

**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 39**

**[Docket No. FAA-2008-1071; Directorate Identifier 2008-NM-093-AD; Amendment 39-15951; AD 2009-14-02]**

**RIN 2120-AA64**

**Airworthiness Directives; Boeing Model 747 Airplanes**

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

**ACTION:** Final rule.

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**SUMMARY:** The FAA is superseding an existing airworthiness directive (AD), which applies to certain Boeing Model 747 airplanes. That AD currently requires repetitive inspections to detect evidence of wear damage in the area at the interface between the vertical stabilizer seal and fuselage skin, and corrective actions, if necessary. The existing AD also provides for an optional terminating action for the repetitive inspections. For all Boeing 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 new AD requires repetitive inspections for wear damage and cracks of the fuselage skin in the interface area of the vertical stabilizer seal and fuselage skin, a detailed inspection for wear damage and cracks of the surface of any skin repair doubler in the area, and corrective actions if necessary. For airplanes on which the fuselage skin has been blended to remove wear damage, this new AD requires repetitive external detailed inspections or high frequency eddy current inspections for cracks of the blended area of the fuselage skin, and corrective actions if necessary. This AD results from reports of wear damage on airplanes with fewer than 8,000 total flight cycles. In addition, there have been three reports of skin wear damage on airplanes that applied Boeing Material Specifications 10-86 Teflon-filled coating (terminating action per the existing AD). We are issuing this AD to detect and correct wear damage and cracks of the fuselage skin in the interface area of the vertical stabilizer seal and fuselage skin in sections 46 and 48, which could cause in-flight depressurization of the airplane.

**DATES:** This AD becomes effective August 3, 2009.

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in the AD as of August 3, 2009.

On February 10, 2003 (68 FR 476, January 6, 2003), the Director of the Federal Register approved the incorporation by reference of Boeing Alert Service Bulletin 747-53A2478, dated February 7, 2002.

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

## **Examining the AD Docket**

You may examine the AD docket on the Internet at <http://www.regulations.gov>; or in person at the Docket Management Facility between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this AD, the regulatory evaluation, any comments received, and other information. The address for the Docket Office (telephone 800-647-5527) is the Document Management Facility, U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room, W12-140, 1200 New Jersey Avenue, SE., Washington, DC 20590.

**FOR FURTHER INFORMATION CONTACT:** Ivan Li, Aerospace Engineer, Airframe Branch, ANM-120S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue, SW., Renton, Washington 98057-3356; telephone (425) 917-6437; fax (425) 917-6590.

## **SUPPLEMENTARY INFORMATION:**

### **Discussion**

The FAA issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to include an AD that supersedes AD 2002-26-15, amendment 39-13003 (68 FR 476, January 6, 2003). The existing AD applies to certain Boeing Model 747 series airplanes. That NPRM was published in the Federal Register on October 8, 2008 (73 FR 58903). That NPRM proposed to require, for all Boeing 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, repetitive inspections for wear damage and cracks of the fuselage skin in the interface area of the vertical stabilizer seal and fuselage skin, a detailed inspection for wear damage and cracks of the surface of any skin repair doubler in the area, and corrective actions if necessary. For airplanes on which the fuselage skin has been blended to remove wear damage, that NPRM proposed to require repetitive external detailed inspections or high frequency eddy current (HFEC) inspections for cracks of the blended area of the fuselage skin, and 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 received on the NPRM.

### **Request for Change in Applicability**

Boeing requests that the second paragraph under "Relevant Service Information" of the NPRM be revised to list the specific Boeing Model 747 series airplanes affected by this rule. The commenter states that Boeing Model 747-8 series airplanes, which are not yet FAA type-certificated, should be excluded because they are equipped with corrosion-resistant steel rubstrips on the affected skins, which are a baseline configuration on these airplanes.

We find that clarification is necessary. The applicability in paragraph (c) of the AD identifies specifically affected Boeing Model 747 airplanes. However, the "Relevant Service Information" section is not restated in the final rule. Therefore, for clarity, we have specified in the Discussion section of this AD the specific Boeing Model 747 airplanes identified in the AD applicability (paragraph (c)) of this AD.

