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[Page 27723-27725]
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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2005-22288; Directorate Identifier 2005-NM-132-AD; Amendment 39-15050; AD 2007-10-09]

RIN 2120-AA64

Airworthiness Directives; Boeing Model 747-400 Series Airplanes

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

ACTION: Final rule; request for comments.

SUMMARY: The FAA is adopting a new airworthiness directive (AD) for certain Boeing Model 747-400 series airplanes. This AD requires repetitive inspections for any crack in the upper deck floor beam at station 400, which include inspecting the floor beam web and chords, certain fastener holes at the intersection of the floor beam and frame on both sides of the airplane, and certain floor panel attachment fastener holes at the floor beam upper chords. This AD also requires corrective action if necessary. This AD results from several reports indicating that fatigue cracking was found in upper deck floor beams made from 7000 series aluminum alloy. We are issuing this AD to detect and correct cracking in the upper deck floor beam at station 400, which could extend and sever the floor beam. A severed floor beam could result in loss of controllability and rapid decompression of the airplane.

DATES: This AD becomes effective June 1, 2007.

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in the AD as of June 1, 2007.

We must receive comments on this AD by July 16, 2007.

ADDRESSES: Use one of the following addresses to submit comments on this AD.

- DOT Docket web site: Go to <http://dms.dot.gov> and follow the instructions for sending your comments electronically.
- Government-wide rulemaking web site: Go to <http://www.regulations.gov> and follow the instructions for sending your comments electronically.
- Mail: Docket Management Facility; U.S. Department of Transportation, 400 Seventh Street, SW., Nassif Building, Room PL-401, Washington, DC 20590.
- Fax: (202) 493-2251.

- Hand Delivery: Room PL-401 on the plaza level of the Nassif Building, 400 Seventh Street, SW., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

Contact Boeing Commercial Airplanes, P.O. Box 3707, Seattle, Washington 98124-2207, for service information identified in this AD.

FOR FURTHER INFORMATION CONTACT: Ivan Li, Aerospace Engineer, Airframe Branch, ANM-120S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue, SW., Renton, Washington 98055-4056; telephone (425) 917-6437; fax (425) 917-6590.

SUPPLEMENTARY INFORMATION:

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 747-400 series airplanes. That NPRM was published in the Federal Register on September 6, 2005 (70 FR 52943). That NPRM proposed to require doing a conductivity test of the upper deck floor beam at station 400 to identify the floor beam material. If the floor beam is manufactured from 7050 aluminum alloy, that NPRM also proposed to require inspecting the upper deck floor beam and certain fastener holes at the floor beam upper chord for cracking; repairing any cracking if necessary; and doing a preventative modification.

Actions Since NPRM Was Issued

Since we issued the NPRM, Boeing has published Alert Service Bulletin 747-53A2660, dated November 16, 2006, to replace Boeing Alert Service Bulletin 747-53A2509, dated June 9, 2005. In the NPRM, we referred to Boeing Alert Service Bulletin 747-53A2509 as the appropriate source of service information for accomplishing the proposed conductivity test, one-time inspections of the upper deck floor beam and certain fastener holes for cracking and repair if necessary, reporting requirement, and preventative modification. We proposed the conductivity test and reporting requirement to find the two upper deck floor beams that were made from 7050-T7451 aluminum alloy, which are more susceptible to fatigue cracking. After several operators accomplished the conductivity test specified in Boeing Alert Service Bulletin 747-53A2509, the discrepant upper deck floor beams were found on two airplanes at station 400. Therefore, we have revised the applicability in paragraph (c) of this AD to include only those affected airplanes. Since the proposed conductivity test and reporting requirement, which were specified in paragraphs (f) and (f)(2) of the NPRM respectively, are no longer required, we have deleted those actions from this AD. Further, we have also deleted the preventative modification, which was specified in paragraph (f)(3) of the NPRM. This AD instead requires accomplishing new repetitive inspections, which are specified in paragraphs (f)(1), (f)(2), and (f)(3) of this AD. We have determined that the new repetitive inspections are sufficient to maintain an acceptable level of safety. We have described the new repetitive inspections under "Relevant Service Information."

