

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39 [63 FR 20311 NO. 79 04/24/98]

Docket No. 98-NM-127-AD; Amendment 39-10498; AD 98-09-17

RIN 2120-AA64

Airworthiness Directives; Boeing Model 747-200F and -200C Series Airplanes

AGENCY: Federal Aviation Administration, DOT

ACTION: Final rule; request for comments

SUMMARY: This amendment adopts a new airworthiness directive (AD) that is applicable to all Boeing Model 747-200F and -200C series airplanes. This action requires repetitive inspections or a one-time inspection to detect cracking of certain areas of the upper deck floor beams; and corrective actions, if necessary. This amendment is prompted by reports indicating that fatigue cracks were found in the upper chord and web of upper deck floor beams. The actions specified in this AD are intended to prevent such fatigue cracking and the resultant failure of such floor beams. Failure of the floor beam could result in damage to critical flight control cables and wire bundles that pass through the floor beam, and consequent reduced controllability of the airplane; failure of the floor beam also could result in the failure of the adjacent fuselage frames and skin, and consequent rapid decompression of the airplane.

DATES: Effective May 11, 1998.

The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of May 11, 1998.

Comments for inclusion in the Rules Docket must be received on or before June 23, 1998.

ADDRESSES: Submit comments in triplicate to the Federal Aviation Administration (FAA), Transport Airplane Directorate, ANM-114, Attention: Rules Docket No. 98-NM-127-AD, 1601 Lind Avenue, SW., Renton, Washington 98055-4056.

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 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.

FOR FURTHER INFORMATION CONTACT: Bob Breneman, Aerospace Engineer, Airframe Branch, ANM-120S, FAA, Transport Airplane Directorate, Seattle Aircraft Certification Office, 1601 Lind Avenue, SW., Renton, Washington 98055-4056; telephone (425) 227-2776; fax (425) 227-1181.

SUPPLEMENTARY INFORMATION: The FAA has received two reports indicating that, during modification of Boeing Model 747-200F series airplanes, fatigue cracking was found in the upper chord and web of the upper deck floor beams at body stations (BS) 340, 360, 380, and 400. One of these airplanes had accumulated approximately 19,100 total flight cycles, and the other approximately 18,500 total flight cycles. In addition, cracks were found at BS 380 on a 747-200F series airplane that had accumulated 11,586 total flight cycles.

The subject cracking was found in the upper chord of the upper deck floor beams, at the fastener location common to the fuselage frame inner chord. Cracks in this location are not detectable by visual inspection until the crack propagates to the horizontal flange of the chord. Analysis has demonstrated that, when a crack of the upper chord reaches the horizontal flange, the crack would propagate extremely rapidly, allowing little time to detect the crack prior to complete failure of the upper chord.

The upper deck floor beams are attached to the adjacent fuselage frames and provide a significant contribution to the structural integrity of the flat-sided fuselage. These floor beams also contain critical flight control cables and wire bundles that originate from the flight deck and flight engineer's control panel. The subject upper deck floor beams are made from 7075-T6511 aluminum, which is less durable and more susceptible to fatigue cracking than 2024 aluminum, which is used on passenger airplanes.

Unsafe Conditions

Fatigue cracking of the upper chord and web, if not corrected could result in failure of the upper deck floor beams and consequent damage to critical flight control cables and wire bundles that pass through the floor beams. Such damage could lead to uncommanded input to flight controls and reduced controllability of the airplane.

In addition, because the subject fatigue cracking has been found at multiple adjacent floor beam locations, failure of one floor beam could precipitate the failure of adjacent floor beams. Failure of these floor beams could cause the failure of the adjacent fuselage frames and skin, which could result in rapid decompression of the airplane.

Similar Models

Boeing Model 747-200C series airplanes have the same upper deck floor beam configuration to that on the affected Model 747-200F series airplanes. Therefore, both of these models may be subject to the same unsafe condition.

