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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2008-0107; Directorate Identifier 2007-NM-087-AD; Amendment 39-16965; AD 2012-04-09]

RIN 2120-AA64

Airworthiness Directives; The Boeing Company Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: We are adopting a new airworthiness directive (AD) for certain The Boeing Company Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-200C, 747-200F, 747-300, 747-400, 747-400D, 747-400F, 747SR, and 747SP series airplanes. This AD requires inspections for scribe lines in affected lap and butt splices, wing-to-body fairing locations, and external repair and cutout reinforcement areas; and related investigative and corrective actions if necessary. This AD was prompted by reports of scribe lines found at lap joints and butt joints, around external doublers and antennas, and at locations where external decals had been cut. We are issuing this AD to detect and correct scribe lines, which can develop into fatigue cracks in the skin and cause sudden decompression of the airplane.

DATES: This AD is effective April 10, 2012.

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in the AD as of April 10, 2012.

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; email 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: Bill Ashforth, Aerospace Engineer, Airframe Branch, ANM-120S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue SW., Renton, Washington 98057-3356; phone: 425-917-6432; fax: 425-917-6590; email: bill.ashforth@faa.gov.

SUPPLEMENTARY INFORMATION:

Discussion

We issued a supplemental notice of proposed rulemaking (SNPRM) to amend 14 CFR part 39 to include an airworthiness directive (AD) that would apply to the specified products. That SNPRM published in the Federal Register on August 30, 2010 (75 FR 52907). The original NPRM (73 FR 5768, January 31, 2008) proposed to require inspections for scribe lines in affected lap and butt splices, wing-to-body fairing locations, and external repair and cutout reinforcement areas; and related investigative and corrective actions if necessary. The SNPRM proposed to revise the original NPRM by adding inspections for certain airplanes and revising certain compliance times including reducing the compliance time for certain repetitive inspections.

Comments

We gave the public the opportunity to participate in developing this AD. The following presents the comments received on the proposal (75 FR 52907, August 30, 2010) and the FAA's response to each comment.

Request To Revise Certain Inspection Requirements

Boeing requested that we revise the SNPRM (75 FR 52907, August 30, 2010) to include an additional exception to the service bulletin specifications. The SNPRM referred to Boeing Service Bulletin 747-53A2563, Revision 4, dated May 6, 2010, as the appropriate source of service information for the post-repair inspections. Revision 4 of this service bulletin includes lap joint repair instructions in the Accomplishment Instructions, and refers to post-repair instructions in Parts 17 and 18. The post-repair inspection instructions incorrectly refer to inspections per the Boeing 747 Supplemental Structural Inspection Document (SSID) D6-35022. Boeing reported that it plans to remove the reference to the SSID and update the post-repair inspections when Boeing Service Bulletin 747-53A2563 is revised. Boeing therefore requested that we revise the SNPRM to require operators to contact the FAA to request the appropriate post-repair inspections rather than follow the post-repair inspections given in Boeing Service Bulletin 747-53A2563, Revision 4, dated May 6, 2010.

We partially agree with the request. Although we agree with the information and rationale provided by the commenter, we have determined that the inspection procedures described in Boeing Service Bulletin 747-53A2563, Revision 4, dated May 6, 2010, are adequate for the purpose of this AD. It is not necessary to further burden the operators with a requirement to contact the FAA for post-repair inspection instructions, when adequate inspections already exist. Operators may, however, contact the FAA with an alternative method to the inspection procedures specified in Boeing Service Bulletin 747-53A2563, Revision 4, dated May 6, 2010, in accordance with the procedures specified in paragraph (m) of this AD.

Request To Remove Certain Inspection Requirement

Boeing and Delta Airlines requested that we revise paragraph (g) of the SNPRM (75 FR 52907, August 30, 2010) to remove the requirement to inspect for scribe lines around the perimeter of the wing-to-body fairing. The commenters stated that this inspection has been removed from Boeing Service Bulletin 747-53A2563, Revision 4, dated May 6, 2010. Boeing noted that repetitive inspections for cracks at previously discovered scribe lines along the wing-to-body fairing may still be necessary, as specified in Table 17 of paragraph 1.E., "Compliance," of Boeing Service Bulletin 747-53A2563, Revision 4, dated May 6, 2010.