## **Request To Delay Issuance of the AD**

Japan Airlines (JAL) requests that we delay the issuance of the AD until the service bulletin is revised and the repair doubler wear limits can be incorporated into the final rule. JAL states that the NPRM and Boeing Alert Service Bulletin 747-53A2478, Revision 1, dated March 27, 2008, do not provide any wear limits for the repair doublers. JAL also states that operators would have to contact Boeing for repair instructions, replace the repair, or replace the repair doubler even if minor blending is found.

We disagree with the request to delay issuance of this AD. The wear limits provided in the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2478, Revision 1, dated March 27, 2008, are also applicable to skin repair doublers since the skin repair doublers have the same function as the fuselage skin. Because of the degree of urgency associated with addressing the identified unsafe condition, we have determined that further delay of this final rule is not appropriate. We have not changed this final rule regarding this issue.

## **Request for an Alternative Inspection Plan**

Cargolux Airlines International S.A. (CLX) and Royal Dutch Airlines (KLM) request an alternative inspection plan for paragraph (i)(1) of the NPRM. The commenters request that we increase the grace period from 6,000 flight hours after the effective date of this AD to 12,000 flight hours after the effective date of this AD (for those airplanes over the threshold); and change the repetitive interval for the detailed inspection from 7,500 flight hours to 12,000 flight hours (or 24 months) after the effective date of this AD, combining the detailed inspection and a surface HFEC inspection. CLX states that the higher sensitivity of the HFEC inspection would justify the increase in the inspection interval. KLM and CLX also state that a 12,000-flight-hour interval will allow for inspections to be done at regular "C-check" maintenance intervals. KLM also adds that there is a large economic impact due to its airplanes having passed the threshold and being the subject to the low repetitive interval of 7,500 flight hours.

We disagree with the request to include an alternative inspection plan. The service and analytical data from the airplane manufacturer do not support this request because significant wear damage has been found on an airplane with the Teflon-filled coating at 21,371 flight hours. Also, one commenter's proposed surface HFEC inspection does not detect wear damage to the skin; a surface HFEC inspection is used to detect cracks.

In developing the compliance times for this AD, we considered not only the safety implications of the identified unsafe condition, but the average utilization rate of the affected fleet and the practical aspects of an orderly inspection, repair, and modification of the fleet during regular maintenance periods. We have considered the commenters' requests, and we have concluded that the proposed compliance times remain appropriate. However, under the provisions of paragraph (m) of this AD, we may consider requests for approval of an alternative method of compliance if sufficient data are submitted to substantiate that an alternative inspection plan would provide an acceptable level of safety. We have not changed this final rule regarding this issue.

## **Request To Revise the Compliance Times in Paragraph (i) of This AD**

Northwest Airlines (NWA) requests a change in the initial inspection threshold and repetitive inspection interval specified in paragraph (i) of the NPRM. The commenter requests that we change the compliance time to:

20,000 total flight hours from delivery, or to 20,000 flight hours after the last application of Teflon-filled coating, or within 9,000 flight hours after the effective date of this AD, whichever occurs later.

NWA states that the threshold fails to recognize an equivalent effectiveness of a subsequent Teflon application after delivery. NWA believes that a grace period of 9,000 flight hours after the effective date of this AD would enable the proposed actions to occur during a heavy maintenance check visit in a suitable and safer environment. The commenter also recommends a repetitive inspection interval of up to 20,000 flight hours from the last Teflon application.

We disagree with the commenter's request. The service and analytical data from the airplane manufacturer do not support the request to change the initial inspection threshold because significant wear damage has been found on an airplane with the Teflon-filled coating at 21,371 total flight hours. In addition, we do not agree that a repetitive inspection interval of 20,000 flight hours from the last Teflon application is appropriate because the affected skins are more likely to have suffered damage from the accumulated debris and other sources after prolonged usage since delivery.

We consider that the compliance times remain appropriate. However, under the provisions of paragraph (m) of this AD, we may consider requests for approval of an AMOC if sufficient data are submitted to substantiate that an alternative inspection plan would provide an acceptable level of safety. We have not changed this final rule regarding this issue.

