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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2011-0303; Directorate Identifier 2010-NM-214-AD; Amendment 39-16939; AD 2012-02-16]

RIN 2120-AA64

Airworthiness Directives; The Boeing Company Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: We are superseding an existing airworthiness directive (AD) for all 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. That AD currently requires an inspection of the No. 2 and No. 3 windows on the left and right sides of the airplane to determine their part numbers, related investigative and corrective actions if necessary, and repetitive inspections of single pane windows. This new AD requires installing dual pane No. 2 and No. 3 windows. This new AD also removes certain airplanes from the applicability. This AD was prompted by loss of a No. 3 window in flight, which could result in consequent rapid loss of cabin pressure. Loss of the window could also result in crew communication difficulties or incapacitation of the crew. We are issuing this AD to correct the unsafe condition on these products.

DATES: This AD is effective May 15, 2012.

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in the AD as of May 15, 2012.

The Director of the Federal Register approved the incorporation by reference of a certain other publication listed in the AD as of September 4, 2007 (72 FR 41438, July 30, 2007; as corrected by 72 FR 53923, September 21, 2007).

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; phone: 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: Nathan P. Weigand, Aerospace Engineer, Airframe Branch, ANM-120S, Seattle Aircraft Certification Office (ACO), FAA, 1601 Lind Avenue SW., Renton, Washington 98057-3356; phone: 425-917-6428; fax: 425-917-6590; email: Nathan.P.Weigand@faa.gov.

SUPPLEMENTARY INFORMATION:

Discussion

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to supersede AD 2007-15-10, Amendment 39-15139 (72 FR 41438, July 30, 2007; as corrected by 72 FR 53923, September 21, 2007). That AD applies to the specified products. The NPRM was published in the Federal Register on April 7, 2011 (76 FR 19278). That NPRM proposed to continue to require certain requirements of AD 2007-15-10, and proposed to require installing dual pane No. 2 and No. 3 windows. That NPRM also proposed to prohibit installed dual structural glass pane windows from being replaced with single structural glass pane windows and to add a definition of "non-clear damage," which the Accomplishment Instructions of Boeing Service Bulletin 747-56A2012, Revision 1, dated August 12, 2010, use as criteria for window replacement. Additionally, that NPRM also proposed removing airplanes having line numbers 1418 and on from the applicability.

Comments

We gave the public the opportunity to participate in developing this AD. The following presents the comments received on the proposal and the FAA's response to each comment.

Support for the NPRM (76 FR 19278, April 7, 2011)

British Airways Engineering (British Airways) stated that it supports the intent of the NPRM (76 FR 19278, April 7, 2011) to replace glass number 2 and 3 windows with dual structural ply windows.

Request To Add an Airplane System To Alert the Air Traffic Control Tower When the Tower Is Unresponsive

An anonymous commenter requested that we change the NPRM (76 FR 19278, April 7, 2011) to add a system in the airplane to sound an alarm in the air traffic control tower when the tower fails to respond. The change is requested due to a concern of sleeping air traffic controllers.

We disagree with the request. The suggested change would alter the actions currently required by this AD, so additional rulemaking would be required. We find that delaying this action would be inappropriate in light of the identified unsafe condition. We have not changed this final rule regarding this issue.

Request To Add a Statement in the NPRM (76 FR 19278, April 7, 2011) That Acrylic Windows Are Unaffected

United Airlines (United) requested we add a statement to the NPRM (76 FR 19278, April 7, 2011) indicating that not all acrylic windows are affected by this NPRM, or the six-year threshold for replacing the windows does not apply if an all-acrylic window is installed. Additionally, United requested clarification as to whether an alternative method of compliance (AMOC) is required if an installed new window specified by the NPRM is replaced by an all-acrylic window, or if this is an acceptable procedure. As justification for its request, United stated that Boeing Service Bulletin 747-56A2012, Revision 1, dated August 12, 2010, which was referenced in the NPRM as the appropriate source of service information for window replacement, states that if the window is replaced with an all-acrylic window such as part number (P/N) 65B07639-() or P/N 65B07640-(), no more work is necessary.

We partially agree. Certain acrylic windows provide an equivalent level of safety as compared to the dual pane windows. We have changed paragraph (i) of this AD to include Boeing-supplied acrylic windows having P/N 65B07639-() and P/N 65B07640-() as allowable replacements for the discrepant windows. The FAA has found these windows provide an equivalent level of safety. Any other windows will need to be evaluated on a case-by-case basis, and any operator may request approval of an AMOC to use these windows as replacements under the provisions of paragraph (l) of this AD. Sufficient data must be submitted to substantiate that the window would provide an acceptable level of safety.

