

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2009-0906; Directorate Identifier 2009-NM-075-AD; Amendment 39-16343; AD 2010-13-12]

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.

SUMMARY: We are adopting a new airworthiness directive (AD) for certain Model 747 series airplanes. This AD requires replacing the power control relays for the main tank fuel boost pumps and jettison pumps, and the center tank scavenge pump, as applicable, with new relays having a ground fault interrupt (GFI) feature. This AD also requires revising the maintenance program to incorporate Airworthiness Limitations (AWLs) 28-AWL-23 (for Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-200C, 747-200F, 747-300, 747SP, and 747SR series airplanes), and AWLs 28-AWL-28 and 28-AWL-29 (for Model 747-400, 747-400D, and 747-400F series airplanes). This AD results from fuel system reviews conducted by the manufacturer. We are issuing this AD to prevent damage to the fuel pumps caused by electrical arcing that could introduce an ignition source in the fuel tank, which, in combination with flammable fuel vapors, could result in a fuel tank explosion and consequent loss of the airplane.

DATES: This AD is effective August 5, 2010.

The Director of the Federal Register approved the incorporation by reference of certain publications listed in the AD as of August 5, 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; 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: Georgios Roussos, Aerospace Engineer, Systems and Equipment Branch, ANM-130S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue, SW., Renton, Washington 98057-3356; telephone (425) 917-6482; 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 certain Model 747 series airplanes. That NPRM was published in the Federal Register on October 13, 2009 (74 FR 52431). That NPRM proposed to require replacing the power control relays for the main tank fuel boost pumps and jettison pumps, and the center tank scavenge pump, as applicable, with new relays having a ground fault interrupt (GFI) feature. That NPRM also proposed to require revising the maintenance program to incorporate Airworthiness Limitations (AWLs) 28-AWL-23 (for Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-200C, 747-200F, 747-300, 747SP, and 747SR series airplanes), and AWLs 28-AWL-28 and 28-AWL-29 (for Model 747-400, 747-400D, and 747-400F series airplanes).

Relevant Service Information

For Model 747-400, 747-400D, and 747-400F series airplanes, we have reviewed Subsection D, "AIRWORTHINESS LIMITATIONS—FUEL SYSTEMS," of Boeing 747-400 Maintenance Planning Data (MPD) Document, Document D621U400-9, Section 9, Revision December 2009. This document includes the same repetitive inspection (test) to verify continued functionality of the GFI relays as did Subsection D, "AIRWORTHINESS LIMITATIONS—FUEL SYSTEMS," of Boeing 747-400 MPD Document, Document D621U400-9, Section 9, Revision April 2008 (which we referred to in the NPRM as an appropriate source of service information for incorporation into the maintenance program). Revision December 2009 clarifies the effectivity for AWL 28-AWL-28. We have revised paragraph (h)(1) of this AD to refer to Subsection D, "AIRWORTHINESS LIMITATIONS—FUEL SYSTEMS," of Boeing 747-400 MPD Document, Document D621U400-9, Section 9, Revision December 2009. We have also added a new paragraph (j) to this final rule to provide credit for operators who have revised their maintenance program using Revision April 2008, or Revision March 2009, of Subsection D, "AIRWORTHINESS LIMITATIONS—FUEL SYSTEMS," of Boeing 747-400 MPD Document, Document D621U400-9, Section 9. We have also reidentified subsequent paragraphs accordingly.

Comments

We gave the public the opportunity to participate in developing this AD. We considered all of the comments received from the commenters.

Request To Extend Compliance Time

Deutsche Lufthansa AG (Lufthansa) requests that we extend the proposed compliance time from 60 months to the intervals specified in the latest approved maintenance review board report (MRBR). Further, Lufthansa states that it would like to know how the proposed compliance time was determined. Lufthansa states that it assumes that the probability of a failure is part of the determination of the proposed compliance time of 60 months. However, Lufthansa further asserts that this compliance time is not in line with its heavy maintenance layover schedule, which is based on the latest approved MRBR.

We do not agree to extend the compliance time. In developing an appropriate compliance time for this AD, we considered not only the safety implications, but the manufacturer's recommendations, the availability of required parts, and the practical aspect of accomplishing the actions within an interval of time that corresponds to typical scheduled maintenance for affected operators. However, under the provisions of paragraph (k) of this AD, we will consider requests for approval of an extension of the compliance time if sufficient data are submitted to substantiate that the change would provide an acceptable level of safety. We have not changed the final rule in this regard.