### Explanation of Restatement of Optional Terminating Action

We have restated paragraph (b) of AD 2002-26-15 as paragraph (g) of this AD. We have added the phrase "prior to the effective date of this AD" to paragraph (g) of this AD. If operators complied with the optional terminating action prior to the effective date of this AD, the repetitive inspections in paragraph (f)(1) of this AD are terminated. However, after the effective date of this AD, the repetitive inspections cannot be terminated until the inspections in paragraph (i) of this AD are done.

### 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

There are about 917 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.

Estimated Costs						
Action	Work hours	Average labor rate per hour	Parts	Cost per airplane	Number of U.S.-registered airplanes	Fleet cost
Inspection (required by AD 2002-26-15)	12	\$80	None	\$960, per inspection cycle	253	\$242,880, per inspection cycle
Inspection and application of BMS 10-86 Teflon-filled coating (new action)	8	\$80	None	\$640, per inspection cycle	165	\$105,600, 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 removing amendment 39-13003 (68 FR 476, January 6, 2003) and by adding the following new airworthiness directive (AD):



**2009-14-02 Boeing:** Amendment 39-15951. Docket No. FAA-2008-1071; Directorate Identifier 2008-NM-093-AD.

### Effective Date

- (a) This AD becomes effective August 3, 2009.

### Affected ADs

- (b) This AD supersedes AD 2002-26-15.

### Applicability

(c) This AD applies to Boeing 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 747-53A2478, Revision 1, dated March 27, 2008.

### Unsafe Condition

(d) This AD results from reports of skin wear damage on airplanes with fewer than 8,000 total flight cycles. In addition, there have been three reports of skin wear damage on airplanes on which Boeing Material Specifications (BMS) 10-86 Teflon-filled coating was applied (terminating action per AD 2002-26-15). We are issuing this AD to detect and correct wear damage and cracks of the fuselage skin in the interface area of the vertical stabilizer seal and fuselage skin in sections 46 and 48, which could cause 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.

### Requirements of AD 2002-26-15

#### Inspections for Damage/Corrective Actions

(f) For airplanes identified in Boeing Alert Service Bulletin 747-53A2478, dated February 7, 2002: Prior to the accumulation of 15,000 total flight cycles, or within 1,200 flight cycles after February 10, 2003 (the effective date of AD 2002-26-15), whichever occurs later, perform a detailed inspection to detect evidence of wear damage of the fuselage skin at the interface area of the vertical stabilizer seal and fuselage skin, per Boeing Alert Service Bulletin 747-53A2478, dated February 7, 2002.

(1) If no wear damage of the fuselage skin is detected or any existing blendout is within the structural repair manual (SRM) allowable damage limits: Repeat the detailed inspection at intervals not to exceed 6,000 flight cycles.

(2) If any wear damage of the fuselage skin is detected or any existing blendout exceeds the allowable damage limits specified in the SRM: Before further flight, repair the vertical stabilizer seal interface and refinish the skin with BMS 10-86 Teflon-filled coating, per Boeing Alert Service Bulletin 747-53A2478, dated February 7, 2002. Accomplishment of the repair and refinishing is terminating action for the repetitive inspections required by paragraph (f)(1) of this AD.

Note 1: 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."

### **Optional Terminating Action for Paragraph (f) of This AD**

(g) Refinishing the fuselage skin with BMS 10-86 Teflon-filled coating, prior to the effective date of this AD, per Boeing Alert Service Bulletin 747-53A2478, dated February 7, 2002, terminates the repetitive inspections required by paragraph (f)(1) of this AD.

### **Previously Accomplished Inspections and Terminating Action**

(h) For airplanes identified in Boeing Alert Service Bulletin 747-53A2478, dated February 7, 2002: Inspections and terminating action done before February 10, 2003, per Boeing Service Bulletin 747-53-2192, dated July 21, 1981, are acceptable for compliance with the corresponding actions required by paragraph (f) of this AD, provided BMS 10-86 Teflon-filled coating was used, and the new allowable damage limits specified in Boeing Alert Service Bulletin 747-53A2478, dated February 7, 2002, are met.

