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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. 2000-NM-387-AD; Amendment 39-12854; AD 2002-16-15]

RIN 2120-AA64

Airworthiness Directives; Boeing Model 777 Series Airplanes

AGENCY: Federal Aviation Administration, DOT.

ACTION: Final rule.

SUMMARY: This amendment adopts a new airworthiness directive (AD), applicable to certain Boeing Model 777 series airplanes, that requires modification of the supports for the wire bundles of the fuel quantity indicator system (FQIS), and follow-on actions, if necessary. The actions specified by this AD are intended to prevent chafing of the FQIS wiring on surrounding structures and systems. Such chafing could result in exposure of the bare conductor in close proximity to structures or other electrically conductive return paths, and potential electrical arcing and explosion in the fuel tank in the event of an additional wiring failure outside the fuel tank. This action is intended to address the identified unsafe condition.

DATES: Effective September 26, 2002.

The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of September 26, 2002.

ADDRESSES: The service information referenced in this AD may be obtained from Boeing Commercial Airplane Group, P.O. Box 3707, Seattle, Washington 98124-2207. This information may be examined at the Federal Aviation Administration (FAA), Transport Airplane Directorate, Rules Docket, 1601 Lind Avenue, SW., Renton, Washington; or at the Office of the Federal Register, 800 North Capitol Street, NW., Suite 700, Washington, DC.

FOR FURTHER INFORMATION CONTACT: John Vann, Aerospace Engineer, Propulsion Branch, ANM-140S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue, SW., Renton, Washington 98055-4056; telephone (425) 227-1024; fax (425) 227-1181.

SUPPLEMENTARY INFORMATION: A proposal to amend part 39 of the Federal Aviation Regulations (14 CFR part 39) to include an airworthiness directive (AD) that is applicable to certain Boeing Model 777 series airplanes was published in the Federal Register on July 25, 2001 (66 FR 38588). That action proposed to require modification of the supports for the fuel quantity indicator system (FQIS) wire bundles.

Comments

Interested persons have been afforded an opportunity to participate in the making of this amendment. Due consideration has been given to the comments received.

Request To Withdraw Proposed Rule

One commenter states that the change proposed by the FAA has already been addressed by the manufacturer, per the release of the service bulletins referenced in the proposed rule that specify inspecting the in-tank wiring and revising the installation to enhance the wire separation from the in-tank structure. The commenter adds that, in testing where there was the potential for wire chafing from fuel sloshing and vibration, and during inspections, wire chafing was not found. The commenter states that chafed fuel quantity indicator system (FQIS) wiring, in combination with certain wiring or component failures, resulting in a potential ignition source, is improbable because of the safety design features that preclude such an occurrence. The commenter notes several reasons that the actions in the proposed rule are not necessary. First, the FQIS processor on Model 777 series airplanes is designed to meet electrical unit intrinsic safety levels, per the manufacturer's requirements. Second, the FQIS wiring has an outer insulation jacket, then a double-braided shield for protection, and each wire has its own insulation jacket. Third, for 70 percent of the distance from the processor to the wing spar, the FQIS wiring has a spatial separation from other airplane wiring. Fourth, the in-tank wiring conductor is nickel-plated, which, per in-service data, is proven to be resistant to fuel tank corrosion.

The FAA infers that the commenter wants the proposed rule withdrawn. We do not agree. We have conducted many inspections of the fuel tanks on Model 777 series airplanes, and have found that the current wiring installation design is highly sensitive to wiring installation quality, such that the level of installation quality control necessary to prevent chafing is unrealistic. In addition, other factors such as fuel sloshing, airplane flexure, inertial loads, and fuel tank maintenance can cause the wiring to move into positions where chafing can occur. The modifications specified in the referenced service bulletins provide the necessary improvements to prevent chafing of the FQIS wiring. Additionally, although the commenter stated that chafed wiring, in combination with certain wiring or component failures, would not result in a potential ignition source, we do not agree. The design features of the FQIS cannot ensure that, over the lifetime of the airplane, sufficient energy will not cause electrical arcing from entering the fuel tank.

