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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. FAA-2009-0718; Directorate Identifier 2009-NM-025-AD; Amendment 39-16212; AD 2010-05-03]**

**RIN 2120-AA64**

**Airworthiness Directives; The Boeing Company Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-200C, 747-200F, 747-300, 747-400, 747-400D, 747-400F, 747SR, and 747SP Series Airplanes**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final rule.

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**SUMMARY:** We are adopting a new airworthiness directive (AD) for all 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. This AD requires one-time detailed and high frequency eddy current inspections for cracks in the wing and horizontal stabilizer side-of-body joints and the fuselage skin circumferential splices, and repair if necessary. This AD also requires, for certain airplanes, repetitive detailed inspections for cracks of the fuselage skin circumferential splices, and repair if necessary. This AD results from Boeing analysis indicating that the wing and horizontal stabilizer side-of-body joints, and the fuselage skin circumferential splices, are susceptible to fatigue cracking due to high cyclic loads on the airplane. We are issuing this AD to detect and correct fatigue cracking at multiple adjacent locations in the subject areas, which could connect to form large cracks and result in reduced structural integrity leading to rapid decompression and consequent loss of control of the airplane.

**DATES:** This AD is effective April 8, 2010.

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in the AD as of April 8, 2010.

**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](mailto: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**

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to include an airworthiness directive (AD) that would apply to all Model 747 airplanes. That NPRM was published in the Federal Register on August 25, 2009 (74 FR 42807). That NPRM proposed to require one-time detailed and high frequency eddy current inspections for cracks in the wing and horizontal stabilizer side-of-body joints and the fuselage skin circumferential splices, and repair if necessary. That NPRM also proposed to require, for certain airplanes, repetitive detailed inspections for cracks of the fuselage skin circumferential splices, and repair if necessary.

### **Comments**

We gave the public the opportunity to participate in developing this AD. We considered the comments received.

### **Supportive Comment**

Boeing concurs with the contents of the NPRM.

### **Requests To Change Compliance Times**

UPS asks that we change the NPRM to extend the compliance time for the inspections specified in Table 3 of paragraph 1.E. of Boeing Alert Service Bulletin 747-51A2060, dated October 30, 2008, and required by paragraph (g) of the NPRM. UPS states that the inspections are not to be done until at least 28,500 total flight cycles or 130,000 total flight hours, whichever occurs later, have been accumulated on the airplane. UPS notes that by restricting the compliance time to between 28,500 and 30,000 total flight cycles or between 130,000 and 135,000 total flight hours, whichever occurs later, operators are extremely limited in positioning aircraft for common access at maintenance checks. UPS adds that without being able to reposition aircraft to line up common access maintenance inspections, a heavy burden will be placed on the operator's maintenance plans, having an adverse economic impact on the airlines.

All Nippon Airways (ANA) asks that the lower flight cycle criteria of 28,500 flight cycles be reduced to 28,000 flight cycles to alleviate additional maintenance burdens. ANA understands the intent of the service bulletin but based on the average utilization of its airplanes (2,000 to 3,000 flight cycles accumulated between C checks), the proposed lower cycle criterion might be a burden to its future operation.

We disagree with the commenters' request to change the compliance time. While restricting the compliance time for the one-time inspection to between 28,500 and 30,000 total flight cycles, or between 130,000 and 135,000 total flight hours, whichever occurs later, would have additional impact on scheduled maintenance, the inspections are intended to detect widespread fatigue damage (WFD) of affected structure. We have determined that such damage is likely to occur in a specific timeframe (in terms of flight cycles and flight hours). Therefore, the potential WFD would be undetectable if the inspections are done at an earlier time.

In developing an appropriate compliance time for the inspections, we considered the safety implications and the practical aspect of accomplishing the inspections within a period of time that corresponds to the normal scheduled maintenance for most affected operators. In consideration of these items, and since the inspections are done one time only, we have determined that the specified compliance time will ensure an acceptable level of safety and allow the inspections to be done during scheduled maintenance intervals for most affected operators. However, under the provisions of paragraph (m) of the AD, we will consider requests to adjust the compliance time if sufficient data are submitted to substantiate that the new compliance time would provide an acceptable level of safety. We have made no change to the AD in this regard.

### **Request To Omit Reporting Negative Findings**

Japan Airlines (JAL) asks that the requirement to report negative findings to Boeing be omitted from the NPRM. JAL states that the proposed reporting requirement specifies submitting a report of both positive and negative findings within 30 days. JAL notes that Boeing requests a report of crack findings only. JAL also asks that we remove the reporting requirement for positive findings. JAL adds that, in most cases, operators will contact Boeing to ask for a review when cracks are found.

