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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2022-0520; Project Identifier AD-2021-00683-T; Amendment 39-22141; AD 2022-17-03]

RIN 2120-AA64

Airworthiness Directives; The Boeing Company Airplanes

AGENCY:

Federal Aviation Administration (FAA), DOT.

ACTION:

Final rule.

SUMMARY:

The FAA is adopting a new airworthiness directive (AD) for all The Boeing Company Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-200C, 747-200F, 747-300, 747SR, and 747SP series airplanes. This AD was prompted by significant changes, including new or more restrictive requirements, made to the airworthiness limitations (AWLs) related to fuel tank ignition prevention. This AD requires revising the existing maintenance or inspection program, as applicable, to incorporate the latest revision of the AWLs. The FAA is issuing this AD to address the unsafe condition on these products.

DATES:

This AD is effective October 20, 2022.

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of October 20, 2022.

ADDRESSES:

For service information identified in this final rule, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminister Blvd., MC 110-SK57, Seal Beach, CA 90740-5600; phone: 562-797-1717; internet: <https://www.myboeingfleet.com>. You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206-231-3195. It is also available at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2022-0520.

Examining the AD Docket

You may examine the AD docket at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2022-0520; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this final rule, any comments received, and other information. The address for Docket Operations is 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:

Samuel Dorsey, Aerospace Engineer, Propulsion Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206-231-3415; email: samuel.j.dorsey@faa.gov.

SUPPLEMENTARY INFORMATION:

Background

The FAA issued a notice of proposed rulemaking (NPRM) to amend [14 CFR part 39](#) by adding an AD that would apply to all The Boeing Company Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-200C, 747-200F, 747-300, 747SR, and 747SP series airplanes. The NPRM published in the **Federal Register** on June 2, 2022 ([87 FR 33451](#)). The NPRM was prompted by significant changes, including new or more restrictive requirements, made to the AWLs related to fuel tank ignition prevention. In the NPRM, the FAA proposed to require revising the existing maintenance or inspection program, as applicable, to incorporate the latest revision of the AWLs. The FAA is issuing this AD to address the potential for ignition sources inside fuel tanks caused by latent failures, alterations, repairs, or maintenance actions, which, in combination with flammable fuel vapors, could result in a fuel tank explosion and consequent loss of the airplane.

Discussion of Final Airworthiness Directive

Comments

The FAA received comments from the Air Line Pilots Association, International (ALPA) and Boeing who supported the NPRM without change.

Conclusion

The FAA reviewed the relevant data, considered the comments received, and determined that air safety requires adopting this AD as proposed. Except for minor editorial changes, this AD is adopted as proposed in the NPRM. None of the changes will increase the economic burden on any operator.

Related Service Information Under [1 CFR Part 51](#)

The FAA reviewed Boeing 747-100/200/300/SP/SR Airworthiness Limitations (AWLs) and Certification Maintenance Requirements (CMRs), D6-13747-CMR, dated September 2020. This service information describes AWLs that include airworthiness limitation instructions (ALIs) and critical design configuration control limitations (CDCCLs) tasks related to fuel tank ignition prevention. This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in **ADDRESSES** .

Costs of Compliance

The FAA estimates that this AD affects 39 airplanes of U.S. registry. The FAA estimates the following costs to comply with this AD:

The FAA has determined that revising the existing maintenance or inspection program takes an average of 90 work-hours per operator, although the agency recognizes that this number may vary from operator to operator. Since operators incorporate maintenance or inspection program changes for their affected fleet(s), the FAA has determined that a per-operator estimate is more accurate than a per-airplane estimate. Therefore, the FAA estimates the average total cost per operator to be \$7,650 (90 work-hours × \$85 per work-hour).

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.

The FAA is 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) Will not affect intrastate aviation in Alaska, 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.

List of Subjects in [14 CFR Part 39](#)

- Air transportation
- Aircraft
- Aviation safety
- Incorporation by reference
- Safety

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 airworthiness directive:

2022-17-03 The Boeing Company: Amendment 39-22141; Docket No. FAA-2022-0520; Project Identifier AD-2021-00683-T.

(a) Effective Date

This airworthiness directive (AD) is effective October 20, 2022.

(b) Affected ADs

This AD affects the ADs specified in paragraphs (b)(1) through (7) of this AD.

(1) AD 2008-10-07 R1, Amendment 39-16070 ([74 FR 56098](#), October 30, 2009) (AD 2008-10-07 R1).

