) of this AD: Before further flight, perform an ultrasonic inspection for damage (including, but not limited to, cracking or corrosion) of each alloy-steel and A286 fastener, in accordance with Part 2 of the Accomplishment Instructions of Boeing Alert Service Bulletin 747-57A2312, Revision 1, dated April 29, 2004. If any bolt is missing or found damaged during the inspection required by this paragraph: Before further flight, perform an ultrasonic inspection for damage of all 10 subject fasteners, in accordance with Part 2 of the Accomplishment Instructions of the service bulletin. Doing the actions required by this paragraph within the compliance time specified in paragraph (f) of this AD eliminates the need to do paragraph (f) of this AD.

Undamaged Fastener: Repetitive Inspections or No Further Action

(j) For any fastener that is found to be installed and undamaged during the inspections required by paragraph (i) of this AD, do paragraph (j)(1), (j)(2), or (j)(3) of this AD, as applicable.

(1) If no damage is found during the inspections required by paragraph (i) of this AD, and all 10 fasteners in the diagonal brace underwing fitting at the Number 1 and Number 4 engine pylons are either BACB30NX or BACB30US fasteners: No further action is required by this AD, though the restrictions of paragraph (n) of this AD, "Parts Installation," apply.

(2) For any undamaged alloy steel fastener: Repeat the ultrasonic inspection specified in paragraph (i) of this AD at intervals not to exceed 18 months, until the actions in paragraph (m) of this AD are done.

(3) For any undamaged A286 fastener: Repeat the ultrasonic inspection specified in paragraph (i) of this AD at intervals not to exceed 8,000 flight cycles, until the actions in paragraph (m) of this AD are done.

Repetitive Ultrasonic Inspections and Corrective Actions

(k) For any missing or damaged fastener found during the inspections required by paragraph (i) or (j) of this AD: Before further flight, install a new, improved fastener in any location where a

fastener is missing, and replace any damaged fastener with a new, improved fastener, in accordance with Part 3 of the Accomplishment Instructions of Boeing Alert Service Bulletin 747-57A2312, Revision 1, dated April 29, 2004. Do an open-hole HFEC inspection for cracking, corrosion, or damage before installing the new fastener. If any cracking, corrosion, or damage is found: Before further flight, perform applicable corrective actions in accordance with the service bulletin, except as provided by paragraph (l) of this AD.

Repair

(l) If any damage (including but not limited to cracking or corrosion) of the bolt hole that exceeds the limits specified in Boeing Alert Service Bulletin 747-57A2312, Revision 1, dated April 29, 2004, is found during any inspection required by this AD, and the service bulletin specifies to contact Boeing for appropriate action: Before further flight, repair per 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 the Manager, Seattle ACO, has authorized to make this finding. For a repair method to be approved by the Manager, Seattle ACO, as required by this paragraph, the Manager's approval letter must specifically reference this AD.

Optional Terminating Action

(m) Replacement of all alloy steel and A286 fasteners with new, improved fasteners in accordance with Part 3 of the Accomplishment Instructions of Boeing Alert Service Bulletin 747-57A2312, Revision 1, dated April 29, 2004 (including performing an open-hole eddy current inspection for cracking of the fastener holes and repairing, as applicable), constitutes terminating action for the repetitive inspection requirements of this AD.

Parts Installation

(n) For Boeing Model 747-100, 747-200, 747-300, and 747SP series airplanes equipped with titanium diagonal brace underwing fittings, as identified in Boeing Alert Service Bulletin 747-57A2312, dated June 15, 2000: As of August 1, 2001, no person may install, on any airplane, a fastener having part number (P/N) BACB30PE() * (); or any other fastener made of 4340, 8740, PH13-8 Mo, or H-11 steel; in the locations specified in this AD.

(o) Except as provided by paragraph (n) of this AD, as of the effective date of this AD no person may install, on any airplane, a fastener having P/N BACB30PE() * (); or any other fastener made of 4340, 8740, PH13-8 Mo, A286, or H-11 steel; in the locations specified in this AD.

Alternative Methods of Compliance (AMOCs)

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

(2) 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 repair must meet the certification basis of the airplane and the approval must specifically refer to this AD.

(3) AMOCs approved previously according to AD 2001-13-06, amendment 39-12286 (66 FR 34094, June 27, 2001), are approved as AMOCs for the inspection requirements of this AD only at

fastener locations where the AMOC provided for installing either BACB30NX or BACB30US fasteners.

Material Incorporated by Reference

(q) You must use Boeing Alert Service Bulletin 747-57A2312, dated June 15, 2000; or Boeing Alert Service Bulletin 747-57A2312, Revision 1, dated April 29, 2004; 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 Alert Service Bulletin 747-57A2312, Revision 1, dated April 29, 2004, 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 747-57A2312, dated June 15, 2000, as of August 1, 2001 (66 FR 34094, June 27, 2001).

(3) To get copies of the service information, contact Boeing Commercial Airplanes, P.O. Box 3707, Seattle, Washington 98124-2207. To view the AD docket, go to 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 to 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 June 29, 2005.

Kevin M. Mullin,

Acting Manager, Transport Airplane Directorate, Aircraft Certification Service.

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