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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2007-27619; Directorate Identifier 2005-NM-164-AD; Amendment 39-15257; AD 2007-23-11]

RIN 2120-AA64

Airworthiness Directives; Boeing Model 777 Airplanes

AGENCY: Federal Aviation Administration (FAA), Department of Transportation (DOT).

ACTION: Final rule.

SUMMARY: The FAA is adopting a new airworthiness directive (AD) for certain Boeing Model 777 airplanes. This AD requires repetitive measurements of the freeplay of certain joints of the trailing edge flap supports; repetitive lubrication of the support joints; and related investigative and corrective actions if necessary. This AD also provides for modifying certain components of the trailing edge flap supports, which extends the intervals for the repetitive measurements, and revising the maintenance practices of the maintenance planning data document. This AD results from reports of excessive wear of the pins, bushings, and bearings, and corrosion at the joints of the outboard trailing edge flap supports. We are issuing this AD to prevent wear and corrosion at the flap support joints, which could result in loss of the trailing edge flap and possible loss of control of the airplane.

DATES: This AD becomes effective December 20, 2007.

The Director of the Federal Register approved the incorporation by reference of certain publications listed in the AD as of December 20, 2007.

ADDRESSES: For service information identified in this AD, contact Boeing Commercial Airplanes, P.O. Box 3707, Seattle, Washington 98124-2207.

Examining the 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: Gary Oltman, Aerospace Engineer, Airframe Branch, ANM-120S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue SW., Renton, Washington 98057-3356; telephone (425) 917-6443; fax (425) 917-6590.

Discussion

The FAA issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to include an AD that would apply to certain Boeing Model 777 airplanes. That NPRM was published in the Federal Register on March 20, 2007 (72 FR 13048). That NPRM proposed to require repetitive measurements of the freeplay of certain joints of the trailing edge flap supports; repetitive lubrication of the support joints; and related investigative and corrective actions if necessary. That NPRM also provides for modifying certain components of the trailing edge flap supports, which extends the intervals for the repetitive measurements, and revising the maintenance practices of the maintenance planning data document.

Comments

We provided the public the opportunity to participate in the development of this AD. We have considered the comments received.

Request To Change Paragraph (f)(1) of the NPRM

Boeing asks that paragraph (f)(1) be changed to read "For airplanes that have accumulated 6,000 total flight cycles or more on or before the effective date of this AD and on which a teardown inspection has not been accomplished before the effective date of this AD." Boeing states that with the use of the word "or" in place of the word "and" as noted above, the NPRM could include "For airplanes on which a teardown inspection has not been accomplished before the effective date of this AD" and could be interpreted as including new airplanes. Boeing adds that this may be confusing as the NPRM provides coverage for airplanes that have accumulated fewer than 6,000 cycles, or new airplanes.

We agree with changing "or" to "and" as requested by Boeing because the use of the word "or" could be interpreted as applying to all Model 777 airplanes in the applicability, regardless of the total flight cycles, if a teardown inspection has not been done. We have changed paragraph (f)(1) of this AD accordingly.

We disagree with the interpretation that the AD applicability could include new airplanes, because Boeing Service Bulletin 777-27A0066, Revision 1, dated May 18, 2006, clearly identifies affected airplanes as having line numbers 1 through 546 only, and we refer to that service bulletin in paragraph (c), "Applicability," of the NPRM. We have made no change to the AD in this regard.

Request To Change Description of Relevant Service Information Section

Air France asks that certain language specified in the Relevant Service Information section of the NPRM be changed. Air France states that the last paragraph of the description of Service Bulletin 777-27A0066, Revision 1, specifies that accomplishing the actions in Boeing Alert Service Bulletin 777-27A0071, Revision 1, dated October 16, 2006, eliminates the need for the repetitive measurements and lubrications of certain trailing edge flap supports. Air France notes that Alert Service Bulletin 777-27A0071, Revision 1, does not eliminate the need for the repetitive inspections, but only extends the interval for the repetitive inspections.

We acknowledge the commenter's concern; however, that section of the preamble does not reappear in the final rule. We have provided clarification as follows: Service Bulletin 777-27A0071, Revision 1, specifies that accomplishing the modification in that service bulletin constitutes terminating action for the actions specified in Service Bulletin 777-27A0066, Revision 1, for the associated trailing edge flap support only. The actions required by paragraph (l) of the AD require continuing periodic inspections and maintenance of the support joints of the trailing edge flap, which is part of the maintenance inspection program. Those are the inspections that are not terminated by the AD. As part of the maintenance program, those inspections would generally be accomplished at the same time or in combination with normally scheduled airplane inspections and other maintenance program tasks. In light of these facts, we have made no change to the AD.

