



[4910-13-P]

**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 39**

**[Docket No. FAA-2014-0926; Directorate Identifier 2014-NM-085-AD]**

**RIN 2120-AA64**

**Airworthiness Directives; The Boeing Company Airplanes**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Notice of proposed rulemaking (NPRM).

**SUMMARY:** We propose to adopt a new airworthiness directive (AD) for certain The Boeing Company Model 747-8 and 747-8F airplanes. This proposed AD was prompted by an analysis, which determined that in a limited flight envelope with specific conditions, divergent flutter could occur during a high g-load maneuver in combination with certain system failures. This proposed AD would require replacing the lateral control electronic (LCE) modules, replacing the inboard elevator power control packages (PCPs), installing new external compensators for the PCPs, and revising the maintenance or inspection program. We are proposing this AD to prevent certain system failures from resulting in divergent flutter, and subsequent loss of continued safe flight and landing.

**DATES:** We must receive comments on this proposed AD by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to <http://www.regulations.gov>. Follow the instructions for submitting comments.
- Fax: 202-493-2251.

- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.

- Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this proposed AD, contact Boeing Commercial Airplanes, Attention: Data & Services Management, P. O. Box 3707, MC 2H-65, Seattle, WA 98124-2207; telephone 206-544-5000, extension 1; fax 206-766-5680; Internet <https://www.myboeingfleet.com>. You may view this referenced service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue, SW, Renton, WA. 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> by searching for and locating Docket No. FAA-2014-0926; 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 proposed AD, the regulatory evaluation, any comments received, and other information. The street address for the Docket Office (phone: 800-647-5527) is in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

**FOR FURTHER INFORMATION CONTACT:** Douglas Tsuji, Senior Aerospace Engineer, Systems and Equipment Branch, ANM-130S, Seattle Aircraft Certification Office, FAA, 1601 Lind Avenue SW., Renton, WA 98057-3356; phone: 425-917-6546; fax: 425-917-6590; email: [douglas.tsuji@faa.gov](mailto:douglas.tsuji@faa.gov).

## **SUPPLEMENTARY INFORMATION:**

### **Comments Invited**

We invite you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under the ADDRESSES section. Include “Docket No. FAA-2014-0926; Directorate Identifier 2014-NM-085-AD” at the beginning of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of this proposed AD. We will consider all comments received by the closing date and may amend this proposed AD because of those comments.

We will post all comments we receive, without change, to <http://www.regulations.gov>, including any personal information you provide. We will also post a report summarizing each substantive verbal contact we receive about this proposed AD.

### **Discussion**

It was determined by analysis that, within a limited speed/Mach/altitude envelope and with specific payload and fuel conditions, divergent flutter could occur on Model 747-8 and 747-8F airplanes with 0% tail fuel during a high g-load maneuver (>1.6 g) in combination with any of the following system failures:

- Dual hydraulic failure resulting in a free outboard (OB) aileron, free inboard (IB) elevator, and free OB elevator;
- Dual electrical system failure resulting in both OB ailerons free;
- System failures resulting in a free OB aileron;
- System failures resulting in a free IB elevator; and
- Latent excessive IB elevator freeplay.

We are proposing this AD to prevent certain system failures from resulting in divergent flutter, and subsequent loss of continued safe flight and landing.

### **Relevant Service Information**

We reviewed the following service information. For information on the procedures and compliance times, see this service information at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2014-0926.

- Boeing Alert Service Bulletin 747-27A2506, February 3, 2014.
- Boeing Alert Service Bulletin 747-27A2513, Revision 1, dated July 18, 2014.

We have also reviewed Boeing 747-8/8F Certification Maintenance Requirements (CMRs) Document D011U721-02-03, Revision December 2013, which contains the following tasks in Section G., “CMR Tasks:”

- Item Numbers 27-CMR-10, “Lubricate inboard elevator hinge bearings.”
- Item Number 27-CMR-11, “Functional check of inboard elevator hinge bearing and power control unit rod end bearing freeplay.”

### **FAA’s Determination**

We are proposing this AD because we evaluated all the relevant information and determined the unsafe condition described previously is likely to exist or develop in other products of the same type design.

### **Proposed AD Requirements**

This proposed AD would require accomplishing the actions specified in the service information identified previously.

### **Explanation of Applicability, Compliance Time, and Repetitive Intervals**

The applicability in paragraph (c) and the compliance times and repetitive intervals in paragraph (i) of this proposed AD are based on airplane utilization. Model 747-8 airplanes referred to as Boeing Business Jets (BBJs) are designated as low utilization airplanes and are maintained under a Boeing Manufacturer’s Recommended Program (MRP). The Boeing MRP is limited to airplanes operated less than 1,200 flight hours per calendar year. Therefore, this proposed AD has different implementation task

intervals and repetitive intervals for these low utilization airplanes due to unique operations.

### **Explanation of “RC” Steps in Service Information**

The FAA worked in conjunction with industry, under the Airworthiness Directives Implementation Aviation Rulemaking Committee, to enhance the AD system. One enhancement was a new process for annotating which steps in the service information are required for compliance with an AD. Differentiating these steps from other tasks in the service information is expected to improve an owner’s/operator’s understanding of crucial AD requirements and help provide consistent judgment in AD compliance. The actions specified in the service information described previously include steps that are labeled as RC (required for compliance) because these steps have a direct effect on detecting, preventing, resolving, or eliminating an identified unsafe condition.

As noted in the specified service information, steps labeled as RC must be done to comply with the proposed AD. However, steps that are not labeled as RC are recommended. Those steps that are not labeled as RC may be deviated from, done as part of other actions, or done using accepted methods different from those identified in the service information without obtaining approval of an alternative method of compliance (AMOC), provided the steps labeled as RC can be done and the airplane can be put back in a serviceable condition. Any substitutions or changes to steps labeled as RC will require approval of an AMOC.