We disagree with adding a statement to the NPRM (76 FR 19278, April 7, 2011) regarding the six-year threshold. This is already addressed in table 1 of Paragraph 1.E., "Compliance," in Boeing Alert Service Bulletin 747-56A2012, dated August 24, 2006, and Boeing Alert Service Bulletin 747-56A2012, Revision 1, dated August 12, 2010, which state that no further action is required if acrylic window part numbers are found. We have not changed the AD in this regard.

Request To Change Window Replacement Compliance Times

Japan Airlines requested a compliance time exception be added to paragraph (i) of the NPRM (76 FR 19278, April 7, 2011) that would allow replacement of single pane windows with dual pane windows within 22,000 flight hours, in addition to the compliance time of within 6 years after the effective date of the AD. We infer that Japan Airlines requests that the compliance time for single pane window replacement be changed to within 22,000 flight hours after new P/N 65B27042-() or P/N 65B27046-() windows were installed or within 6 years after the effective date of the AD, whichever occurs later. Japan Airlines stated its justification for this change with three reasons. First, during the repetitive inspections, it is almost impossible to detect and correct the moisture ingress into the window, which can contribute to interlayer cracks. Therefore, there are no significant issues that could result in loss of the window. The second reason is the economic impact. The parts price of dual structural glass pane windows is almost twice that of single pane windows. The third reason is that the operational history of the dual pane windows is unknown, and it will be difficult to know how durable the dual pane windows will be compared to the existing single pane windows.

We disagree with changing the compliance time. We concur with the manufacturer's compliance time stated in Boeing Service Bulletin 747-56A2012, Revision 1, dated August 12, 2010, for dual pane window replacement. Fleet data do not support the existence of difficulties with inspection for moisture ingress. Once we issue this AD, any operator may request approval of an AMOC for a change of compliance time under the provisions of paragraph (l) of this AD. Sufficient data must be submitted to substantiate that the compliance time change would provide an acceptable level of safety. We have not changed the AD in this regard.

We acknowledge the costs of the modification. However, to reduce the reliance on long-term inspections, the modification is necessary to meet an acceptable level of safety. We have not changed the AD in this regard.

Support for the NPRM (76 FR 19278, April 7, 2011) and a Request To Exempt Certain Windows From the NPRM

British Airways requested that the NPRM (76 FR 19278, April 7, 2011) be revised to exempt windows produced by GKN under European Aviation Safety Agency (EASA) Supplemental Type Certificate (STC) EASA.A.S02838 from the six-year window replacement action specified in paragraph (i) of the NPRM. British Airways also recommended that no replacement timescale be applied to these EASA-approved parts and to allow replacement by attrition. British Airways justified its request by stating that these GKN windows were developed to replace the discrepant windows that the NPRM proposed to replace. British Airways stated that the GKN windows have the problematic PVB or PU/PVB interlayers removed, and have had zero removals since 2007 due to failing the inspection standards specified in Boeing Service Bulletin 747-56A2012, Revision 1, dated August 12, 2010. British Airways also stated that in over 15 years of experience with GKN windows, the interlayer has not exhibited cracking at the hot and cold temperatures experienced by the windows under service conditions. British Airways identified certain part numbers of the EASA-approved GKN windows and the corresponding Boeing part numbers to provide assistance to the FAA.

We disagree with exempting windows produced by GKN from replacement. British Airways has provided useful data in support of its request. However, we need additional information to exempt these windows from the AD. Once we issue this AD, any operator may request approval of an AMOC for GKN window substitution under the provisions of paragraph (l) of this AD. Sufficient data must be submitted to substantiate that the GKN windows would provide an acceptable level of safety. We have not changed the AD in this regard.

Request To Clarify Certain Wording in NPRM (76 FR 19278, April 7, 2011)

The Boeing Company requested that we clarify certain statements in the NPRM (76 FR 19278, April 7, 2011) by changing the wording in paragraph (i) of the NPRM from "Part 3–Window Replacement" to "Work Instructions, Part 3–Window Replacement;" and the wording in paragraph (j) of the NPRM from "Part 2 of the Work Instructions of" to "Work Instructions, Part 2–Window Inspection."