We partially agree with the commenter. We do not agree to remove the reporting requirement for positive findings. However, we find that it is not necessary for operators to report negative findings for Boeing and the FAA to further evaluate the WFD inspection program. Therefore, we have changed paragraph (l) of this AD to require only positive findings be reported.

### **Request To Delay Issuing AD**

JAL also asks that the final rule be issued after release of a revised service bulletin to correct an error. Figure 31, Sheet 7, of the Accomplishment Instructions of Boeing Alert Service Bulletin 747-51A2060, dated October 30, 2008, specifies inspecting the fuselage stringer; however, Circle Note 1 of Sheet 6 specifies inspecting the fuselage skin. Boeing has confirmed that an inspection of the "fuselage skin" is correct, and stated that a revised service bulletin will be issued.

We partially agree with the commenter. We agree that there is an error in Circle Note 1 of Sheet 6 of Figure 31; however, we do not agree that issuing the final rule should be delayed to wait for the service bulletin to be revised. We have added Note 1 to this AD to clarify that the inspection specified in Sheet 6 of Figure 31 is of the fuselage skin.

### **Request To Include Credit for Previously Approved Repairs**

ANA asks that credit for previously approved repairs per AMOCs for AD 2004-07-22, Amendment 39-13566 (69 FR 18250, April 7, 2004), AD 2004-07-22 R1, Amendment 39-13566 (69 FR 24063, May 3, 2004), or AD 2006-10-16 Amendment 39-14600 (71 FR 28570, May 17, 2006) be included in the NPRM.

We acknowledge the commenter's request. However, the purpose of this AD is to detect WFD of affected structure, and the effect of local repairs on that affected structure must be thoroughly evaluated on a case-by-case basis. We suggest that the commenter contact Boeing for evaluation guidelines. After the commenter has the evaluation guidelines, under the provisions of paragraph (m)

of the AD, we will consider requests to give credit for previously approved repairs if sufficient data are submitted. We have made no change to the AD in this regard.

### **Clarifications to Final Rule**

The affected airplane models identified in the Summary section of this final rule have been changed, for clarification, to more accurately reflect the airplane models as they are identified on the type certificate data sheet. We have also revised this final rule to identify the legal name of the manufacturer as published in the most recent type certificate data sheet for the affected airplane models.

### **Explanation of Change Made to This AD**

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

### **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 labor rate.

### **Interim Action**

We consider this AD interim action. If final action is later identified, we might consider further rulemaking then.

### **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.

### **Costs of Compliance**

We estimate that this AD affects 165 airplanes of U.S. registry. We also estimate that it takes 2,604 work-hours per product to comply with this AD. The average labor rate is \$85 per work-hour. Based on these figures, we estimate the cost of this AD to the U.S. operators to be \$36,521,100, or \$221,340 per product.

### **Authority for This Rulemaking**

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

We are issuing this rulemaking under the authority described in "Subtitle VII, Part A, Subpart III, Section 44701: General requirements." Under that section, Congress charges the FAA with promoting

safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

### **Regulatory Findings**

This AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

- (1) Is not a "significant regulatory action" under Executive Order 12866,
- (2) Is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979), 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.

You can find our regulatory evaluation and the estimated costs of compliance in the AD Docket.

### **List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

### **Adoption of the Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

### **PART 39—AIRWORTHINESS DIRECTIVES**

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

#### **§ 39.13 [Amended]**

2. The FAA amends § 39.13 by adding the following new AD:



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**2010-05-03 The Boeing Company:** Amendment 39-16212. Docket No. FAA-2009-0718; Directorate Identifier 2009-NM-025-AD.

**Effective Date**

(a) This airworthiness directive (AD) is effective April 8, 2010.

**Affected ADs**

(b) None.

**Applicability**

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

**Subject**

(d) Air Transport Association (ATA) of America Code 51: Standard practices/structures.

**Unsafe Condition**

(e) This AD results from a Boeing analysis indicating that the wing and horizontal stabilizer side-of-body joints, and the fuselage skin circumferential splices, are susceptible to fatigue cracking due to high cyclic loads on the airplane. The Federal Aviation Administration is issuing this AD to detect and correct fatigue cracking at multiple adjacent locations in the subject areas, which could connect to form large cracks and result in reduced structural integrity leading to rapid decompression and consequent loss of control 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.