We partially agree with the request. We agree that the initial inspection of the wing-to-body fairing for scribe lines is not required; this action was removed from Boeing Service Bulletin 747-53A2563, Revision 3, dated June 11, 2009; and Boeing Service Bulletin 747-53A2563, Revision 4, dated May 6, 2010. But we disagree that it is necessary to change the final rule to specify this provision; Note 1, which was added to the SNPRM (75 FR 52907, August 30, 2010) and retained in this final rule, accounts for this requested change. We have not changed the final rule regarding this issue.

Request To Clarify Reporting Requirement

Delta requested that we revise paragraph (j) of the SNPRM (75 FR 52907, August 30, 2010) (paragraph (k) in this final rule) to specify that the inspection report is required only for the initial inspection for scribe lines. The commenter noted that the service bulletin has no provision for reporting requirements for any repetitive inspections done during the limited return to service (LRTS) program specified in Boeing Service Bulletin 747-53A2563, Revision 4, dated May 6, 2010.

We agree to clarify that a report is not required for any inspection accomplished per the LRTS program. We have added this clarification in paragraph (k) in this final rule.

Request To Extend Certain Compliance Times

Air New Zealand discussed the implications of scribe lines found before the applicable inspection threshold. This commenter asserted that a scribe line could be present on the airplane from its date of manufacture, and that Boeing Service Bulletin 747-53A2563, Revision 4, dated May 6, 2010, effectively declares there is no safety implication resulting from this scribe line until the relevant inspection threshold. Yet the SNPRM (75 FR 52907, August 30, 2010) would require that a scribe line found before the inspection threshold must immediately be repaired or further inspected. Air New Zealand asserted that, if scribe lines are discovered early, this requirement would add to the maintenance burden without increasing safety.

We infer that the commenter is requesting that we revise the SNPRM (75 FR 52907, August 30, 2010) to extend the time for corrective action on known scribe lines to match the threshold specified in the service information, instead of requiring action before further flight. We disagree. We have determined that, in this case, due to the safety implications and consequences of this type of known damage, operators must repair or inspect scribed structure before further flight. We have not changed the final rule regarding this issue.

Request To Remove Certain Airplanes From Inspection Requirements

Cargolux Airlines asserted that certain airplanes should not be subject to the inspection requirement, and requested that we revise the SNPRM (75 FR 52907, August 30, 2010) to exclude airplanes delivered without fillet seals at lap joints, and airplanes with fillet seals that were applied but never removed. The operator noted that Boeing Service Bulletin 747-53A2563, Revision 4, dated May 6, 2010, provides some exceptions for airplanes that had never been stripped or repainted, and for airplanes on which any sealant removal was always done in accordance with Appendix A of this

service bulletin. The operator also noted, on the other hand, that no exception exists if fillet seals were never applied, or were applied but never removed. Paragraph 1.D. of this service bulletin specifies that scribe lines are made while fillet seals are removed during repainting. The commenter concluded that if no fillet seal was ever applied at a lap joint location, or if an applied fillet seal was never removed, no scribe line can exist.

We disagree with the commenter's request to remove certain airplanes from the inspections required by this AD. As noted in paragraph 1.E.1 of Boeing Service Bulletin 747-53A2563, Revision 4, dated May 6, 2010, certain inspections are still necessary even if no fillet seal has ever been removed. We do not agree to exempt airplanes on which no fillet seal has ever been removed from those inspections. The valid exceptions to certain inspections are explained further in Paragraphs 1.E.1 through 1.E.4 of Boeing Service Bulletin 747-53A2563, Revision 4, dated May 6, 2010. Note 1 of this AD states that the exemptions noted in paragraph 1.E. of Boeing Service Bulletin 747-53A2563, Revision 4, dated May 6, 2010, apply to this AD. It is not necessary to change the final rule regarding this issue.