We agree to revise the references for consistency. We have changed the wording in paragraph (i) and paragraph (j) of this AD.

Explanation of Additional Changes Made to This AD

We have revised certain paragraph headers throughout this AD.

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 have determined that these minor changes:

Are consistent with the intent that was proposed in the NPRM (76 FR 19278, April 7, 2011) for correcting the unsafe condition; and

Do not add any additional burden upon the public than was already proposed in the NPRM (76 FR 19278, April 7, 2011).

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 144 airplanes of U.S. registry.

We estimate the following costs to comply with this AD:

Estimated Costs

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Inspection to determine window part numbers; retained from existing AD	4 work-hours X \$85 per hour = \$340	\$0	\$340	\$48,960
Detailed inspection, if necessary; retained from existing AD	1 work-hour X \$85 per hour = \$85	\$0	\$85	\$12,240
Dual pane window replacement; new action	16 work-hours X \$85 per hour = \$1,360	\$44,014	\$45,374	\$6,533,856

We estimate the following costs to do any necessary replacements that would be required based on the results of the inspection. We have no way of determining the number of aircraft that might need these replacements:

On-Condition Costs

Action	Labor cost	Parts cost	Cost per product
Window replacement	16 work-hours X \$85 per hour = \$1,360	\$44,014	\$45,374

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),
- (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 removing airworthiness directive (AD) 2007-15-10, Amendment 39-15139 (72 FR 41438, July 30, 2007; as corrected by 72 FR 53923, September 21, 2007), and adding the following new AD:



2012-02-16 The Boeing Company: Amendment 39-16939; Docket No. FAA-2011-0303; Directorate Identifier 2010-NM-214-AD.

(a) Effective Date

This airworthiness directive (AD) is effective May 15, 2012.

(b) Affected ADs

This AD supersedes AD 2007-15-10, Amendment 39-15139 (72 FR 41438, July 30, 2007; as corrected by 72 FR 53923, September 21, 2007).

(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, 747SR, and 747SP series airplanes, certificated in any category, as identified in Boeing Service Bulletin 747-56A2012, Revision 1, dated August 12, 2010.

(d) Subject

Joint Aircraft System Component (JASC)/Air Transport Association (ATA) of America Code 56, Windows.

(e) Unsafe Condition

This AD was prompted by loss of a No. 3 window in flight, which could result in consequent rapid loss of cabin pressure. We are issuing this AD to detect and correct cracking in the fail-safe interlayer of certain No. 2 and No. 3 glass windows, which could result in loss of the window and consequent rapid loss of cabin pressure. Loss of the window could also result in crew communication difficulties or incapacitation of the crew.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Retained Requirements With New Service Information

This paragraph restates the requirements of paragraph (f) of AD 2007-15-10, Amendment 39-15139 (72 FR 41438, July 30, 2007; as corrected by 72 FR 53923, September 21, 2007), with new service information. Inspect the No. 2 and No. 3 windows on the left and right sides of the airplane to determine their part numbers, and do all the applicable related investigative and corrective actions, by accomplishing all of the actions specified in the Accomplishment Instructions of Boeing Alert Service Bulletin 747-56A2012, dated August 24, 2006; or Boeing Service Bulletin 747-56A2012, Revision 1, dated August 12, 2010; except as required by paragraph (j) of this AD; as applicable. Do

all of these actions at the compliance times specified in Tables 1, 2, and 3 of paragraph 1.E. of Boeing Alert Service Bulletin 747-56A2012, dated August 24, 2006; or Boeing Service Bulletin 747-56A2012, Revision 1, dated August 12, 2010; as applicable; except as provided by paragraph (h) of this AD. A review of airplane maintenance records is acceptable in lieu of the inspection if the part numbers of the windows can be conclusively determined from that review. Repeat the related investigative and corrective actions thereafter at the interval specified in Table 2 or 3 of paragraph 1.E. of Boeing Alert Service Bulletin 747-56A2012, dated August 24, 2006; or Boeing Service Bulletin 747-56A2012, Revision 1, dated August 12, 2010; except as required by paragraph (h) of this AD, as applicable. As of the effective date of this AD, only Boeing Service Bulletin 747-56A2012, Revision 1, dated August 12, 2010, except as required by (j) of this AD, may be used. Replacing a window in accordance with paragraph (i) of this AD terminates the requirements of this paragraph for that window.