Request To Clarify if Boeing Alert Service Bulletin 747-28A2261 Terminates Requirements of Previous AD

Japan Airlines (JAL) requests that we revise the NPRM to clarify whether accomplishing the actions specified in Boeing Alert Service Bulletin 747-28A2261, dated February 19, 2009, terminates the requirements of AD 97-26-07, Amendment 39-10250 (62 FR 65352, December 12, 1997). JAL states that AD 97-26-07 presently requires repetitive inspections of the Number 1 and Number 4 main fuel tank boost pump wiring (which runs through the inboard fuel tanks) per Boeing Service Bulletin 747-28A2204. JAL asserts that the currently required inspection makes sure the wiring is not damaged. JAL also asserts that, after operators do the proposed modification, the GFI relays will monitor the electrical faults and remove the power from the fuel pump immediately to minimize the risk of ignition when wires become damaged. JAL states that clarifying the NPRM to identify Boeing Alert Service Bulletin 747-28A2261 as terminating action for AD 97-26-07 would save operators additional work.

The FAA acknowledges that both AD 97-26-07 and this AD relate to potential electrical system faults in the fuel system. However, the FAA does not agree that this AD provides terminating action for the actions specified in AD 97-26-07. The Boeing GFI design addresses section 25.981(a)(3) of the Federal Aviation Regulations (14 CFR 25.981(a)(3)) single failure requirement only. However the probability of the GFI having a latent failure condition, which would prevent it from detecting a fault current and removing power from the fuel pump, is not shown to be extremely remote. The GFI does not have the ability to verify that fault protection is operational prior to application of power to the pump. Potential latent failures in the GFI function will be detected via a manual BIT test, which will be performed by operators at minimum 4,000 flight-hour maintenance intervals. We have made no change to the AD in this regard.

Request To Revise Description in the Relevant Service Information Section

The Boeing Company (Boeing) requests that we revise the Relevant Service Information section of the NPRM to specify that the replacement given in Boeing Alert Service Bulletin 747-28A2261, dated February 19, 2009, ". . . also includes reworking certain wiring and doing an operational test of the main tank fuel boost pumps, the main tank jettison pumps (if applicable) and the center tank scavenge pump (if installed), and new relays." Boeing states that the wording in the NPRM specifies conducting only the main tank boost pumps and relay operational tests, while Boeing Alert Service Bulletin 747-28A2261, dated February 19, 2009, specifies operational checks of the main tank fuel

boost pumps, the main tank jettison pumps, and the center tank fuel scavenge pump, as well as tests of the GFI relays, following procedures for replacing the relays, and making relevant wiring changes.

We partially agree with Boeing. For the reasons provided by Boeing, we do agree that the suggested wording changes to the description of Boeing Alert Service Bulletin 747-28A2261, dated February 19, 2009, are more accurate. However, we do not agree to revise this final rule in this regard. Normally, the Relevant Service Information section of the NPRM is not restated in the final rule, unless service information that was not described in the NPRM is being added in the final rule (e.g., new revisions of a document). In this case, the Relevant Service Information section does appear in this final rule to describe a new revision of an MPD document being added to this final rule. Although the Relevant Service Information section does appear in this final rule, the description of Boeing Alert Service Bulletin 747-28A2261, dated February 19, 2009, is not restated in that section. We have made no change to the final rule in this regard.

Request To Remove Proposed Requirement to Incorporate AWLs

All Nippon Airways (ANA) requests that we revise the NPRM to remove paragraph (h)(1), which proposed to require incorporating AWLs 28-AWL-28 and 28-AWL-29 into the maintenance program. ANA asserts that paragraph (g)(3) of AD 2008-10-06, Amendment 39-15512 (73 FR 25990, May 8, 2008), already requires incorporation of AWLs 28-AWL-24 through 28-AWL-29. ANA believes that the proposed requirement is duplicating an existing requirement.

We do not agree to remove paragraph (h)(1) of this AD. We acknowledge that paragraph (g)(3) of AD 2008-10-06 does specify revising the maintenance program to incorporate AWLs 28-AWL-24 through 28-AWL-29—as an option. AD 2008-10-06 does not require incorporation of AWLs 28-AWL-24 through 28-AWL-29. Therefore, this AD does not duplicate a requirement and there is no reason to remove the requirement from this AD. However, we have revised paragraph (h)(1) of this AD to clarify that revising the maintenance program to include AWLs 28-AWL-28 and 28-AWL-29 in accordance with paragraph (g)(3) of AD 2008-10-06, Amendment 39-15512 (73 FR 25990, May 8, 2008) ; or AD 2008-10-06 R1, Amendment 39-16160 (75 FR 906, January 7, 2010); is acceptable for compliance with the corresponding requirements specified in paragraph (h)(1) of this AD.