Request To Revise Compliance Time

British Airways (BA) requested that we revise the SNPRM (75 FR 52907, August 30, 2010) to allow low-time airplanes (with fewer than 17,500 total accumulated flight cycles) to be inspected in area 1 of the fuselage at the later of 1,500 flight cycles after the effective date of the AD, and the next "D" check after the airplane has accumulated 15,000 total cycles without exceeding 19,000 total flight cycles. BA noted that Boeing recommends a 15,000-flight-cycle threshold for the area 1 inspections, and that the inspections should be done during a "D" check to avoid unscheduled downtime. As a result, to align with a "D" check, the inspections for low-time airplanes may have to occur as early as 12,000 total flight cycles for long-haul airplanes, and even earlier for short-haul airplanes. The commenter added that Boeing Service Bulletin 747-53A2563, Revision 4, dated May 6, 2010, also includes procedures for inspecting for scribe lines around external fuselage repairs, and as such, shares commonality with the need to assess repairs as detailed in Boeing SSID D6-36181, which the FAA approved in 2008. This program's threshold is the first "D" check after the airplane has accumulated 15,000 total flight cycles. The commenter felt it would be appropriate to carry out the scribe line inspection of area 1 and the repair assessment program at the same time. BA stated that it understands that the term "D check" means different things to different operators, but pointed out that in the past the FAA has been able to clarify this, for example, in paragraph 217 of FAA Advisory Circular 120-93, dated November 20, 2007 (http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgAdvisoryCircular.nsf/1ab39b4ed563b08985256a35006d56af/f73fd2a31b353a71862573b000521928!OpenDocument), which states as follows:

Airplanes less than 75 percent of DSG [design service goal] on December 18, 2009. Operators complete a survey at the first heavy maintenance check (time limit equivalent to a "D-check") after an individual airplane reaches 75% of the DSG, not to exceed the DSG.

Note: A heavy maintenance check (D-check or equivalent airplane inspection) is an airplane maintenance visit where the major structural inspections are performed. In some cases, this may be a formal D-check or, in the case of a Maintenance Steering Group (MSG)-2 or -3 based maintenance program, the D-check equivalent may be the "C-check" multiple that contains the majority of the major structural inspections, such as a "C-4" which is sometimes called a heavy maintenance visit.

BA stated that its proposed variation on the threshold for area 1 would follow this convention, but have the additional safeguard that the airplane would not exceed 19,000 total flight cycles before inspection. Younger airplanes therefore would have the same or greater level of safety than airplanes

currently inspected at 17,500 total flight cycles and allowed a 1,500-flight-cycle grace period. BA reported that, of 314 Model 747 airplanes that have accumulated more than 19,000 total flight cycles, none had experienced cracking from scribe lines—even though exploratory inspections to date suggest that scribe lines are commonplace.

We disagree with the request to revise the compliance time as suggested. We do not specify compliance times in terms of letter checks because, as the commenter noted, maintenance schedules vary among operators. We have determined that the compliance times as proposed are appropriate to address the identified unsafe condition. The minimum grace period for compliance with this AD is 1,500 flight cycles for airplanes with fewer than 17,500 total flight cycles, which corresponds to approximately 3 years based on a typical utilization of 500 flight cycles per year for long-haul airplanes. A 3-year grace period should be sufficient for operators to plan for the scribe line inspections, and will allow for timely data collection for use in developing final action and determining whether this AD should be revised in the future. We have not changed the final rule regarding this issue. Under the provisions of paragraph (m) in this final rule, however, we may consider requests for adjustments to the compliance time if data are submitted to substantiate that such an adjustment would provide an acceptable level of safety.

Request for Alternative Inspection Program

KLM requested that we revise the SNPRM (75 FR 52907, August 30, 2010) to exclude from the inspection program the CLAD layer of the skin (up to a certain depth/percentage, to be determined by the type certificate holder). KLM asserted that scribe lines found in the CLAD layer are not critical for continued operation and do not require repeat inspections as specified in the LRTS program. KLM also requested investigation of a single fatigue crack evolving from a scribe line found in the CLAD layer, not in the base material. KLM requested that the proposed AD be revised to allow blending scribe lines found in CLAD layers as a corrective action. KLM suggested that scribe lines might have no effect on the CLAD layer, and suggested that a program be developed for inspecting scribe lines in the CLAD layer of the skin.