Explanation of Relevant Service Information

The FAA has reviewed and approved Boeing Alert Service Bulletin 747-53A2420, dated March 26, 1998, which describes procedures for performing repetitive detailed visual inspections to detect cracks of the upper chord, web, and strap of the upper deck floor beams at BS 340 through BS 520 inclusive; and repair, if necessary. The alert service bulletin also describes procedures for a one-time open hole high frequency eddy current (HFEC) inspection to detect cracking at BS 340 through BS 420 inclusive, which would eliminate the need for the repetitive detailed visual inspections.

Explanation of the Requirements of the Rule

Since an unsafe condition has been identified that is likely to exist or develop on other airplanes of the same type design, this AD is being issued to prevent reduced controllability of the airplane and/or rapid decompression of the airplane due to fatigue cracking in the upper deck floor beams. This AD requires accomplishment of the actions specified in the alert service bulletin described previously, except as provided below.

Differences Between Rule and Alert Service Bulletin

This AD differs from the alert service bulletin in the following three respects:

1. The alert service bulletin specifies that the manufacturer may be contacted for disposition of repair conditions. However, this AD requires the repair of those conditions to be accomplished in accordance with a method approved by the FAA.
2. The alert service bulletin requires a visual inspection of the upper deck floor beams at BS 460 and BS 480. This AD does not require inspection of this area because the upper chords of these floor beams are made from a 2024 material, which is more durable than the other upper deck floor beams and is less susceptible to the same type of fatigue cracking.
3. The alert service bulletin does not require repeat detailed visual inspections or any open hole eddy current inspection of the upper deck floor beams at BS 440 through BS 520. For this area, this AD requires that the detailed visual inspection, if accomplished, be repetitively performed; and also requires that an open hole HFEC inspection eventually be accomplished. The floor beams at BS 440 through BS 520 (with the exception of floor beams at BS 460 and BS 480) are made from the same, less durable 7075-T6511 material and are subjected to the same operational loads as the floor beams with reported fatigue cracking; therefore, these beams are subject to the same type of fatigue cracking. Operators should note that procedures specified in Figures 2 and 4 of the alert service bulletin are identical.

Interim Action

This is considered to be interim action. The manufacturer advises that it currently is developing a preventive modification that will positively address the unsafe condition addressed by this AD. Once this modification is developed, approved, and available, the FAA may consider additional rulemaking.

Determination of Rule's Effective Date

Since a situation exists that requires the immediate adoption of this regulation, it is found that notice and opportunity for prior public comment hereon are impracticable, and that good cause exists for making this amendment effective in less than 30 days.

Comments Invited

Although this action is in the form of a final rule that involves requirements affecting flight safety and, thus, was not preceded by notice and an opportunity for public comment, comments are invited on this rule. Interested persons are invited to comment on this rule by submitting such written data, views, or arguments as they may desire. Communications shall identify the Rules Docket number and be submitted in triplicate to the address specified under the caption "ADDRESSES." All communications received on or before the closing date for comments will be considered, and this rule may be amended in light of the comments received. Factual

information that supports the commenter's ideas and suggestions is extremely helpful in evaluating the effectiveness of the AD action and determining whether additional rulemaking action would be needed.

Comments are specifically invited on the overall regulatory, economic, environmental, and energy aspects of the rule that might suggest a need to modify the rule. All comments submitted will be available, both before and after the closing date for comments, in the Rules Docket for examination by interested persons. A report that summarizes each FAA-public contact concerned with the substance of this AD will be filed in the Rules Docket.

Commenters wishing the FAA to acknowledge receipt of their comments submitted in response to this rule must submit a self-addressed, stamped postcard on which the following statement is made: "Comments to Docket Number 98-NM-127-AD." The postcard will be date stamped and returned to the commenter.