Japan Airlines International (JAL) asks that the NPRM be changed to allow modification of the flap support mechanism by incorporating Service Bulletin 777-27A0071, Revision 1, dated October 16, 2006, instead of doing a support teardown inspection or temporary return to service inspection. JAL refers to the Relevant Service Information section of the NPRM, which describes procedures for disassembling any joint that exceeds the freeplay limits specified in Service Bulletin 777-27A0066, Revision 1, and doing the related investigative and corrective actions in the "support teardown inspection." JAL also refers to the teardown inspections required by paragraphs (h)(1), (h)(2), and (h)(3) of the NPRM. JAL notes that as an option to the support teardown inspection, for certain airplanes, the service bulletin describes procedures for a "temporary return to service" inspection.

We agree with JAL that allowing operators to accomplish the modification specified in Alert Service Bulletin 777-27A0071, Revision 1, instead of the teardown inspection or temporary return to service is an acceptable option. However, we do not agree to change the AD because that option is already specified in this AD. We have made no change to the AD in this regard.

Requests To Clarify Actions in Paragraph (k) of the NPRM

Air France asks that we include in paragraph (k) of the NPRM the extension interval of 16,000 flight cycles for the repetitive measurements allowed by the application of Alert Service Bulletin 777-27A0071, Revision 1, dated October 16, 2006. Air France notes that paragraph (k) should specify accomplishing the actions in Alert Service Bulletin 777-27A0071, Revision 1; or make a reference to maintenance review board (MRB) and maintenance planning document (MPD) item 27-460-01, which is the item created in the MRB and MPD; or take into account airplanes on which Service Bulletin 777-27A0071, Revision 1, has been accomplished at the extended 16,000 flight cycle intervals.

JAL states that paragraph (k) of the NPRM should be clarified to include the extended interval of 16,000 flight cycles.

We agree with the commenters that paragraph (k) of the AD should provide the extended interval for the repetitive measurements so it corresponds with the interval specified in paragraph (j) of the AD. We have included that interval in paragraph (k) for clarification.

Air France also asks that paragraph (k) of the NPRM include terminating action. Air France states that paragraph (k) does not specify that application of Alert Service Bulletin 777-27A0071, Revision 1, is terminating action for the actions specified in paragraphs (f), (g), (h), and (i) of the NPRM, for the associated trailing edge flap support only. Air France adds that paragraph (k) should correspond with paragraph (j) of the NPRM.

We agree with Air France for the reasons provided, and we have included the terminating action in paragraph (k) of the AD for clarification.

Request To Change Compliance Times

JAL asks that the compliance times specified in paragraph (h)(1)(i) and (h)(3) of the NPRM be extended from 12 to 18 months after the first freeplay measurement of 0.020 inch to 0.100 inch

inclusive, and that the repetitive freeplay inspection (measurement) interval be reduced to 500 flight cycles. JAL provides the following reasons for the request:

- All flap support mechanisms are modified at the same time to avoid complexity and save time with the freeplay inspection interval. There are many Model 777 airplanes planned for flap-related modifications, but once the freeplay value exceeds 0.020 inch, the actions must be done within 12 months. The 12-month compliance time makes it difficult to schedule additional airplanes because of inflexibility; however, 18 months provides more flexibility for scheduling flap modifications. Reducing the freeplay inspection interval to 500 flight cycles would support the compliance time extension.
- Since the freeplay inspection procedure is not precise, it frequently measures freeplay data containing human errors. If the freeplay measurement value exceeds 0.020 inch the actions should be done within 12 months. The teardown inspection must be done before further flight if the freeplay value exceeds 0.020 inch. On the next measurement the value can get within 0.020 inch, but the actions must still be done within 12 months. This is not economical and JAL should be allowed an additional 6-month buffer for flexibility.
- Since repetitive inspections are done at intervals of 500 flight cycles, JAL monitors the freeplay data for the joints. Due to the freeplay (wear) value of all joints being monitored, the trend of the freeplay value of specific joints is known. For Model 777 airplanes utilized for domestic flight (high utilization in terms of flight cycles), the 500 flight-cycle freeplay inspection is done within 3 months, and the normal 1,000 flight-cycle freeplay inspection is done at around 6 months.