Relevant Service Information

We have reviewed Boeing Alert Service Bulletin 747-53A2660, dated November 16, 2006. Part 1 of the Accomplishment Instructions of the service bulletin describes procedures for doing (1) repetitive detailed inspections for any crack in the upper deck floor beam at the intersection of the floor beam and frame on both sides of the airplane, (2) repetitive open hole high frequency eddy current (HFEC) inspections for any crack in certain fastener holes at the intersection of the floor beam upper chord and the frame inner chord on both sides of the airplane, and (3) corrective actions if necessary.

The corrective actions include (1) contacting Boeing for repair instructions if any crack is found in the floor beam during any detailed inspection, (2) oversizing the cracked fastener holes at the intersection of the floor beam upper chord and frame inner chord, and doing open hole HFEC inspections of the oversized faster holes, if any crack is found in the fastener holes during any HFEC inspection, (3) installing an oversized fastener, if no crack is found in an oversized fastener hole and a minimum edge margin of 1.7D is maintained, and (4) contacting Boeing for repair instructions if any crack in a fastener hole cannot not be removed by oversizing the fastener hole and maintaining a minimum edge margin of 1.7D.

Part 2 of the Accomplishment Instructions of the service bulletin describes procedures for doing repetitive open hole HFEC inspections for any crack in the upper deck floor beam at all floor panel attachment fastener holes through the forward and aft horizontal flanges of the floor beam upper chord, from the left body frame to the right body frame; and doing corrective actions if necessary. The corrective action includes contacting Boeing for repair instructions if any crack is found at the floor panel attachment fastener holes.

The service bulletin specifies accomplishing the initial inspections in Parts 1 and 2 of the Accomplishment Instructions before the airplane has accumulated 18,000 total flight cycles. The service bulletin also specifies a repetitive interval of 10,000 flight cycles for the inspections in Part 1 of the Accomplishment Instructions and a repetitive interval of 6,000 flight cycles for the inspection in Part 2 of the Accomplishment Instructions.

Accomplishing the actions specified in the service information is intended to adequately address the unsafe condition.

Comments

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

Request To Clarify the Source of Reported Cracking

Boeing requests that we clarify that this AD results from several reports of fatigue cracking found in upper deck floor beams made from 7000 series aluminum alloy, not 7050 aluminum alloy. Boeing states that 7050 aluminum alloy was not yet an option when cracking was found in the upper deck floor beams on Model 747 airplanes; cracking was found on airplanes with 7075-T6 upper deck floor beams, which prompted issuance of other related rulemaking (as identified in the NPRM) to address that unsafe condition. The commenter also states that the fatigue and crack growth in the 7050 beams is expected to be marginally better than in the 7075 beams.

We agree with Boeing's request and have revised the "Summary" and paragraph (d) of this AD.

Clarification of Alternative Method of Compliance (AMOC) Paragraph

We have revised this action to clarify the appropriate procedure for notifying the principal inspector before using any approved AMOC on any airplane to which the AMOC applies.

FAA's Determination and Requirements of This AD

The unsafe condition described previously is likely to exist or develop on other airplanes of the same type design that may be registered in the U.S. at some time in the future. Therefore, we are issuing this AD to detect and correct cracking in the upper deck floor beam, which could extend and sever the floor beam. A severed floor beam could result in loss of controllability and rapid decompression of the airplane. This AD requires accomplishing the actions specified in the service information described previously.

Explanation of Changes to Costs of Compliance

In the NPRM, we estimated that there are about 123 airplanes of the affected design in the worldwide fleet and about 17 airplanes of U.S. registry. However, since issuance of the NPRM, we have determined that only 2 airplanes are affected by this AD. Those affected airplanes are currently operated by non-U.S. operators under foreign registry. Therefore, we have revised the “Costs of Compliance” accordingly.

After the NPRM was issued, we reviewed the figures we have used over the past several years to calculate AD costs to operators. To account for various inflationary costs in the airline industry, we find it necessary to increase the labor rate used in these calculations from \$65 per work hour to \$80 per work hour. The cost impact information, below, reflects this increase in the specified hourly labor rate.