(2) AD 2008-18-09, Amendment 39-15666 ([73 FR 52911](#), September 12, 2008) (AD 2008-18-09).

(3) AD 2010-13-12, Amendment 39-16343 ([75 FR 37997](#), July 1, 2010) (AD 2010-13-12).

(4) AD 2010-24-13, Amendment 39-16532 ([75 FR 78591](#), December 16, 2010; corrected May 25, 2011 ([76 FR 30253](#))) (AD 2010-24-13).

(5) AD 2011-06-03, Amendment 39-16627 ([76 FR 15814](#), March 22, 2011) (AD 2011-06-03).

(6) AD 2014-15-14, Amendment 39-17916 ([79 FR 45324](#), August 5, 2014) (AD 2014-15-14).

(7) AD 2016-19-03, Amendment 39-18652 ([81 FR 65872](#), September 26, 2016) (AD 2016-19-03).

(c) Applicability

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

(d) Subject

Air Transport Association (ATA) of America Code 28, Fuel.

(e) Unsafe Condition

This AD was prompted by significant changes, including new or more restrictive requirements, made to the airworthiness limitations (AWLs) related to fuel tank ignition prevention. The FAA is issuing this AD to address the potential for ignition sources inside fuel tanks caused by latent failures, alterations, repairs, or maintenance actions, which, in combination with flammable fuel vapors, could result in a fuel tank explosion and consequent loss of the airplane.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Maintenance or Inspection Program Revision

Within 60 days after the effective date of this AD, revise the existing maintenance or inspection program, as applicable, to incorporate the information specified in Boeing 747-100/200/300/SP/SR Airworthiness Limitations (AWLs) and Certification Maintenance Requirements (CMRs), D6-13747-CMR, dated September 2020, except as specified in paragraphs (h) and (i) of this AD. The initial compliance times for the airworthiness limitation instruction (ALI) tasks are within the applicable compliance times for each AWL number specified in paragraphs (g)(1) through (8) of this AD:

(1) For AWL No. 28-AWL-01, “External Wires Over Center Fuel Tank”: At the applicable time specified in paragraph (g)(1)(i) or (ii) of this AD.

(i) For airplanes that did not have any version of AWL No. 28-AWL-01 in the existing maintenance or inspection program before the effective date of this AD: Within 144 months since issuance of the original airworthiness certificate or original export certificate, or within 12 months after the effective date of this AD, whichever occurs later.

(ii) For airplanes not identified in paragraph (g)(1)(i) of this AD: Within 144 months since AWL No. 28-AWL-01 was incorporated into the existing maintenance or inspection program, or within 144 months after the most recent inspection was performed as specified in AWL No. 28-AWL-01, whichever occurs later.

(2) For 28-AWL-03, “Fuel Quantity Indicating System (FQIS)—Out Tank Wiring Lightning Shield to Ground Termination”: At the applicable time specified in paragraph (g)(2)(i) or (ii) of this AD.

(i) For airplanes that did not have any version of AWL No. 28-AWL-03 in the existing maintenance or inspection program before the effective date of this AD: Within 144 months since issuance of the

original airworthiness certificate or original export certificate of airworthiness, or within 12 months after the effective date of this AD, whichever occurs later.

(ii) For airplanes not identified in paragraph (g)(2)(i) of this AD: Within 144 months since AWL No. 28-AWL-03 was incorporated into the existing maintenance or inspection program, or within 144 months after the most recent inspection was performed as specified in AWL No. 28-AWL-03, whichever occurs later.

(3) For 28-AWL-09, “Over-Current and Arcing Protection Electrical Design Features Operation—Fault Current Detector for Center Tank Override/Jettison (O/J) Pumps”: At the applicable time specified in paragraph (g)(3)(i) or (ii) of this AD.

(i) For airplanes that did not have any version of AWL No. 28-AWL-09 in the existing maintenance or inspection program before the effective date of this AD: Within 18 months since issuance of the original airworthiness certificate or original export certificate of airworthiness, or within 90 days after the effective date of this AD, whichever occurs later.

(ii) For airplanes not identified in paragraph (g)(3)(i) of this AD: Within 18 months since AWL No. 28-AWL-09 was incorporated into the existing maintenance or inspection program, or within 18 months after the most recent inspection was performed as specified in AWL No. 28-AWL-09, whichever occurs later.