We agree that additional studies on scribe lines within CLAD layers might benefit the development of new inspection programs and relieve certain inspection criteria. But we disagree to change this aspect of the SNPRM (75 FR 52907, August 30, 2010) at this time, because no such inspection program exists. To delay this action would be inappropriate, since we have determined that an unsafe condition exists and we must proceed to mandate the inspections as proposed to ensure continued safety. In the future, we might consider additional rulemaking to include new inspections, if a new inspection program is developed, approved, and available. In the meantime, under the provisions of paragraph (m) of this final rule, we will consider requests for approval of an alternative method of compliance if sufficient data are submitted to substantiate that the alternative inspection program would provide an acceptable level of safety. We have not changed the final rule regarding this issue.

Explanation of Additional Change Made to This AD

We have revised the heading for and wording in paragraph (l) of this AD; this change has not changed the intent of that paragraph.

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 also determined that these changes will not increase the economic burden on any operator or increase the scope of the AD.

Costs of Compliance

We estimate that this AD affects 219 airplanes of U.S. registry. We estimate the following costs to comply with this AD:

Estimated Costs					
Action	Work hours	Average labor rate per hour	Cost per airplane	Number of U.S.-registered airplanes	Fleet cost
Detailed inspections	1,020 to 1,140	\$85	\$86,700 to \$96,900	219	\$18,987,300 to \$21,221,100

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):



2012-04-09 The Boeing Company: Amendment 39-16965; Docket No. FAA-2008-0107; Directorate Identifier 2007-NM-087-AD.

(a) Effective Date

This AD is effective April 10, 2012.

(b) Affected ADs

None.

(c) Applicability

This AD applies to The Boeing Company Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-200C, 747-200F, 747-300, 747-400, 747-400D, 747-400F, 747SP, and 747SR series airplanes; certificated in any category; as identified in Boeing Service Bulletin 747-53A2563, Revision 4, dated May 6, 2010.

(d) Subject

Air Transport Association (ATA) of America Code 53: Fuselage.

(e) Unsafe Condition

This AD results from reports of scribe lines found at lap joints and butt joints, around external doublers and antennas, and at locations where external decals had been cut. We are issuing this AD to detect and correct scribe lines, which can develop into fatigue cracks in the skin and cause sudden decompression of the airplane.

(f) Compliance

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

(g) Inspection

At the applicable times specified in Tables 1 through 21 and Table 25 in paragraph 1.E., "Compliance," of Boeing Service Bulletin 747-53A2563, Revision 4, dated May 6, 2010, except as provided in paragraph (h) of this AD, do detailed inspections for scribe lines of affected lap and butt splices, wing-to-body fairing locations, and external repair and cutout reinforcement areas, and do all applicable related investigative and corrective actions, by accomplishing all actions specified in the Accomplishment Instructions of Boeing Service Bulletin 747-53A2563, Revision 4, dated May 6, 2010, except as provided by paragraph (i) of this AD.

Note 1 to paragraph (g) of this AD: The inspection exemptions noted in paragraph 1.E., "Compliance," of Boeing Service Bulletin 747-53A2563, Revision 4, dated May 6, 2010, apply to this AD, provided that the operator meets the requirements stated in each applicable exemption.

(h) Exceptions to Service Bulletin Specifications: Compliance Time

Where Boeing Service Bulletin 747-53A2563, Revision 4, dated May 6, 2010, specifies a compliance time after the date on that revision or any previous issue of Boeing Service Bulletin 747-53A2563, this AD requires compliance within the specified compliance time after the effective date of this AD. Where Boeing Service Bulletin 747-53A2563, Revision 4, dated May 6, 2010, states that airplane flight-cycle time shall be calculated after the "issue date on this service bulletin," this AD requires the airplane flight-cycle time to be calculated as of the effective date of this AD.