**Inspections and Repair if Necessary**

(g) Except as provided by paragraphs (h) and (i) of this AD: At the applicable times specified in paragraph 1.E. of Boeing Alert Service Bulletin 747-51A2060, dated October 30, 2008, do one-time inspections for cracks in the wing and horizontal stabilizer side-of-body joints, and the fuselage skin circumferential splices; do detailed inspections, as applicable, for cracks of the fuselage skin circumferential splices; and do all applicable repairs before further flight, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-51A2060, dated October 30, 2008, except as provided by paragraphs (j) and (k) of this AD. As applicable, repeat the detailed

inspection for cracks of the fuselage skin circumferential splices, at the applicable times specified in paragraph 1.E. of Boeing Alert Service Bulletin 747-51A2060, dated October 30, 2008.

Note 1: The inspection specified in Sheet 6 of Figure 31 of the Accomplishment Instructions of Boeing Alert Service Bulletin 747-51A2060, dated October 30, 2008, is an external detailed inspection of the fuselage skin as specified in Step 3 of Figure 31, not an inspection of the fuselage stringer.

### **Exceptions to Compliance Times**

(h) Where Boeing Alert Service Bulletin 747-51A2060, dated October 30, 2008, specifies a compliance time after "\* \* \* the date on this service bulletin," this AD requires compliance within the specified compliance time after the effective date of this AD.

(i) Where Note (a) of Table 2 of paragraph 1.E. of Boeing Alert Service Bulletin 747-51A2060, dated October 30, 2008, specifies that if a certain modification was done then certain inspections may be deferred "until the post modification inspection period as given in Service Bulletin 747-57A2314," this AD allows, for airplanes on which the modification specified in Boeing Service Bulletin 747-57A2314 has been done, deferring the inspections specified in Part 2 of paragraph 3.B., Work Instructions, of Boeing Alert Service Bulletin 747-51A2060, dated October 30, 2008, until the applicable post-modification inspection compliance times required by paragraph (e) of AD 2004-03-09, amendment 39-13453.

### **Exception to Part 4 Actions**

(j) For Group 6 airplanes identified in Boeing Alert Service Bulletin 747-51A2060, dated October 30, 2008: Do the inspections specified in Part 4 of paragraph 3.B., Work Instructions, of Boeing Alert Service Bulletin 747-51A2060, dated October 30, 2008, in accordance with the procedures specified in paragraph (m) of this AD.

### **Exception to Corrective Actions**

(k) If any crack is found during any inspection required by this AD, and Boeing Alert Service Bulletin 747-51A2060, dated October 30, 2008, specifies to contact Boeing for appropriate action: Before further flight, repair using a method approved in accordance with the procedures specified in paragraph (m) of this AD.

### **Reporting Requirement**

(l) At the applicable time specified in paragraph (l)(1) or (l)(2) of this AD, submit a report of positive findings of cracks found during the inspection required by paragraph (g) of this AD to Boeing Commercial Airplane Group, P.O. Box 3707, Seattle, Washington 98124-2207. Alternatively, operators may submit reports to their Boeing field service representatives. The report must contain, as a minimum, the following information: airplane serial number, flight cycles at time of discovery, location(s) and extent of positive crack findings. Under the provisions of the Paperwork Reduction Act (44 U.S.C. 3501 et seq.), the Office of Management and Budget (OMB) has approved the information collection requirements contained in this AD and has assigned OMB Control Number 2120-0056.

(1) If the inspection was done on or before the effective date of this AD: Send the report within 30 days after the effective date of this AD.

(2) If the inspection was done after the effective date of this AD: Send the report within 30 days after the inspection is done.

## **Alternative Methods of Compliance (AMOCs)**

(m)(1) The Manager, Seattle Aircraft Certification Office (ACO), FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. Send information to ATTN: 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.

## **Material Incorporated by Reference**

(n) You must use Boeing Alert Service Bulletin 747-51A2060, dated October 30, 2008, to do the actions required by this AD, unless the AD specifies otherwise.

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

(2) For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Data & Services Management, P.O. Box 3707, MC 2H-65, Seattle, Washington 98124-2207; telephone 206-544-5000, extension 1; fax 206-766-5680; e-mail me.boecom@boeing.com; Internet <https://www.myboeingfleet.com>.

(3) You may review copies of the service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue, SW., Renton, Washington. For information on the availability of this material at the FAA, call 425-227-1221 or 425-227-1152.

(4) You may also review copies of the service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: [http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html).

Issued in Renton, Washington, on February 11, 2010.

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