The same commenter asks that, if the proposed rule is adopted as final, it be changed to reference subsequent revisions of the referenced service bulletins for accomplishment of the specified actions.

We do not agree with the commenter. An AD may only refer to service documents that are submitted and approved by the Office of the Federal Register for "incorporation by reference." In order for operators to use later revisions of the referenced document (issued after the publication of the AD), either the AD must be revised to refer to the specific later revisions, or operators must request approval for the use of them as an alternative method of compliance with this AD under the provisions of paragraph (c) of this AD. No change to the final rule is necessary in regard to the previous comments.

Extend Compliance Time

One commenter asks that the compliance time specified in the proposed rule be extended from 24 to 48 months. The commenter states that the airlines should be allowed to schedule incorporation of the modifications at a convenient heavy maintenance check if the specified safety procedures are in place and no evidence of chafing is found during testing or incorporation of the modifications.

We do not agree with the commenter. The commenter provides no technical justification for increasing the compliance time as requested. Further, the areas where the wiring concerns being remedied by this AD are regularly exposed to flammable fuel vapors. Arcing in the tank can cause ignition of these flammable fuel vapors. In light of this, and since the unsafe condition addressed by this AD is a significant safety issue, we have determined that the compliance time of 24 months, as proposed, is warranted.

In developing an appropriate compliance time for the actions required by this AD, we considered not only those safety issues, but the manufacturer's recommendations, parts availability, and the practical aspect of accomplishing the modifications within an interval paralleling normal scheduled maintenance for the majority of affected operators. In light of all of these factors described previously, we consider 24 months to be an appropriate compliance time wherein safety will not be adversely affected. No change to the final rule is necessary in this regard.

Eliminate Reporting Requirement

One commenter asks that the reporting requirement included in paragraph (b) of the proposed rule be eliminated. The commenter states that at the time it accomplished the specified modifications, the referenced service bulletins did not include formal procedures or steps for inspection of the damaged wire. Therefore, the commenter did not include those steps in its internal documentation and cannot compile the information for the reporting requirement. The commenter notes that to comply it would have to re-inspect the wiring that has already been modified on all affected airplanes. This would include unscheduled fuel tank entries, which would not take place during a normal maintenance visit and would have a significant financial impact on the airlines.

We partially agree with the commenter, but we do not agree to eliminate paragraph (b) of the final rule. However, we agree that if operators have accomplished the modifications required by paragraph (a) of the final rule, they should not have to re-enter the fuel tank to obtain the information necessary for the reporting requirement submission. Therefore, we have revised paragraph (b)(2) of the final rule to require submission of a report of findings from the previously completed fuel tank modification within 60 days after the effective date of this final rule.

Explanation of Change to Final Rule

The FAA finds that the follow-on actions (Replacement and Reporting of Damaged Wiring), as specified in paragraph (b) of this AD, were inadvertently omitted from the Summary section of the proposed rule. Those actions have been included in the Summary section of this final rule for clarification. We also have changed the heading for paragraph (b) of the final rule to specify "Follow-On Actions," in lieu of "Replacement and Reporting of Damaged Wiring," to better define the actions specified in paragraph (b) of this final rule.

Conclusion

After careful review of the available data, including the comments noted above, the FAA has determined that air safety and the public interest require the adoption of the rule with the changes previously described. The FAA has determined that these changes will neither increase the economic burden on any operator nor increase the scope of the AD.

Cost Impact

There are approximately 266 airplanes of the affected design in the worldwide fleet. The FAA estimates that 75 airplanes of U.S. registry will be affected by this AD, that it will take approximately the number of work hours per airplane displayed in the table below to accomplish the required modifications, and that the average labor rate is \$60 per work hour. Required parts costs are also listed in the table below:

ESTIMATED COST IMPACT

Boeing service bulletin	Number of work hours per airplane	Parts cost per airplane	Estimated cost per airplane	Number of U.S. airplanes affected	Estimated cost to U.S. fleet
777-28-0012	38	\$628	\$2,908	23	\$66,884
777-28-0016 (Group 1)	43	490	3,070	18	55,260
777-28-0016 (Group 2)	48	839	3,719	57	211,983
777-28-0021 (Work Package 1)	30	1,058	2,858	75	214,350
777-28-0021 (Work Package 2)	32	1,058	2,978	75	223,350

Service Bulletins 777-28-0012 and 777-28-0016 both address center fuel tank (CFT) wiring improvements and require CFT entry. Operators should note that concurrent incorporation of these two service bulletins would minimize tank entries and would be a cost savings (33 work hours per airplane) to the operators because they would need to de-fuel, access, and close access to the CFT only once.

The cost impact figures discussed in the table above are based on assumptions that no operator has yet accomplished any of the requirements of this AD action, and that no operator would accomplish those actions in the future if this AD were not adopted. The cost impact figures discussed in AD rulemaking actions represent only the time necessary to perform the specific actions actually required by the AD. These figures typically do not include incidental costs, such as the time required to gain access and close up, planning time, or time necessitated by other administrative actions.

Regulatory Impact

The regulations adopted herein 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. Therefore, it is determined that this final rule does not have federalism implications under Executive Order 13132.

For the reasons discussed above, I certify that this action (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. A final evaluation has been prepared for this action and it is contained in the Rules Docket. A copy of it may be obtained from the Rules Docket at the location provided under the caption ADDRESSES.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

Adoption of the Amendment

Accordingly, pursuant to the authority delegated to me by the Administrator, the Federal Aviation Administration amends part 39 of the Federal Aviation Regulations (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.

Sec. 39.13 [Amended]

2. Section 39.13 is amended by adding the following new airworthiness directive:

AIRWORTHINESS DIRECTIVE



Aircraft Certification Service
Washington, DC

U.S. Department
of Transportation
**Federal Aviation
Administration**

We post ADs on the internet at "www.airweb.faa.gov/rgl"

The following Airworthiness Directive issued by the Federal Aviation Administration in accordance with the provisions of Title 14 of the Code of Federal Regulations (14 CFR) part 39, applies to an aircraft model of which our records indicate you may be the registered owner. Airworthiness Directives affect aviation safety and are regulations which require immediate attention. You are cautioned that no person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of the Airworthiness Directive (reference 14 CFR part 39, subpart 39.3).

2002-16-15 Boeing: Amendment 39-12854. Docket 2000-NM-387-AD.

Applicability: Model 777 series airplanes, line numbers 1 through 266 inclusive, certificated in any category.

Note 1: This AD applies to each airplane identified in the preceding applicability provision, regardless of whether it has been modified, altered, or repaired in the area subject to the requirements of this AD. For airplanes that have been modified, altered, or repaired so that the performance of the requirements of this AD is affected, the owner/operator must request approval for an alternative method of compliance in accordance with paragraph (c) of this AD. The request should include an assessment of the effect of the modification, alteration, or repair on the unsafe condition addressed by this AD; and, if the unsafe condition has not been eliminated, the request should include specific proposed actions to address it.

Compliance: Required as indicated, unless accomplished previously.

To prevent chafing of the fuel quantity indicator system (FQIS) wiring on surrounding structures and systems, which could result in exposure of the bare conductor in close proximity to structures or other electrically conductive return paths, and potential electrical arcing and explosion in the fuel tank in the event of an additional wiring failure outside the fuel tank, accomplish the following:

Modifications

(a) Within 24 months after the effective date of this AD, complete the actions required by paragraphs (a)(1), (a)(2), or (a)(3) of this AD, as applicable.

Modification of Model 777-200 Center Fuel Tank Wiring

(1) For Model 777-200 series airplanes identified in Boeing Special Attention Service Bulletin 777-28-0012, dated September 2, 1999, modify the FQIS wire bundles (including removing the FQIS wire bundle support brackets at each spanwise beam penetration and replacing them with seals, removing the FQIS wire bundle support brackets from the side of the body rib, installing a grommet in the penetration hole, and replacing the bracket with two new brackets), in accordance with the Accomplishment Instructions of the service bulletin.