(i) Exception to Service Bulletin Specifications: Repair Method

Where Boeing Service Bulletin 747-53A2563, Revision 4, dated May 6, 2010, specifies to contact Boeing for appropriate action, accomplish applicable actions before further flight using a method approved in accordance with the procedures specified in paragraph (m) of this AD.

(j) Report

At the applicable time specified in paragraph (j)(1) or (j)(2) of this AD: Submit a report of the findings (both positive and negative) of the inspections required by paragraphs (g) and (k) of this AD. Send the report to Boeing Commercial Airplanes, P.O. Box 3707, Seattle, Washington 98124-2207. The report must contain, at a minimum, the inspection results, a description of any discrepancies including maximum scribe depth, the airplane serial number, and the number of flight cycles and flight hours on the airplane. Under the provisions of the Paperwork Reduction Act (44 U.S.C. 3501 et seq.), the Office of Management and Budget (OMB) has approved the information collection requirements contained in this AD and has assigned OMB Control Number 2120-0056. A report is not required for any inspection accomplished in accordance with the Limited Return to Service (LRTS) program.

(1) If the inspection was done on or after the effective date of this AD: Submit the report within 30 days after the inspection.

(2) If the inspection was done before the effective date of this AD: Submit the report within 30 days after the effective date of this AD.

(k) Additional Inspections for Previously Inspected Airplanes

For airplanes that have been inspected before the effective date of this AD in accordance with the service information specified in table 1 of this AD: At the applicable times specified in Tables 22 through 24 and Tables 26 through 29 of paragraph 1.E., "Compliance," of Boeing Service Bulletin 747-53A2563, Revision 4, dated May 6, 2010, except as provided in paragraph (h) of this AD, do detailed inspections for scribe lines of affected lap splices, butt splices and cargo door lap splices; and do detailed and surface high frequency eddy current or ultrasonic inspections of scribe lines; and do all applicable related investigative and corrective actions; by accomplishing all the applicable actions specified in the Accomplishment Instructions of Boeing Service Bulletin 747-53A2563, Revision 4, dated May 6, 2010, except as provided by paragraph (i) of this AD.

Table 1—Previous Service Bulletin Revisions

Document	Revision	Date
Boeing Alert Service Bulletin 747-53A2563	Original	March 29, 2007
Boeing Service Bulletin 747-53A2563	2	January 3, 2008
Boeing Service Bulletin 747-53A2563	3	June 11, 2009

Note 2 to paragraph (k) of this AD: Boeing Alert Service Bulletin 747-53A2563, Revision 1, dated November 8, 2007, was published with omitted information. Actions accomplished according to Boeing Alert Service Bulletin 747-53A2563, Revision 1, dated November 8, 2007, are not considered acceptable for compliance with this AD.

(l) Credit for Previous Actions

This paragraph provides credit for the actions required by paragraph (g) of this AD, if those actions were performed before the effective date of this AD using the service information identified in Table 1 of this AD, except as required by paragraph (k) of this AD.

(m) Alternative Methods of Compliance (AMOCs)

(1) The Manager, Seattle Aircraft Certification Office, 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. Information may be mailed to 9-ANM-Seattle-ACO-AMOC-Requests@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(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 the Boeing Commercial Airplanes Organization Designation Authority (ODA) that 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.

(n) Related Information

For more information about this AD, contact Bill Ashforth, Aerospace Engineer, Airframe Branch, ANM-120S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue SW., Renton, Washington 98057-3356; phone: 425-917-6432; fax: 425-917-6590; email: bill.ashforth@faa.gov.

(o) Material Incorporated by Reference

You must use Boeing Service Bulletin 747-53A2563, Revision 4, dated May 6, 2010, 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 this service information 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, Washington 98124-2207; telephone 206-544-5000, extension 1; fax 206-766-5680; email 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 February 17, 2012.

Kalene C. Yanamura,
Acting Manager, Transport Airplane Directorate,
Aircraft Certification Service.