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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2010-1312; Directorate Identifier 2010-NM-220-AD; Amendment 39-16826; AD 2011-21-03]

RIN 2120-AA64

Airworthiness Directives; The Boeing Company Model 777-200, -200LR, -300, and -300ER Series Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: We are adopting a new airworthiness directive (AD) for the products listed above. This AD requires installing foreign object debris (FOD) rubber shields over the primary and secondary external power connectors for certain airplanes, and wrapping silicone tape around the hydraulic tube for certain other airplanes. This AD was prompted by a report of a fire in the main equipment center due to failure of an external power connector, which caused high-temperature arcing and subsequent splatter of molten copper on an adjacent hydraulic tube, creating a hole in the tube and spraying hydraulic fluid into the power connector, resulting in a fire. In addition there were several reports of overheating or arcing of external power connectors, and one report of a fire due to arcing caused by FOD. We are issuing this AD to prevent FOD from entering the primary and secondary external power connectors, which could result in overheating or arcing and consequent fire in the main equipment center.

DATES: This AD is effective November 16, 2011.

The Director of the Federal Register approved the incorporation by reference of certain publications listed in the AD as of November 16, 2011.

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>. You may review copies of the referenced 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.

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 (phone: 800-647-5527) is 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; phone: (425) 917-6482; fax: (425) 917-6590; e-mail: georgios.roussos@faa.gov.

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 the specified products. That NPRM published in the Federal Register on January 18, 2011 (76 FR 2846). That NPRM proposed to require installing foreign object debris (FOD) rubber shields over the primary and secondary external power connectors for certain airplanes, and wrapping fire-resistant silicone tape around the hydraulic tube for certain other airplanes.

Comments

We gave the public the opportunity to participate in developing this AD. The following presents the comments received on the proposal and the FAA's response to each comment.

Support for the NPRM

American Airlines has accomplished the modifications on the majority of its fleet, and has no objection to the actions and compliance times in the NPRM (76 FR 2846, January 18, 2011). The National Transportation Safety Board supports the NPRM.

Request To Use Latest Production Hydraulic Tube

Japan Airlines (JAL), Continental Airlines, and All Nippon Airways (ANA) asked that operators be allowed to use the latest production hydraulic tube having part number (P/N) 272W4190-192, which already has the silicone tape pre-wrapped, in lieu of modifying the existing hydraulic tube assembly by installing the silicone tape in accordance with Boeing Special Attention Service Bulletin 777-29-0032, dated August 9, 2007. JAL also noted a concern about procuring the hydraulic tube.

We do not agree with the request to use the latest production hydraulic tube as an acceptable alternative to installing the silicone tape. Based on the latest information received from Boeing engineering, the following applies to any possible hydraulic tube replacement: Any hydraulic tube having P/N 272W4190-192 (as specified in Boeing Special Attention Service Bulletin 777-29-0032, dated August 9, 2007), cannot be a direct replacement for the existing part. Hydraulic tubes having P/Ns 272W4190-93, -168, and -192 for production installation require the use of permaswage fittings on either side of the tube. Removal of the tube for its replacement requires that the tube be physically cut past the permaswage fitting, thus making it longer than the original production part. We have made no change to the AD in this regard.

Request To Include Instructions for Continued Airworthiness

Continental and ANA also noted that the service information does not contain proper instructions for continued airworthiness (ICAs) to install the tape on the new line, or inclusion of the equivalent production part number in the Boeing 777 illustrated parts catalog (IPC). Continental added that a pre- and post-service bulletin configuration should be included to provide instructions to use a newer part or to accomplish the actions specified in the service information again.

We acknowledge the commenters' concern, but we do not agree. The Boeing ICAs do include a statement indicating that the production tubes are reworked by using the procedures in Boeing Special Attention Service Bulletin 777-29-0032, dated August 9, 2007. Since there is not direct replacement with a production tube, we are working with Boeing to identify additional information necessary in support of replacing the hydraulic tube. We have made no change to the AD in this regard.

Request To Include Information Notices

United Airlines asked that we revise the NPRM (76 FR 2846, January 18, 2011) to refer to Boeing Service Bulletin Information Notices 777-29-0032 IN 01, dated November 29, 2007, and 777-29-0032 IN 02, dated December 11, 2008, which include clarifications to the Accomplishment Instructions of Boeing Special Attention Service Bulletin 777-29-0032, dated August 9, 2007.

We acknowledge that these information notices may be useful to operators to clarify certain instructions specified in Boeing Special Attention Service Bulletin 777-29-0032, dated August 9, 2007. However, Boeing has provided these notices to operators. We do not reference information notices in ADs because those documents are not FAA-reviewed. In addition, the information notices do not contain technical information and are not necessary to accomplish the actions required by the AD. We have made no change to the AD in this regard.