(4) For AWL No. 28-AWL-13, “Main Tank, Center Wing Tank, Body Tank (if installed), and Auxiliary Tank (if installed) Refuel Valve Installation—Fault Current Bond”: At the applicable time specified in paragraph (g)(4)(i) or (ii) of this AD.

(i) For airplanes that did not have any version of AWL No. 28-AWL-13 in the existing maintenance or inspection program before the effective date of this AD: Within 144 months since issuance of the original airworthiness certificate or original export certificate of airworthiness, or within 12 months after the effective date of this AD, whichever occurs later.

(ii) For airplanes not identified in paragraph (g)(4)(i) of this AD: Within 144 months since AWL No. 28-AWL-13 was incorporated into the existing maintenance or inspection program, or within 144 months after the most recent inspection was performed as specified in AWL No. 28-AWL-13, whichever occurs later.

(5) For AWL No. 28-AWL-22, “Center Tank Override/Jettison Fuel Pump Inlet Protection and Power Failed On Protection System”: At the applicable time specified in paragraph (g)(5)(i) or (ii) of this AD.

(i) For airplanes that did not have any version of AWL No. 28-AWL-22 in the existing maintenance or inspection program before the effective date of this AD: Within 12 months since issuance of the original airworthiness certificate or original export certificate of airworthiness, or within 90 days after the effective date of this AD, whichever occurs later.

(ii) For airplanes not identified in paragraph (g)(5)(i) of this AD: Within 12 months since AWL No. 28-AWL-22 was incorporated into the existing maintenance or inspection program, or within 12 months after the most recent inspection was performed as specified in AWL No. 28-AWL-22, whichever occurs later.

(6) For AWL No. 28-AWL-23, “Over-Current and Arcing Protection Electrical Design Features Operation—Main Tank AC Fuel Pump and Center Tank Scavenge AC Fuel Pump Ground Fault Interrupter (GFI)”: At the applicable time specified in paragraph (g)(6)(i) or (ii) of this AD.

(i) For airplanes that did not have any version of AWL No. 28-AWL-23 in the existing maintenance or inspection program before the effective date of this AD: Within 12 months since issuance of the original airworthiness certificate or original export certificate of airworthiness, within 12 months since Boeing Service Bulletin 747-28A2261 was incorporated, or within 90 days after the effective date of this AD, whichever occurs latest.

(ii) For airplanes not identified in paragraph (g)(6)(i) of this AD: Within 12 months since AWL No. 28-AWL-23 was incorporated into the existing maintenance or inspection program, or within 12 months after the most recent inspection was performed as specified in AWL No. 28-AWL-23, whichever occurs later.

(7) For AWL No. 28-AWL-25, “Cushion Clamps and Teflon Sleeving Installed on Out-of-Tank Wire Bundles Installed on Brackets that are Mounted Directly on the Fuel Tanks”: At the applicable time specified in paragraph (g)(7)(i) or (ii) of this AD.

(i) For airplanes that did not have any version of AWL No. 28-AWL-25 in the existing maintenance or inspection program before the effective date of this AD: Within 144 months since issuance of the original airworthiness certificate or original export certificate of airworthiness, or within 12 months after the effective date of this AD, whichever occurs later.

(ii) For airplanes not identified in paragraph (g)(7)(i) of this AD: Within 144 months since AWL No. 28-AWL-25 was incorporated into the existing maintenance or inspection program, within 144 months since Boeing Special Attention Service Bulletin 747-57-2327 was incorporated, or within 144 months after the most recent inspection was performed as specified in AWL No. 28-AWL-25, whichever occurs latest.

(8) For AWL No. 28-AWL-31, “Reserve Tank Refuel Valve Installation—Lightning Protection Electrical Bond”: At the applicable time specified in paragraph (g)(8)(i) or (ii) of this AD.

(i) For airplanes that did not have any version of AWL No. 28-AWL-31 in the existing maintenance or inspection program before the effective date of this AD: Within 72 months since issuance of the original airworthiness certificate or original export certificate of airworthiness, or within 6 months after the effective date of this AD, whichever occurs later.

(ii) For airplanes not identified in paragraph (g)(8)(i) of this AD: Within 72 months since AWL No. 28-AWL-31 was incorporated into the existing maintenance or inspection program, or within 72 months after the most recent inspection was performed as specified in AWL No. 28-AWL-31, whichever occurs later.