Request To Allow Later Revisions of Maintenance Planning Data (MPD) Document

United Airlines states that it concurs with the contents of the NPRM, but requests that we revise paragraph (h)(1) of the NPRM to allow use of later revisions of Section 9 of the Boeing 747-400 MPD Document, Document D621U400-9, Revision April 2008. United Airlines did not provide justification for this request.

We understand United Airlines' request and operator's desire to have some flexibility in AD compliance actions. However, we cannot allow use of later revisions of Section 9 of the Boeing 747-400 MPD Document, Document D621U400-9. We cannot use the phrase, "or later FAA-approved revisions," in an AD when referring to the service document because doing so violates Office of the Federal Register (OFR) regulations for approval of materials "incorporated by reference" in rules. In general terms, we are required by these OFR regulations to either publish the service document contents as part of the actual AD language; or submit the service document to the OFR for approval as "referenced" material, in which case we may only refer to such material in the text of an AD. The AD may refer to the service document only if the OFR approved it for "incorporation by reference." To allow operators to use later revisions of the referenced document (issued after publication of the AD), either we must revise the AD to reference specific later revisions, or operators must request approval to use later revisions as an alternative method of compliance with this AD under the provisions of paragraph (k) of this AD. However, as explained previously, we have revised this final rule to refer to Subsection D, "AIRWORTHINESS LIMITATIONS—FUEL SYSTEMS," of Boeing 747-400 MPD Document, Document D621U400-9, Section 9, Revision December 2009.

Explanation of Additional Changes Made to this AD

We have revised paragraph (h)(2) of this AD to clarify that revising the maintenance program to include AWL 28-AWL-23 in accordance with paragraph (g) of AD 2008-10-07, Amendment 39-15513 (73 FR 25977, May 8, 2008); or AD 2008-10-07 R1, Amendment 39-16070 (74 FR 56098, October 30, 2009); is acceptable for compliance with the corresponding requirements specified in paragraph (h)(2) of this AD.

We have revised this AD to identify the legal name of the manufacturer as published in the most recent type certificate data sheet for the affected airplane models.

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.

Explanation of Change to Costs of Compliance

Since issuance of the NPRM, we have increased the labor rate used in the Costs of Compliance from \$80 per work-hour to \$85 per work-hour. The Costs of Compliance information, below, reflects this increase in the specified hourly labor rate.

Costs of Compliance

We estimate that this proposed AD would affect 258 airplanes of U.S. registry. The following table provides the estimated costs for U.S. operators to comply with this AD.

Table – Estimated costs

Action	Work hours	Average labor rate per hour	Parts	Cost per product	Number of U.S.-registered airplanes	Fleet cost
Replacement	10 to 14 ¹	\$85	\$16,800 to \$36,200 ¹	\$17,650 to \$37,390 ¹	258	\$4,553,700 to \$9,646,620 ¹
Revision of Airworthiness Limitations section	1	\$85	None	\$85	258	\$21,930

¹Depending on airplane configuration.

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:



2010-13-12 The Boeing Company: Amendment 39-16343. Docket No. FAA-2009-0906; Directorate Identifier 2009-NM-075-AD.

Effective Date

- (a) This airworthiness directive (AD) is effective August 5, 2010.

Affected ADs

- (b) None.

Applicability

(c) This AD applies to 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; as identified in Boeing Alert Service Bulletin 747-28A2261, dated February 19, 2009.

Note 1: This AD requires a revision to a certain operator maintenance document to include new inspections. Compliance with these inspections is required by 14 CFR 43.16 and 91.403(c). For airplanes that have been previously modified, altered, or repaired in the areas addressed by these limitations, the operator may not be able to accomplish the actions described in the revisions. In this situation, to comply with 14 CFR 43.16 and 91.403(c), the operator must request approval for an alternative method of compliance according to paragraph (k) of this AD. The request should include a description of changes to the required inspections that will ensure the continued operational safety of the airplane.

Subject

- (d) Air Transport Association (ATA) of America Code 28: Fuel.