Regulatory Impact

The regulations adopted herein will not have substantial direct effects 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, in accordance with Executive Order 12612, it is determined that this final rule does not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

The FAA has determined that this regulation is an emergency regulation that must be issued immediately to correct an unsafe condition in aircraft, and that it is not a "significant regulatory action" under Executive Order 12866. It has been determined further that this action involves an emergency regulation under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979). If it is determined that this emergency regulation otherwise would be significant under DOT Regulatory Policies and Procedures, a final regulatory evaluation will be prepared and placed in the Rules Docket. A copy of it, if filed, 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. § 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**

The following Airworthiness Directive issued by the Federal Aviation Administration in accordance with the provisions of Federal Aviation Regulations, 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 FAR Subpart 39.3).

98-09-17 BOEING: Amendment 39-10498. Docket 98-NM-127-AD.

Applicability: All Model 747-200F and -200C series airplanes, 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 (d) 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 reduced controllability of the airplane and/or rapid decompression of the airplane due to fatigue cracking in the upper deck floor beams, accomplish the following:

NOTE 2: For this AD, "flight cycles" are considered to be flight cycles with a cabin pressure differential greater than 2.0 pounds per square inch.

(a) For airplanes that have accumulated less than 18,000 total flight cycles as of the effective date of this AD: Prior to the accumulation of 15,000 total flight cycles, or within 250 flight cycles after the effective date of this AD, whichever occurs later, inspect the upper chord, web, and strap of the upper deck floor beams at body station (BS) 340 through BS 440 inclusive, and the upper deck floor beams at BS 500 and BS 520, on the right and left sides of the airplane, in accordance with paragraph (a)(1) or (a)(2) of this AD. The inspections shall be accomplished in accordance with Boeing Alert Service Bulletin 747-53A2420, dated March 26, 1998.

(1) Perform a detailed visual inspection to detect cracks in accordance with Figure 2 of the alert service bulletin.

(i) Repeat the detailed visual inspection thereafter at intervals not to exceed 25 flight cycles, until the requirements of paragraph (a)(1)(ii) are accomplished.

(ii) Within 500 flight cycles after accomplishment of the initial detailed visual inspection, accomplish paragraph (a)(2) of this AD.

(2) Perform a one-time open hole high frequency eddy current (HFEC) inspection to detect cracks in accordance with Figure 3 of the alert service bulletin. Accomplishment of this action constitutes terminating action for the repetitive inspection requirements of this AD.

(b) For airplanes that have accumulated 18,000 or more total flight cycles as of the effective date of this AD: Within 25 flight cycles after the effective date of this AD, inspect the upper chord, web, and strap of the upper deck floor beams at BS 340 through BS 440 inclusive, and the upper deck floor beams at BS 500 and BS 520, on the right and left sides of the airplane, in accordance with paragraph (b)(1) or (b)(2) of this AD. The inspections shall be accomplished in accordance with Boeing Alert Service Bulletin 747-53A2420, dated March 26, 1998.

(1) Perform a detailed visual inspection to detect cracks in accordance with Figure 2 of the alert service bulletin.

(i) Repeat the detailed visual inspection thereafter at intervals not to exceed 25 flight cycles, until the requirements of paragraph (b)(1)(ii) are accomplished.

(ii) Within 250 flight cycles after accomplishment of the initial detailed visual inspection, accomplish paragraph (b)(2) of this AD.

(2) Perform a one-time open hole HFEC inspection to detect cracks in accordance with Figure 3 of the alert service bulletin. Accomplishment of this action constitutes terminating action for the repetitive inspection requirements of this AD.

(c) If any cracking is found during any inspection required by this AD, prior to further flight, repair in accordance with a method approved by the Manager, Seattle Aircraft Certification Office, FAA, Transport Airplane Directorate.

(d) 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 ACO. 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 3: Information concerning the existence of approved alternative methods of compliance with this AD, if any, may be obtained from the Seattle ACO.

(e) Special flight permits may be issued in accordance with sections 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.

(f) The inspections shall be done in accordance with Boeing Alert Service Bulletin 747-53A2420, dated March 26, 1998. 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.

(g) This amendment becomes effective on May 11, 1998.

SUPERSEDED