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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2019-0859; Product Identifier 2019-NM-114-AD; Amendment 39-19893; AD 2020-07-14]

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 certain 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. This AD was prompted by fuel system reviews conducted by the manufacturer indicating that the existing bond path design provides insufficient bond resistance margin between the fuel pump motor/impeller and structure. This AD requires replacement of the bonding jumpers on the auxiliary power unit (APU) fuel pump. This AD also requires, for certain airplanes, installation of a second bonding jumper; an inspection of the override/jettison fuel pumps and transfer/jettison fuel pumps to determine if the bonding jumper has a one-piece braid or two-piece braid and replacement of the bonding jumper if necessary; and replacement of the bonding jumper on the electrical scavenge fuel pump. The FAA is issuing this AD to address the unsafe condition on these products.

DATES: This AD is effective May 18, 2020.

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of May 18, 2020.

ADDRESSES: For service information identified in this final rule, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminster Blvd., MC 110-SK57, Seal Beach, CA 90740-5600; telephone 562-797-1717; internet https://www.myboeingfleet.com. You may view this service information at the FAA, Transport Standards 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 on the internet at https://www.regulations.gov by searching for and locating Docket No. FAA-2019-0859.

Examining the AD Docket

You may examine the AD docket on the internet at https://www.regulations.gov by searching for and locating Docket No. FAA-2019-0859; 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, the regulatory evaluation, 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: Jeffrey Rothman, Aerospace Engineer, Propulsion Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206-231-3558; email: jeffrey.rothman@faa.gov.

SUPPLEMENTARY INFORMATION:

Discussion

The FAA issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 by adding an AD that would apply to certain 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. The NPRM published in the Federal Register on November 8, 2019 (84 FR 60351). The NPRM was prompted by fuel system reviews conducted by the manufacturer indicating that the existing bond path design provides insufficient bond resistance margin between the fuel pump motor/impeller and structure. The NPRM proposed to require replacement of the bonding jumpers on the APU fuel pump. The NPRM also proposed to require, for certain airplanes, installation of a second bonding jumper; an inspection of the override/jettison fuel pumps and transfer/jettison fuel pumps to determine if the bonding jumper has a one-piece braid or two-piece braid and replacement of the bonding jumper if necessary; and replacement of the bonding jumper on the electrical scavenge fuel pump.

Comments

The FAA gave the public the opportunity to participate in developing this final rule. The following presents the comments received on the NPRM and the FAA's response to each comment.

Support for the NPRM

The Air Line Pilots Association, International (ALPA) and Boeing indicated support for the NPRM. An anonymous commenter also indicated support for the NPRM. Two other commenters, Patrick Imperatrice and Gaganjyot Arora, stated that they supported the NPRM.

Request To Clarify Requirements for Certain Airplanes

Lufthansa Technik AG on behalf of Lufthansa German Airlines requested that the FAA add a note to the proposed AD to clarify the requirements for airplanes on which BMS 10-20 was not used while accomplishing Boeing Service Bulletin 747-28-2228, dated November 4, 1999 (Boeing Service Bulletin 747-28-2228, Revision 1, dated September 27, 2001, is referred to as the appropriate source of service information for accomplishing the proposed actions.). Lufthansa Technik AG asked that the FAA consider whether an airplane on which Boeing Service Bulletin 747-28-2228, dated November 4, 1999, was accomplished without using BMS 10-20 is in compliance with the proposed AD.

The FAA agrees to clarify the requirements. Boeing Service Bulletin 747-28-2228, Revision 1, dated September 27, 2001, specifies it is necessary to rebond the bonding jumper if BMS 10-20 was

applied on the mating surfaces between the bonding jumper and rear spar while accomplishing Boeing Service Bulletin 747-28-2228, dated November 4, 1999. However, Boeing Service Bulletin 747-28-2228, dated November 4, 1999, specifies limits to the bonding resistance values between the pump housing and rear spar structure. Complying with those bonding resistance values is required to address the unsafe condition, regardless of whether or not BMS 10-20 was applied. These bonding resistance limits were unchanged between Boeing Service Bulletin 747-28-2228, dated November 4, 1999, and Boeing Service Bulletin 747-28-2228, Revision 1, dated September 27, 2001. Therefore, credit can be given if it can be conclusively determined that all bonding resistance limits specified in Boeing Service Bulletin 747-28-2228, Revision 1, dated September 27, 2001, have been met. The FAA has added paragraph (i) to this AD to provide this credit and reidentified subsequent paragraphs accordingly.

Conclusion

The FAA reviewed the relevant data, considered the comments received, and determined that air safety and the public interest require adopting this final rule with the changes described previously and minor editorial changes. The FAA has determined that these minor changes:

- Are consistent with the intent that was proposed in the NPRM for addressing the unsafe condition; and
- Do not add any additional burden upon the public than was already proposed in the NPRM.

The FAA also determined that these changes will not increase the economic burden on any operator or increase the scope of this final rule.

Related Service Information Under 1 CFR Part 51

The FAA reviewed Boeing Service Bulletin 747-28-2228, Revision 1, dated September 27, 2001. This service information describes procedures for a replacement of the bonding jumpers on the APU fuel pump; an inspection of the six override/jettison fuel pumps and of the two transfer/jettison fuel pumps to determine if the bonding jumper has a one-piece braid or two-piece braid, and replacement of the existing bonding jumper if the bonding jumper has a one-piece braid; installation of a second bonding jumper; and replacement of the bonding jumper on the electrical scavenge fuel pump. 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 the ADDRESSES section.