Request To Change the Applicability

Boeing requested that the applicability section in the NPRM (76 FR 2846, January 18, 2011) be changed. Boeing stated that the applicability should be limited to the airplanes identified in the referenced service information, which include only those airplanes on which the modifications required by the AD have not been accomplished in production.

We agree with the commenter for the reason provided and have limited the applicability section in this AD accordingly, in lieu of specifying "all" airplanes of the affected model.

Request To Clarify Tape Qualities

Boeing asked that we delete the term "fire-resistant," which describes "silicone tape," as specified in the Summary section, Relevant Service Information section, and paragraph (g)(2) of the NPRM (76 FR 2846, January 18, 2011). Boeing stated that the product data sheet identifies the tape as "high temperature arc- and track-resistant tape," but not "fire-resistant."

We agree with the commenter for the reason provided. However, the term "fire-resistant" was used in the NPRM (76 FR 2846, January 18, 2011) because it is specified as such in the referenced service information. We have removed it from the Summary section and paragraph (g)(2) of this AD. The Relevant Service Information section of the preamble does not reappear in the final rule.

Request To Clarify Terminology of Tape Dimensions

Boeing asked that we change the language in the "Exception to Service Information" section in paragraph (h) of the NPRM (76 FR 2846, January 18, 2011) as follows: "Figure 1 of the Accomplishment Instructions of Boeing Special Attention Service Bulletin 777-29-0032, dated

August 9, 2007, does not identify the units of the dimensions of the silicone tape installed on the hydraulic tube; those dimensions are identified in inches." Boeing noted that the dimensions of the tape are identified, but the units of the dimensions are missing. Boeing added that, although the tape can be used as "electrical" tape, for this application it is more appropriate to identify it as "silicone" tape.

We agree with the commenter for the reasons provided. The word "electrical" was used in the NPRM (76 FR 2846, January 18, 2011) because it is specified as such in the referenced service information. We have changed paragraph (h) of this AD to reiterate the commenter's suggested language.

Request To Provide Additional Credit

Boeing asked that the service information specified in paragraph (i) of the NPRM (76 FR 2846, January 18, 2011) under "Credit for Actions Accomplished in Accordance with Previous Service Information" be changed to include Boeing Special Attention Service Bulletin 777-29-0032, dated August 9, 2007 (referred to in the NPRM as the service information to use for installing the silicone tape). Boeing stated that the modification accomplished by this service bulletin before the effective date of the AD is identical to the modification accomplished by this service bulletin after the effective date of the AD.

We do not agree that the subject service bulletin should be added to paragraph (i) of this AD. Operators are already given credit for previously accomplished actions as allowed by the phrase in paragraph (f) of this AD which states the following: "Comply with this AD within the compliance times specified, unless already done." We have made no change to the AD in this regard.

Request To Exclude Certain Proposed Actions

Delta Airlines asked that Boeing Special Attention Service Bulletin 777-29-0032, dated August 9, 2007, be excluded from the NPRM (76 FR 2846, January 18, 2011). Delta stated that since the root cause of the external power connector fires and overheating was related to foreign object debris (FOD) shorting out the external power connector inside the airplane, once the FOD shields are installed per Boeing Service Bulletin 777-24-0102, Revision 1, dated June 17, 2010, the protective tape identified in Boeing Special Attention Service Bulletin 777-29-0032, dated August 9, 2007, serves no purpose. Delta added that if damage to the hydraulic tubing is still a concern even after accomplishment of this service bulletin, a routing change to the hydraulic tubing would be a better solution to protecting the tubing from a fire/overheat condition. Delta noted that the tape being installed is not fireproof, only fire-resistant. Delta also stated that the instructions for installing the tape specified in Boeing Special Attention Service Bulletin 777-29-0032, dated August 9, 2007, would be difficult to comply with. Subsequent inspections of the tape installation to ensure compliance with the NPRM would also be difficult when judging the overlap and number of tape wraps, since the tape installation is based on the amount of stretch and a percentage of overlap.

We do not agree to remove Boeing Special Attention Service Bulletin 777-29-0032, dated August 9, 2007, from this AD. Installation of the FOD shields is not the only action necessary to address the identified unsafe condition. FOD shields alone do not resolve the potential for overheating and arcing of the electrical connectors. Based on our evaluation, we have determined that the connector design, lack of proper connector maintenance actions, and the proximity of the hydraulic tubing to the connectors can result in a fire; therefore, accomplishing the actions required by this AD will minimize the threat of fire on the airplane.