Costs of Compliance

If an affected airplane is imported and placed on the U.S. Register in the future, the required inspections would take about 5 work hours, at an average labor rate of \$80 per work hour. Based on these figures, we estimate the cost of this AD to be \$400 per airplane, per inspection cycle.

FAA's Determination of the Effective Date

No airplane affected by this AD is currently on the U.S. Register. Therefore, providing notice and opportunity for public comment is unnecessary before this AD is issued, and this AD may be made effective in less than 30 days after it is published in the Federal Register.

Comments Invited

This AD is a final rule that involves requirements that affect flight safety. The new requirements, which are to be done in accordance with Boeing Alert Service Bulletin 747-53A2660, dated November 16, 2006, were not preceded by notice and an opportunity for public comment; however, we invite you to submit any relevant written data, views, or arguments regarding this AD. Send your comments to an address listed under the ADDRESSES section. Include “Docket No. FAA-2005-22288; Directorate Identifier 2005-NM-132-AD” at the beginning of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of the AD that might suggest a need to modify it.

We will post all comments we receive, without change, to <http://dms.dot.gov>, including any personal information you provide. We will also post a report summarizing each substantive verbal contact with FAA personnel concerning this AD. Using the search function of that web site, anyone can find and read the comments in any of our dockets, including the name of the individual who sent the comment (or signed the comment on behalf of an association, business, labor union, etc.). You may review the DOT's complete Privacy Act Statement in the Federal Register published on April 11, 2000 (65 FR 19477-78), or you may visit <http://dms.dot.gov>.

Examining the Docket

You may examine the AD docket on the Internet at <http://dms.dot.gov>, or in person at the Docket Management Facility office between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The Docket Management Facility office (telephone (800) 647-5227) is located on the plaza level of the Nassif Building at the DOT street address stated in the ADDRESSES section. Comments will be available in the AD docket shortly after the Docket Management System receives them.

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 the regulation:

1. Is not a "significant regulatory action" under Executive Order 12866;
2. Is not a "significant rule" under the 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):



2007-10-09 Boeing: Amendment 39-15050. Docket No. FAA-2005-22288; Directorate Identifier 2005-NM-132-AD.

Effective Date

- (a) This AD becomes effective June 1, 2007.

Affected ADs

- (b) None.

Applicability

- (c) This AD applies to Boeing Model 747-400 series airplanes, certificated in any category; as identified in Boeing Alert Service Bulletin 747-53A2660, dated November 16, 2006.

Unsafe Condition

- (d) This AD results from several reports indicating that fatigue cracking was found in upper deck floor beams made from 7000 series aluminum alloy. We are issuing this AD to detect and correct cracking in the upper deck floor beam at station 400, which could extend and sever the floor beam. A severed floor beam could result in loss of controllability and rapid decompression 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.

Repetitive Inspections and Corrective Actions

- (f) At the applicable times specified in Table 1 of paragraph 1.E. of Boeing Alert Service Bulletin 747-53A2660, dated November 16, 2006, do the actions specified in paragraphs (f)(1), (f)(2), and (f)(3) of this AD and do all applicable corrective actions, by accomplishing all the applicable actions specified in the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2660, dated November 16, 2006; except where the service bulletin specifies to contact Boeing for appropriate action: Before further flight, repair the crack using a method approved in accordance with paragraph (g) of this AD. Do all applicable corrective actions before further flight.

- (1) Repetitive detailed inspections for any crack in the upper deck floor beam at the intersection of the floor beam and frame on both sides of the airplane.

- (2) Repetitive open hole high frequency eddy current (HFEC) inspections for any crack in certain fastener holes at the intersection of the floor beam upper chord and the frame inner chord on both sides of the airplane.

(3) Repetitive open hole HFEC inspections for any crack in the upper deck floor beam at all floor panel attachment fastener holes through the forward and aft horizontal flanges of the floor beam upper chord, from the left body frame to the right body frame.

Alternative Methods of Compliance (AMOCs)

(g)(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

(h) You must use Boeing Alert Service Bulletin 747-53A2660, dated November 16, 2006, 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 this document 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, S.W., 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 May 7, 2007.

Stephen P. Boyd,

Acting Manager, Transport Airplane Directorate, Aircraft Certification Service.

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