In developing an appropriate compliance time for these actions, we considered the urgency associated with the subject unsafe condition, the availability of required parts, and the practical aspect of accomplishing the required modification within a period of time that corresponds to the normal scheduled maintenance for most affected operators. Additionally, the compliance times were in part based on observed wear properties of the applicable parts. We recognize that JAL may have data to show that its wear rates are different than that used in the manufacturer's analysis. If this is the case, we recommend that JAL submit its data in the form of an alternative method of compliance because JAL provides no technical justification for changing the compliance times. According to the provisions of paragraph (n) of the AD, we may approve requests to adjust the compliance time if the request includes data that show that the new compliance time would provide an acceptable level of safety. We have made no change to the AD in this regard.

Conclusion

We have carefully reviewed the available data, including 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

There are about 546 airplanes of the affected design in the worldwide fleet. The following table provides the estimated costs for U.S. operators to comply with this AD.

Estimated Costs

Action	Work hours	Average labor rate per hour	Parts Cost	Cost per airplane	Number of U.S.-registered airplanes	Fleet cost
Freeplay measurement	28	\$80	\$0	\$2,240, per cycle	145	\$324,800, per cycle
Lubrication	2	\$80	\$0	\$160, per cycle	145	\$23,200 per cycle
Modification for flap support No. 3 and 6	135	\$80	\$58,521	\$69,321	145	\$10,051,545

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

We have determined that 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.

We prepared a regulatory evaluation of the estimated costs to comply with this AD and placed it in the AD docket. See the ADDRESSES section for a location to examine the regulatory evaluation.

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 Federal Aviation Administration (FAA) amends § 39.13 by adding the following new airworthiness directive (AD):



2007-23-11 Boeing: Amendment 39-15257. Docket No. FAA-2007-27619; Directorate Identifier 2005-NM-164-AD.

Effective Date

- (a) This AD becomes effective December 20, 2007.

Affected ADs

- (b) None.

Applicability

(c) This AD applies to Boeing Model 777-200, -200LR, -300, and -300ER series airplanes, certificated in any category; as identified in Boeing Service Bulletin 777-27A0066, Revision 1, dated May 18, 2006.

Unsafe Condition

(d) This AD results from reports of excessive wear of the pins, bushings, and bearings, and corrosion at the joints of the outboard trailing edge flap supports. We are issuing this AD to prevent wear and corrosion at the flap support joints, which could result in loss of the trailing edge flap and possible loss of control of the airplane.

Compliance

(e) You are responsible for having the actions required by this AD performed within the compliance times specified, unless the actions have already been done.

Initial Freeplay Measurement

(f) At the applicable time in paragraph (f)(1) or (f)(2) of this AD: Measure the freeplay of support joints A, B, C, and D of the trailing edge flap supports, numbers 1 through 3 inclusive and 6 through 8 inclusive, and of joint B of the trailing edge flap supports, numbers 4 and 5; in accordance with the Accomplishment Instructions of Boeing Service Bulletin 777-27A0066, Revision 1, dated May 18, 2006.

(1) For airplanes that have accumulated 6,000 total flight cycles or more on or before the effective date of this AD and on which a teardown inspection has not been accomplished before the effective date of this AD: At the earlier of the times in paragraph (f)(1)(i) or (f)(1)(ii) of this AD.

(i) Prior to the accumulation of 10,000 total flight cycles, or within 9 months after the effective date of this AD, whichever occurs later.

(ii) Within 30 months after the effective date of this AD.

(2) For airplanes that have accumulated fewer than 6,000 total flight cycles on or before the effective date of this AD: At the later of the times in paragraph (f)(2)(i) or (f)(2)(ii) of this AD.

(i) Prior to the accumulation of 6,000 total flight cycles, or within 120 months after the date of issuance of the original standard airworthiness certificate or the date of issuance of the original export certificate of airworthiness, whichever occurs first.

(ii) Within 30 months after the effective date of this AD.