Other Relevant Rulemaking

Boeing Service Bulletin 747-28-2228, Revision 1, dated September 27, 2001, identifies “Boeing Service Bulletin 747-28-2033” as a concurrent requirement for certain airplanes. Boeing Alert Service Bulletin 747-28A2033, Revision 1, dated December 18, 2003, is the appropriate source of service information for accomplishing the installation required by AD 2005-01-07, Amendment 39-13931 (70 FR 1336, January 7, 2005) (“AD 2005-01-07”). The compliance time for accomplishing the installation required by AD 2005-01-07 has already passed; therefore, it is not necessary to include Boeing Alert Service Bulletin 747-28A2033 as a concurrent requirement in this AD. The FAA issued AD 2005-01-07 to ensure adequate electrical bonding between the housing of each fuel pump and airplane structure outside the fuel tanks. Inadequate electrical bonding, in the event of a lightning strike or fuel pump electrical fault, could cause electrical arcing and ignition of fuel vapor in the wing fuel tank, which could result in a fuel tank explosion.

Costs of Compliance

The FAA estimates that this AD affects 74 airplanes of U.S. registry. The FAA estimates the following costs to comply with this AD:

Estimated Costs

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Replacement, Installation, and Inspection	Up to 15 work-hours × $85 per hour = Up to $1,275	Up to $2,000	Up to $3,275	Up to $242,350.

The FAA estimates the following costs to do any necessary replacements that would be required based on the results of the proposed inspection. The FAA has no way of determining the number of aircraft that might need these replacements:

On-Condition Costs

Action	Labor cost	Parts cost	Cost per product
Replacement	Up to 6 work-hours × $85 per hour = Up to $510	Up to $950	Up to $1,460.

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.

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 airworthiness directive (AD):

2020-07-14 The Boeing Company: Amendment 39-19893; Docket No. FAA-2019-0859; Product Identifier 2019-NM-114-AD.

(a) Effective Date

This AD is effective May 18, 2020.

(b) Affected ADs

None.

(c) Applicability

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, line numbers (L/Ns) 1 through 1229 inclusive.

(d) Subject

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

(e) Unsafe Condition

This AD was prompted by fuel system reviews conducted by the manufacturer indicating that the existing bond path design provides insufficient bond resistance margin between the fuel pump motor/impeller and structure. The FAA is issuing this AD to address insufficient bond resistance margin between the fuel pump motor/impeller and structure. In the event of a fuel pump electrical fault, this condition might cause arcs at the existing fuel pump/tank interfaces and an ignition of fuel vapor in the wing fuel tank, which 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) Definitions

The definitions specified in paragraphs (g)(1) through (4) of this AD apply.
(1) Group 1 airplanes: L/Ns 1 through 167 inclusive.
(2) Group 2 airplanes: L/Ns 168 through 971 inclusive.
(3) Group 3 airplanes: L/Ns 972 through 1161 inclusive.
(4) Group 4 airplanes: L/Ns 1162 through 1229 inclusive.

(h) Replacement, Installation, and Inspection

Within 60 months after the effective date of this AD, do the applicable actions specified in paragraphs (h)(1) through (4) of this AD, in accordance with the Accomplishment Instructions of Boeing Service Bulletin 747-28-2228, Revision 1, dated September 27, 2001.

(1) For Groups 1, 2, and 3 airplanes: Do the actions specified in paragraphs (h)(1)(i) and (ii) of this AD.

(i) Do a general visual inspection of the six override/jettison fuel pumps to determine if the bonding jumper has a one-piece braid or two-piece braid. If the bonding jumper has a one-piece braid, within 60 months after the effective date of this AD, replace the existing bonding jumper.

(ii) Install a second bonding jumper.

(2) For Groups 1, 2, and 3 airplanes with horizontal stabilizer fuel tanks: Do the actions specified in paragraphs (h)(2)(i) and (ii) of this AD.

(i) Do a general visual inspection of the two transfer/jettison fuel pumps to determine if the bonding jumper has a one-piece braid or a two-piece braid. If the bonding jumper has a one-piece braid, within 60 months after the effective date of this AD, replace the existing bonding jumper.

(ii) Install a second bonding jumper.

(3) For all airplanes: Replace the bonding jumpers on the auxiliary power unit (APU) fuel pump.

(4) For Groups 1 and 2 airplanes: Replace the bonding jumper on the electrical scavenge fuel pump.

(i) Credit for Previous Actions

This paragraph provides credit for the actions specified in paragraph (h) of this AD, if those actions were performed before the effective date of this AD using Boeing Service Bulletin 747-28-2228, dated November 4, 1999, provided it can conclusively be determined that all bonding resistance values specified in Boeing Service Bulletin 747-28-2228, Revision 1, dated September 27, 2001, have been met.

(j) 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 local Flight Standards District 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 (k) 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 local flight standards district office/certificate holding district 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.

(k) Related Information

For more information about this AD, contact Jeffrey Rothman, Aerospace Engineer, Propulsion Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206-231-3558; email: jeffrey.rothman@faa.gov.

(l) 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 Service Bulletin 747-28-2228, Revision 1, dated September 27, 2001.

(ii) [Reserved]

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

(4) You may view this service information at the FAA, Transport Standards 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, email fedreg.legal@nara.gov, or go to: https://www.archives.gov/federal-register/cfr/ibr-locations.html.

Issued on April 3, 2020.

Gaetano A. Sciortino,

Deputy Director for Strategic Initiatives, Compliance & Airworthiness Division, Aircraft Certification Service.

[FR Doc. 2020-07645 Filed 4-10-20; 8:45 am]