Unsafe Condition

(e) This AD results from fuel system reviews conducted by the manufacturer. The Federal Aviation Administration is issuing this AD to prevent damage to the fuel pumps caused by electrical arcing that could introduce an ignition source in the fuel tank which, in combination with flammable fuel vapors, could result in a fuel tank explosion and consequent loss 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.

Replacement

(g) Within 60 months after the effective date of this AD: Replace the power control relays for the main tank fuel boost pumps and jettison pumps, and the center tank scavenge pump, as applicable, with new relays having a ground fault interrupt feature, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-28A2261, dated February 19, 2009.

Maintenance Program Revision

(h) Concurrently with the actions required by paragraph (g) of this AD: Revise the maintenance program by incorporating the applicable information in paragraphs (h)(1) and (h)(2) of this AD. The inspection interval for airworthiness limitations (AWLs) 28-AWL-23, 28-AWL-28, and 28-AWL-29 starts on the date the replacement required by paragraph (g) of this AD is done.

(1) For Model 747-400, 747-400D, and 747-400F series airplanes: Incorporate new airworthiness limitations 28-AWL-28 and 28-AWL-29 of Subsection D, "AIRWORTHINESS LIMITATIONS—FUEL SYSTEMS," of Boeing 747-400 Maintenance Planning Data (MPD) Document, Document D621U400-9, Section 9, Revision December 2009. (These AWLs were first introduced in Revision October 2007 of the MPD document.) Incorporating AWLs 28-AWL-28 and 28-AWL-29 in accordance with paragraph (g)(3) of AD 2008-10-06, Amendment 39-15512; or AD 2008-10-06 R1, Amendment 39-16160; is acceptable for compliance with the corresponding requirements specified in this paragraph.

(2) For Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-200C, 747-200F, 747-300, 747SP, and 747SR series airplanes: Incorporate new AWL 28-AWL-23 of Subsection D, "AIRWORTHINESS LIMITATIONS—SYSTEMS," of Boeing 747-100/200/300/SP Airworthiness Limitations (AWLs) and Certification Maintenance Requirements (CMRs), Document D6-13747-CMR, Revision March 2008. (This AWL was first introduced in Revision September 2007 of the AWLs/CMRs document.) Incorporating AWL 28-AWL-23 in accordance with paragraph (g) of AD 2008-10-07, Amendment 39-15513; or AD 2008-10-07 R1, Amendment 39-16070; is acceptable for compliance with the corresponding requirements specified in this paragraph.

No Alternative Inspection or Inspection Intervals

(i) After accomplishing the actions required by paragraph (h) of this AD, no alternative inspections or inspection intervals may be used, unless the inspections or intervals are approved as an alternative method of compliance (AMOC) in accordance with the procedures specified in paragraph (k) of this AD.

Credit for Actions Done Using Previous Service Information

(j) Incorporating new AWLs 28-AWL-28 and 28-AWL-29 of Subsection D, "AIRWORTHINESS LIMITATIONS—FUEL SYSTEMS," of Boeing 747-400 Maintenance Planning Data (MPD) Document, Document D621U400-9, Section 9, Revision April 2008; or Revision March 2009; before the effective date of this AD is acceptable for compliance with the requirements of paragraph (h)(1) of this AD.

Alternative Methods of Compliance (AMOCs)

(k)(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: Georgios Roussos, Aerospace Engineer, Systems and Equipment Branch, ANM-130S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue SW., Renton, Washington

98057-3356; telephone (425) 917-6482; fax (425) 917-6590. Information may be e-mailed 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.

Material Incorporated by Reference

(1) You must use the service information contained in Table 1 of this AD to do the actions required by this AD, as applicable, unless the AD specifies otherwise.

Table 1 – Material incorporated by reference

Document	Revision	Date
Boeing Alert Service Bulletin 747-28A2261	Original	February 19, 2009
Subsection D, “AIRWORTHINESS LIMITATIONS – SYSTEMS,” of Boeing 747-100/200/300/SP Airworthiness Limitations (AWLs) and Certification Maintenance Requirements (CMRs), Document D6-13747-CMR	March 2008	March 2008
Subsection D, “AIRWORTHINESS LIMITATIONS – FUEL SYSTEMS,” of Section 9 of the Boeing 747-400 Maintenance Planning Data (MPD) Document, Document D621U400-9	December 2009	December 2009

(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.

(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.

Issued in Renton, Washington, on June 10, 2010.

Jeffrey E. Duven,
Acting Manager, Transport Airplane Directorate,
Aircraft Certification Service.