Repetitive Intervals if the Freeplay Measurement is Less Than 0.020 Inch

(g) If, during any freeplay measurement required by paragraph (f), (g), or (h) of this AD, the freeplay measurement is less than 0.020 inch: Repeat the freeplay measurement required by paragraph (f) of this AD at the applicable interval in paragraph (g)(1) or (g)(2) of this AD. Accomplishing the actions specified in paragraph (j) or (k) of this AD, as applicable, extends the intervals for the repetitive measurements for the associated flap support only.

(1) At intervals not to exceed 1,000 flight cycles.

(2) At intervals not to exceed 6,000 flight cycles or 120 months, whichever occurs first, if a review of airplane maintenance records can conclusively determine that the joints have been lubricated with only BMS 3-33 grease at the earlier of intervals not to exceed 1,000 flight cycles or 240 days since the last support teardown inspection, or since the date of issuance of the original standard airworthiness certificate or the date of issuance of the original export certificate of airworthiness.

Related Investigative and Corrective Actions, and Repetitive Intervals if the Freeplay Measurement is 0.020 Inch or Greater

(h) If, during any freeplay measurement required by paragraph (f), (g), or (h) of this AD, the freeplay measurement is 0.020 inch or greater: Do the applicable action in paragraph (h)(1), (h)(2), or (h)(3) of this AD. Accomplishing the actions specified in paragraph (j) or (k) of this AD, as applicable, extends the intervals for repetitive measurements for the associated flap support only. Do all actions in accordance with the Accomplishment Instructions and note (e) of Table 1 in paragraph 1.E., "Compliance." of Boeing Service Bulletin 777-27A0066, Revision 1, dated May 18, 2006.

(1) For airplanes that have accumulated 6,000 total flight cycles or more as of the effective date of this AD, and for which the freeplay measurement is 0.020 inch to 0.100 inch inclusive: Repeat the freeplay measurement required by paragraph (f) of this AD thereafter at intervals not to exceed 500 flight cycles until the support teardown inspection in paragraph (h)(1)(i) or (h)(1)(ii) of this AD is done.

(i) Within 12 months after the first freeplay measurement of 0.020 inch to 0.100 inch inclusive, do the applicable related investigative and corrective actions specified in the service bulletin as the "Support Teardown Inspection," and repeat the freeplay measurement required by paragraph (f) of this AD thereafter at intervals not to exceed 6,000 flight cycles or 120 months, whichever occurs first.

(ii) Before further flight after the first freeplay measurement of 0.020 inch to 0.100 inch inclusive, do the applicable related investigative and corrective actions specified in the service bulletin as the "Temporary Return to Service Inspection" and, within 24 months after the first freeplay measurement of 0.020 inch to 0.100 inch inclusive, do the applicable related investigative and corrective actions specified in the service bulletin as the "Support Teardown Inspection." Repeat the freeplay measurement required by paragraph (f) of this AD thereafter at intervals not to exceed 6,000 flight cycles, or 120 months, whichever occurs first.

(2) For airplanes that have accumulated 6,000 total flight cycles or more as of the effective date of this AD, and the freeplay measurement is greater than 0.100 inch: Do the action in paragraph (h)(2)(i) or (h)(2)(ii) of this AD.

(i) Before further flight after the first freeplay measurement of greater than 0.100 inch, do the applicable related investigative and corrective actions specified in the service bulletin as the "Support

Teardown Inspection." Repeat the freeplay measurement required by paragraph (f) of this AD thereafter at intervals not to exceed 6,000 flight cycles or 120 months, whichever occurs first.

(ii) Before further flight after the first freeplay measurement of greater than 0.100 inch, do applicable related investigative and corrective actions in the "Temporary Return to Service Inspection," and within 6 months after the first freeplay measurement of greater than 0.100 inch, do the applicable related investigative and corrective actions in the "Support Teardown Inspection." Repeat the freeplay measurement required by paragraph (f) of this AD thereafter at intervals not to exceed 6,000 flight cycles or 120 months, whichever occurs first.

(3) For airplanes that have accumulated fewer than 6,000 total flight cycles as of the effective date of this AD: Before further flight after the first freeplay measurement of 0.020 inch or greater, do the related investigative and corrective actions specified in the service bulletin as the "Support Teardown Inspection." Repeat the freeplay measurement required by paragraph (f) of this AD thereafter at intervals not to exceed 6,000 flight cycles or 120 months, whichever occurs first.