(h) Differences From the Required Service Information

(1) Where the “Applicability” column of AWL Nos. 28-AWL-25 and 28-AWL-27 specifies “ALL” and “NOTE,” replace that text with “Airplanes L/N 645 and on.”

(2) In the “Description” column of AWL Nos. 28-AWL-25 and 28-AWL-27, remove the Applicability Note.

(i) Additional Acceptable Wire Types and Sleeving

(1) Where AWL No. 28-AWL-11 identifies wire types BMS 13-48, BMS 13-58, and BMS 13-60, the following wire types are acceptable: MIL-W-22759/16, SAE AS22759/16 (M22759/16), MIL-W-22759/32, SAE AS22759/32 (M22759/32), MIL-W-22759/34, SAE AS22759/34 (M22759/34), MIL-W-22759/41, SAE AS22759/41 (M22759/41), MIL-W-22759/86, SAE AS22759/86 (M22759/86), MIL-W-22759/87, SAE AS22759/87 (M22759/87), MIL-W-22759/92, and SAE AS22759/92 (M22759/92); and MIL-C-27500 and NEMA WC 27500 cables constructed from these military or SAE specification wire types, as applicable.

(2) Where AWL No. 28-AWL-11 identifies TFE-2X Standard wall for wire sleeving, the following sleeving materials are acceptable: Roundit 2000NX and Varglas Type HO, HP, or HM.

(j) No Alternative Actions, Intervals, or Critical Design Configuration Control Limitations (CDCCLs)

After the existing maintenance or inspection program has been revised as required by paragraph (g) of this AD, no alternative actions (*e.g.*, inspections), intervals, or CDCCLs may be used unless the actions, intervals, and CDCCLs are approved as an alternative method of compliance (AMOC) in accordance with the procedures specified in paragraph (l) of this AD.

(k) Terminating Action for Certain ADs

Accomplishment of the revision required by paragraph (g) of this AD terminates the requirements specified in paragraphs (k)(1) through (7) of this AD for that airplane:

- (1) The revision required by paragraphs (g) and (h) of AD 2008-10-07 R1.
- (2) The revision required by paragraph (g)(1) of AD 2008-18-09.
- (3) The revision required by paragraph (h)(2) of AD 2010-13-12.
- (4) The revision required by paragraph (h) of AD 2010-24-13.
- (5) The revision required by paragraph (k) of AD 2011-06-03.
- (6) The revision required by paragraph (h)(2) of AD 2014-15-14.
- (7) The revision required by paragraph (h) of AD 2016-19-03.

(l) Alternative Methods of Compliance (AMOCs)

(1) The Manager, Seattle ACO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in [14 CFR 39.19](#). In accordance with [14 CFR 39.19](#), send your request to your principal inspector or responsible Flight Standards Office, as appropriate. If sending information directly to the manager of the certification office, send it to the attention of the person

identified in paragraph (m) of this AD. Information may be emailed to: 9-ANM-Seattle-ACO-AMOC-Requests@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the responsible Flight Standards Office.

(3) An AMOC that provides an acceptable level of safety may be used for any repair, modification, or alteration required by this AD if it is approved by The Boeing Company Organization Designation Authorization (ODA) that has been authorized by the Manager, Seattle ACO Branch, FAA, to make those findings. To be approved, the repair method, modification deviation, or alteration deviation must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

(m) Related Information

For more information about this AD, contact Samuel Dorsey, Aerospace Engineer, Propulsion Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206-231-3415; email: samuel.j.dorsey@faa.gov.

(n) Material Incorporated by Reference

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under [5 U.S.C. 552\(a\)](#) and [1 CFR part 51](#).

(2) You must use this service information as applicable to do the actions required by this AD, unless the AD specifies otherwise.

(i) Boeing 747-100/200/300/SP/SR Airworthiness Limitations (AWLs) and Certification Maintenance Requirements (CMRs), D6-13747-CMR, dated September 2020.

(ii) [Reserved]

(3) For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminister Blvd., MC 110-SK57, Seal Beach, CA 90740-5600; phone: 562-797-1717; internet: <https://www.myboeingfleet.com>.

(4) You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206-231-3195.

(5) You may view this 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, fr.inspection@nara.gov, or go to: <https://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued on August 4, 2022.

Christina Underwood,

Acting Director, Compliance & Airworthiness Division, Aircraft Certification Service.

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