Modification of Model 777-200 and -300 Center Fuel Tank Wiring

(2) For Model 777-200 and -300 series airplanes identified in Boeing Special Attention Service Bulletin 777-28-0016, dated April 27, 2000, modify the supports for the FQIS wire bundles in the center fuel tank (including installing spacers on the FQIS wiring support brackets and standoffs, installing a clamp next to the grommet at each tank unit, and replacing the clamp filler O-rings), in accordance with the Accomplishment Instructions of the service bulletin.

Modification of Model 777-200 and -300 Main Fuel Tank Wiring

(3) For Model 777-200 and -300 series airplanes identified in Boeing Special Attention Service Bulletin 777-28-0021, dated April 27, 2000, modify the FQIS wire bundles in the main fuel tanks (including installing spacers on the wiring support brackets and standoffs, installing a clamp next to the grommet at each tank unit, and replacing the clamp O-rings), in accordance with the Accomplishment Instructions of the service bulletin.

Follow-On Actions

(b) If any damaged wiring is found during the performance of the modifications required by paragraph (a)(1), (a)(2), or (a)(3) of this AD, before further flight, replace the damaged wiring with new wiring in accordance with Boeing Standard Wiring Practices Manual D6-54446, Chapter 20, Section 10, Subject 11 (20-10-11), dated August 1, 1996. Then submit a report of damaged wire findings to Service Bulletin Engineering, Boeing Commercial Airplane Group, P.O. Box 3707, Mail Stop 2H-37, Seattle, Washington 98124-2207, at the applicable time specified in paragraph (b)(1) or (b)(2) of this AD. The report must include a description of any discrepancies found, the airplane serial number, and the number of landings and flight hours on the airplane. Information collection requirements contained in this AD have been approved by the Office of Management and Budget (OMB) under the provisions of the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.) and have been assigned OMB Control Number 2120-0056.

(1) For airplanes on which the modifications are accomplished after the effective date of this AD: Submit the report within 14 days after performing the applicable modification required by paragraph (a)(1), (a)(2), or (a)(3) of this AD.

(2) For airplanes on which the modifications were accomplished before the effective date of this AD, it is not necessary to re-enter the fuel tanks to conduct inspections. Based on records collected during the previous modifications, submit the report within 60 days after the effective date of this AD. The report must include the date the modifications were done; any problems recorded when doing the modifications; a description of where the problems were found, if recorded; and a point of contact and telephone number.

Alternative Methods of Compliance

(c) An alternative method of compliance or adjustment of the compliance time that provides an acceptable level of safety may be used if approved by the Manager, Seattle Aircraft Certification Office (ACO), FAA. Operators shall submit their requests through an appropriate FAA Principal Maintenance Inspector, who may add comments and then send it to the Manager, Seattle ACO.

Note 2: Information concerning the existence of approved alternative methods of compliance with this AD, if any, may be obtained from the Seattle ACO.

Special Flight Permits

(d) Special flight permits may be issued in accordance with Secs. 21.197 and 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199) to operate the airplane to a location where the requirements of this AD can be accomplished.

Incorporation by Reference

(e) The modifications shall be done in accordance with Boeing Special Attention Service Bulletin 777-28-0012, dated September 2, 1999; Boeing Special Attention Service Bulletin 777-28-0016, dated April 27, 2000; and Boeing Special Attention Service Bulletin 777-28-0021, dated April 27, 2000; as applicable. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from Boeing Commercial Airplane Group, P.O. Box 3707, Seattle, Washington 98124-2207. Copies may be inspected at the FAA, Transport Airplane Directorate, 1601 Lind Avenue, SW., Renton, Washington; or at the Office of the Federal Register, 800 North Capitol Street, NW., Suite 700, Washington, DC.

Effective Date

(f) This amendment becomes effective on September 26, 2002.

Issued in Renton, Washington, on August 5, 2002.

Vi Lipski,

Manager, Transport Airplane Directorate, Aircraft Certification Service.

[FR Doc. 02-20269 Filed 8-21-02; 8:45 am]

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