Additionally, although the silicone tape is not fireproof, installing the tape provides an acceptable level of protection to the hydraulic tubing in the event of overheating or arcing of the connectors. The procedures for installing the tape are not difficult for compliance and include easy access and liberal application of the tape; several operators have already done this modification and did not encounter any problems. Further, it is the responsibility of operators to maintain the AD-

mandated configuration, and this can be done using the procedures specified in Boeing Special Attention Service Bulletin 777-29-0032, dated August 9, 2007. In light of these factors, we have made no change to the AD.

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 have determined that these changes will neither increase the economic burden on any operator nor increase the scope of the AD.

Costs of Compliance

We estimate that this AD will affect 126 airplanes of U.S. registry. We estimate the following costs to comply with this AD:

Estimated Costs					
Action	Labor cost	Parts cost	Cost per product	Number of airplanes affected	Fleet Cost
Install FOD rubber shields	6 work-hour X \$85 per hour = \$510	\$134	\$644	124	\$79,856
Wrap silicone tape	2 work-hour X \$85 per hour = \$170	\$0	\$170	126	\$21,420

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),
- (3) Will not affect intrastate aviation in Alaska, and

(4) 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):



2011-21-03 The Boeing Company: Amendment 39-16826; Docket No. FAA-2010-1312; Directorate Identifier 2010-NM-220-AD.

Effective Date

(a) This AD is effective November 16, 2011.

Affected ADs

(b) None.

Applicability

(c) This AD applies to The Boeing Company Model 777-200, -200LR, -300, and -300ER series airplanes; certificated in any category; as identified in Boeing Service Bulletin 777-24-0102, Revision 1, dated June 17, 2010; and Boeing Special Attention Service Bulletin 777-29-0032, dated August 9, 2007.

Subject

(d) Joint Aircraft System Component (JASC)/Air Transport Association (ATA) of America Codes 29: Hydraulic power; and 24: Electrical power.

Unsafe Condition

(e) This AD was prompted by a report of a fire in the main equipment center due to failure of an external power connector, which caused high-temperature arcing and subsequent splatter of molten copper on an adjacent hydraulic tube, creating a hole in the tube and spraying hydraulic fluid into the power connector, resulting in a fire. In addition there were several reports of overheating or arcing of external power connectors, and one report of a fire due to arcing caused by foreign object debris (FOD). We are issuing this AD to prevent FOD from entering the primary and secondary external power connectors, which could result in overheating or arcing and consequent fire in the main equipment center.

Compliance

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

Modification

(g) Within 36 months after the effective date of this AD, do the actions required by paragraphs (g)(1) and (g)(2) of this AD.

(1) For airplanes identified in Boeing Service Bulletin 777-24-0102, Revision 1, dated June 17, 2010: Install FOD rubber shields over the primary and secondary external power connectors, in

accordance with the Accomplishment Instructions of Boeing Service Bulletin 777-24-0102, Revision 1, dated June 17, 2010.

(2) For airplanes identified in Boeing Special Attention Service Bulletin 777-29-0032, dated August 9, 2007: Wrap silicone tape around the hydraulic tube, in accordance with the Accomplishment Instructions of Boeing Special Attention Service Bulletin 777-29-0032, dated August 9, 2007.

Exception to Service Information

(h) Figure 1 of the Accomplishment Instructions of Boeing Special Attention Service Bulletin 777-29-0032, dated August 9, 2007, does not identify the units of the dimensions of the silicone tape installed on the hydraulic tube; those dimensions are identified in inches.

Credit for Actions Accomplished in Accordance With Previous Service Information

(i) Actions done before the effective date of this AD in accordance with Boeing Service Bulletin 777-24-0102, dated July 12, 2007, are acceptable for compliance with the corresponding requirements of paragraph (g)(1) of this AD.

Alternative Methods of Compliance (AMOCs)

(j)(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. 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 ACO, send it to the attention of the person identified in the Related Information section of this AD. Information may be e-mailed to: 9-ANM-Seattle-ACO-AMOC-Requests@faa.gov.

(2) Before using any approved AMOC, notify your Principal Maintenance Inspector or Principal Avionics Inspector, as appropriate, or lacking a principal inspector, your local Flight Standards District Office.

Related Information

(k) For more information about this AD, contact Georgios Roussos, Aerospace Engineer, Systems and Equipment Branch, ANM-130S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue, SW., Renton, Washington 98057-3356; phone: (425) 917-6482; fax: (425) 917-6590; e-mail: georgios.roussos@faa.gov.

(l) 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>. You may review copies of the referenced 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.

Material Incorporated by Reference

(m) You must use Boeing Service Bulletin 777-24-0102, Revision 1, dated June 17, 2010; or Boeing Special Attention Service Bulletin 777-29-0032, dated August 9, 2007; 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 the service information contained 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, WA 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 an NARA facility, 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 September 27, 2011.

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