### **New Requirements of This AD**

#### **New Repetitive Inspections**

(i) Except as provided by paragraph (j) of this AD: At the applicable times specified in Table 1 of this AD, do the actions specified in paragraphs (i)(1) and (i)(2) of this AD, as applicable. Accomplishing the initial inspection specified in paragraph (i) terminates the requirements of paragraph (f) of this AD.

(1) For all airplanes: Do the actions specified in paragraphs (i)(1)(i) and (i)(1)(ii) of this AD, as applicable.

(i) Do repetitive external detailed inspections for wear damage and cracks of the fuselage skin in the interface area of the vertical stabilizer seal and fuselage skin, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2478, Revision 1, dated March 27, 2008.

(ii) Where a skin repair doubler is present in the interface area of the vertical stabilizer seal and fuselage skin, do a detailed inspection for wear damage and cracks of the surface of the repair doubler.

(2) For airplanes that have reduced skin thickness in section 46 due to blending without reinforcement: Do repetitive external detailed inspections or high frequency eddy (HFEC) current inspections for cracks of the blended area of the fuselage skin, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2478, Revision 1, dated March 27, 2008.

**Table 1 – Compliance Times**

<b>Action</b>	<b>Compliance Time (whichever occurs later)</b>		<b>Repeat Interval (Not to Exceed)</b>
	<b>Threshold</b>	<b>Grace Period</b>	
For actions required by paragraph (i)(1) of this AD	Prior to the accumulation of 20,000 total flight hours since the date of issuance of the original airworthiness certificate or the date of issuance of the original export certificate of airworthiness, or within 7,500 flight hours after the last inspection of this AD, whichever occurs later	Within 6,000 flight hours after the effective date of this AD	7,500 flight hours
For actions required by paragraph (i)(2) of this AD	Prior to the accumulation of 20,000 total flight cycles since the date of issuance of the original airworthiness certificate or the date of issuance of the original export certificate of airworthiness, or within 6,000 flight cycles after the initial blend, whichever occurs later	Within 1,000 flight cycles after the effective date of this AD	1,200 flight cycles for external detailed inspection, or 6,000 flight cycles for HFEC inspection

**Exception to the Repetitive Inspections**

(j) If corrosion-resistant steel rubstrips are installed in the interface area of the vertical stabilizer seal and fuselage skin: Within the applicable compliance times specified in paragraph (i) of this AD, inspect the fuselage skin using a method approved in accordance with the procedures specified in paragraph (m) of this AD.

**For No Wear Damage or Cracks Found: Apply Teflon**

(k) If no wear damage or crack is found in the fuselage skin (or skin repair doubler) during any inspection required by paragraph (i) of this AD: Before further flight, apply Boeing Material Specifications (BMS) 10-86 Teflon-filled coating in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2478, Revision 1, dated March 27, 2008.

**For Any Wear Damage or Crack Found: Applicable Corrective Actions**

(l) If any wear damage or crack is found in the fuselage skin (or skin repair doubler) during any inspections required by paragraph (i) of this AD: Before further flight, after the inspection required by paragraph (i), do the actions specified in paragraphs (1)(1), (1)(2), and (1)(3) of this AD, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2478, Revision 1, dated March 27, 2008.

- (1) Measure the depth of the wear and record the location.
- (2) Repair any wear damage and any crack.
- (3) Apply BMS 10-86 Teflon-filled coating.

**Alternative Methods of Compliance (AMOCs)**

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

(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 appropriate principal inspector (PI) in the FAA Flight Standards District Office (FSDO), or lacking a PI, your local FSDO.

(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.

### **Material Incorporated by Reference**

(n) You must use Boeing Alert Service Bulletin 747-53A2478, dated February 7, 2002; and Boeing Alert Service Bulletin 747-53A2478, Revision 1, dated March 27, 2008; as applicable; 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 Boeing Alert Service Bulletin 747-53A2478, Revision 1, dated March 27, 2008, under 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 747-53A2478, dated February 7, 2002, on February 10, 2003 (68 FR 476, January 6, 2003).

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

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

(5) You may also review copies of the service information 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 June 19, 2009.

Dorr M. Anderson,  
Acting Manager, Transport Airplane Directorate,  
Aircraft Certification Service.