(h) Retained Exception to Compliance Times

This paragraph restates the exceptions to the compliance times specified in paragraph (g) of AD 2007-15-10, Amendment 39-15139 (72 FR 41438, July 30, 2007; as corrected by 72 FR 53923, September 21, 2007). Where Tables 1, 2, and 3 of paragraph 1.E. of Boeing Alert Service Bulletin 747-56A2012, dated August 24, 2006, specify counting the compliance time from " * * * after the date on this service bulletin," this AD requires counting the compliance time from September 4, 2007 (the effective date of AD 2007-15-10, Amendment 39-15139 (72 FR 41438, July 30, 2007; as corrected by 72 FR 53923, September 21, 2007)). After replacing a discrepant window with a new window having part number (P/N) 65B27042-(), 65B27043-(), 65B27046-(), or 65B27047-(), do the initial detailed inspection required in paragraph (g) of this AD of the new window at the applicable compliance time: (1) Within 5,500 flight hours after installing P/N 65B27042-() or 65B27043-(), or (2) Within 22,000 flight hours after installing P/N 65B27046-() or 65B27047-().

(i) New Requirements of This AD: Window Replacement

Within 6 years after the effective date of this AD, replace all No. 2 windows having P/N 65B27042-() or 65B27046-() with windows having P/N 141U4821-(), 141U4822-(), or 65B07639-(); and replace all No. 3 windows having P/N 65B27043-() or 65B27047-() with windows having P/N 141U4831-(), 141U4832-(), or 65B07640-(), in accordance with "Work Instructions, Part 3–Window Replacement," of the Accomplishment Instructions of Boeing Service Bulletin 747-56A2012, Revision 1, dated August 12, 2010. Doing this replacement for all windows terminates the actions required by paragraphs (g) and (h) of this AD.

(j) New Requirements of This AD: Non-Clear Damage Definition and Action

Where Step 4.e., "Work Instructions, Part 2–Window Inspection," of the Accomplishment Instructions in Boeing Service Bulletin 747-56A2012, Revision 1, dated August 12, 2010, specifies "non-clear damage" as a criterion for window replacement, this AD defines non-clear damage to be any degradation of the transparency of the window, which would hinder the internal or external detailed inspections for fail-safe interlayer cracks, glass pane cracks and chips, and indications of electrical arcing. Replacement for non-clear damage is required by this AD only if the non-clear damage hinders the inspection for fail-safe interlayer cracks, glass pane cracks and chips, or indications of electrical arcing.

(k) Parts Installation

As of the effective date of this AD, do not install any No. 2 or No. 3 window having P/N 65B27042-(), 65B27043-(), 65B27046-(), or 65B27047-() that is not new or on which the window

flight hours are not known, on any airplanes, unless the actions specified in paragraph (g) of this AD are done.

(l) 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. If sending information directly to the manager of the ACO, send it to the attention of the person identified in the Related Information section of this AD. Information may be emailed 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 Authorization (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.

(4) AMOCs previously approved in accordance with AD 2007-15-10, Amendment 39-15139 (72 FR 41438, July 30, 2007; as corrected by 72 FR 53923, September 21, 2007), are approved as AMOCs for the corresponding provisions of this AD except previous AMOCs approving window replacement that do not specify installing dual structural glass pane windows are not considered approved for corresponding inspection methods required by this AD.

(m) Related Information

For more information about this AD, contact Nathan P. Weigand, Aerospace Engineer, Airframe Branch, ANM-120S, Seattle Aircraft Certification Office (ACO), FAA, 1601 Lind Avenue SW., Renton, Washington 98057-3356; phone: 425-917-6428; fax: 425-917-6590; email: Nathan.P.Weigand@faa.gov.

(n) Material Incorporated by Reference

(1) The Director of the Federal Register approved the incorporation by reference (IBR) under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use the following service information to do the actions required by this AD, unless the AD specifies otherwise.

(3) The following service information was approved for IBR on May 15, 2012.

(i) Boeing Service Bulletin 747-56A2012, Revision 1, dated August 12, 2010.

(4) The following service information was approved for IBR on September 4, 2007 (72 FR 41438, July 30, 2007; as corrected by 72 FR 53923, September 21, 2007).

(i) Boeing Alert Service Bulletin 747-56A2012, dated August 24, 2006.

(5) 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; phone: 206-544-5000, extension 1; fax: 206-766-5680; email: me.boecom@boeing.com; Internet: <https://www.myboeingfleet.com>.

(6) 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.

(7) 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 January 23, 2012.

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