Repetitive Lubrications

(i) Within 12 months after the effective date of this AD: Lubricate the joints of the trailing edge flap supports using BMS 3-33 grease. Repeat the lubrication thereafter at intervals not to exceed 1,000 flight cycles, or 240 days, whichever occurs first. Do all actions in accordance with the Accomplishment Instructions, and note (d) of Table 1 in paragraph 1.E., "Compliance," of Boeing Service Bulletin 777-27A0066, Revision 1, dated May 18, 2006.

Modification/Repetitive Freeplay Measurements for Flap Support Numbers 3 and 6

(j) Before the accumulation of 23,000 total flight cycles or within 24 months after the effective date of this AD, whichever is later: Replace the pins, ball sets, and bushings on the joints of the trailing edge flap at support numbers 3 and 6 with new, improved components by doing all the applicable actions, including all applicable corrective actions, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 777-27A0071, Revision 1, dated October 16, 2006. Before further flight after doing the actions, do a detailed inspection of the components that interface with the flap support pins for discrepancies (corrosion, damage, or excessive wear), and a general visual inspection for any blocked lubrication paths; and do all applicable corrective actions. Repeat the freeplay measurements for the associated trailing edge flap support at intervals not to exceed 16,000 flight cycles in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 777-27A0071, Revision 1, dated October 16, 2006. Accomplishing the actions in this paragraph constitutes terminating action for the actions specified in paragraphs (f), (g), (h), and (i) of this AD, for the associated trailing edge flap support only.

Optional Modification for Flap Support Numbers 1, 2, 4, 5, 7, and 8

(k) Accomplishing the actions specified in paragraph (j) of this AD at support numbers 1, 2, 4, 5, 7, and 8, extends the repetitive intervals for the freeplay measurements required by paragraph (g) of this AD to an interval not to exceed 16,000 flight cycles for the associated trailing edge flap support. Accomplishing the actions in this paragraph constitutes terminating action for the actions specified in paragraphs (f), (g), (h), and (i) of this AD, for the associated trailing edge flap support only.

Revise Maintenance Planning Data (MPD) Document

(l) Within 12 months after the effective date of this AD: Revise the maintenance practices for performing periodic inspections and maintenance of the support joints of the trailing edge flap for the maintenance inspection program of the Boeing 777 MPD Document by doing the actions specified in

paragraphs 1 and 3 only of Part 7 of the Accomplishment Instructions of Boeing Alert Service Bulletin 777-27A0071, Revision 1, dated October 16, 2006.

Actions Accomplished Previously

(m) Actions done before the effective date of this AD in accordance with Boeing Alert Service Bulletin 777-27A0066, dated July 28, 2005, are acceptable for compliance with the actions specified in paragraphs (f), (g), (h), and (i) of this AD, as applicable. Actions done before the effective date of this AD in accordance with Boeing Alert Service Bulletin 777-27A0071, dated March 30, 2006, are acceptable for compliance with the actions specified in paragraphs (j), (k), and (l) of this AD, as applicable.

Alternative Methods of Compliance (AMOCs)

(n)(1) The Manager, Seattle Aircraft Certification Office (ACO), FAA, has the authority to approve AMOCs for this AD, if requested in accordance with the procedures found in 14 CFR 39.19.

(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 appropriate principal inspector (PI) in the FAA Flight Standards District Office (FSDO), or lacking a PI, your local FSDO.

(3) An AMOC that provides an acceptable level of safety may be used for any repair required by this AD, if it is approved by an Authorized Representative for the Boeing Commercial Airplanes Delegation Option Authorization Organization who has been authorized by the Manager, Seattle ACO, to make those findings. For a repair method to be approved, the repair must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

Material Incorporated by Reference

(o) You must use Boeing Service Bulletin 777-27A0066, Revision 1, dated May 18, 2006; and Boeing Alert Service Bulletin 777-27A0071, Revision 1, dated October 16, 2006; as applicable, to perform the actions that are required by this AD, unless the AD specifies otherwise. The Director of the Federal Register approved the incorporation by reference of these documents in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Contact Boeing Commercial Airplanes, P.O. Box 3707, Seattle, Washington 98124-2207, for a copy of this service information. You may review copies at the FAA, Transport Airplane Directorate, 1601 Lind Avenue SW., Renton, Washington; or 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/cfr/ibr-locations.html>.

Issued in Renton, Washington, on November 2, 2007.

Ali Bahrami,

Manager, Transport Airplane Directorate, Aircraft Certification Service.

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