### **Costs of Compliance**

We estimate that this proposed AD affects 8 airplanes of U.S. registry.

We estimate the following costs to comply with this proposed AD:

**Estimated costs**

<b>Action</b>	<b>Labor cost</b>	<b>Parts cost</b>	<b>Cost per product</b>	<b>Cost on U.S. operators</b>
Replacement of LCEs	4 work-hours X \$85 per hour = \$340	\$0	\$340	\$2,720
Replacement of IB elevator PCPs and installation of external IB elevator compensators	57 work-hours X \$85 per hour =\$4,845	\$44,894	\$49,739	\$397,912
Revision to maintenance or inspection program	1 work-hour X \$85 per hour = \$85	\$0	\$85	\$680

According to the manufacturer, all of the costs of this proposed AD may be covered under warranty, thereby reducing the cost impact on affected individuals. We do not control warranty coverage for affected individuals. As a result, we have included all costs in our cost estimate.

**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 determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would 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 this proposed 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),
- (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.

### **The Proposed Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 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):

**The Boeing Company:** Docket No. FAA-2014-0926; Directorate Identifier 2014-NM-085-AD.

**(a) Comments Due Date**

We must receive comments by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**(b) Affected ADs**

None.

**(c) Applicability**

This AD applies to The Boeing Company airplanes, certificated in any category, identified in paragraphs (c)(1), (c)(2), and (c)(3) of this AD.

(1) Model 747-8 and 747-8F series airplanes, as identified in Boeing Alert Service Bulletin 747-27A2506, dated February 3, 2014.

(2) Model 747-8 and 747-8F series airplanes, as identified in Boeing Alert Service Bulletin 747-27A2513, Revision 1, dated July 18, 2014.

(3) Model 747-8 series airplanes that are operated less than 1,200 flight hours per calendar year.

**(d) Subject**

Air Transport Association (ATA) of America Code 27, Flight Controls.

**(e) Unsafe Condition**

This AD was prompted by an analysis, which determined that in a limited flight envelope with specific conditions, divergent flutter could occur during a high g-load maneuver in combination with certain system failures. We are issuing this AD to prevent certain system failures from resulting in divergent flutter, and subsequent loss of continued safe flight and landing.

**(f) Compliance**

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

**(g) Replacement of Lateral Control Electronic (LCE) Modules**

For airplanes identified in paragraph (c)(1) of this AD: Within 12 months after the effective date of this AD, replace the LCE modules with new LCE modules having revised software, and do an operational test of the LCE modules, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-27A2506, dated February 3, 2014. If the operational test fails, before further flight, do corrective actions and repeat the operational test and applicable corrective actions until the operational test passes.

**(h) Replacement of Inboard Elevator Power Control Packages and Installation of External Inboard Elevator Compensators**

For airplanes identified in paragraph (c)(2) of this AD: Within 60 months after the effective date of this AD, replace both inboard elevator power control packages (PCPs) with new PCPs that have the internal compensators removed, install two larger external compensators for each PCP, and do an operational test of each inboard elevator PCP, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-27A2513, Revision 1, dated July 18, 2014. If the operational test fails, before further flight, do corrective actions and repeat the operational test and applicable corrective actions until the operational test passes.

**(i) Revision to the Maintenance or Inspection Program**

For all airplanes: Within 90 days after the effective date of this AD, revise the maintenance or inspection program, as applicable, to incorporate Item Numbers 27-CMR-10, "Lubricate inboard elevator hinge bearings," and 27-CMR-11, "Functional check of inboard elevator hinge bearing and power control unit rod end bearing freeplay," of Section G., "CMR Tasks," of the 747-8/8F Certification Maintenance Requirements (CMRs) Document D011U721-02-03, Revision December 2013. The initial compliance times and repetitive intervals for the lubrication and functional check are specified in paragraphs (i)(1) and (i)(2) of this AD.

(1) For airplanes identified in paragraphs (c)(1) and (c)(2) of this AD that are not identified in paragraph (c)(3) of this AD:

(i) The initial compliance time for the lubrication of the inboard elevator hinge bearings is within 18 months after the most recent lubrication. The repetitive lubrication intervals are specified in Item Number 27-CMR-10, "Lubricate inboard elevator hinge bearings," of Section G., "CMR Tasks," of the 747-8/8F Certification Maintenance Requirements (CMRs) Document D011U721-02-03, Revision December 2013.

(ii) The initial compliance time for the functional check of the inboard elevator hinge bearing and power control unit rod end bearing freeplay is within 12 months after the effective date of this AD. The repetitive functional check intervals are specified in Item Number 27-CMR-11, "Functional check of inboard elevator hinge bearing and power control unit rod end bearing freeplay," of Section G., CMR Tasks, of the 747-8/8F Certification Maintenance Requirements, D011U721-02-03, December 2013.

(2) For airplanes identified in paragraph (c)(3) of this AD:

(i) The initial compliance time for the lubrication of the inboard elevator hinge bearings is within 24 months after the most recent lubrication. Repeat the lubrication thereafter at intervals not to exceed 24 months.

(ii) The initial compliance time for the functional check of the inboard elevator hinge bearing and power control unit rod end bearing freeplay is within 36 months after the effective date of this AD. Repeat the functional check thereafter at intervals not to exceed 36 months.

**(j) Parts Installation Prohibition**

As of the effective date of this AD, no person may install an LCE having part number (P/N) CA49253-001 or CA49253-002, or an inboard elevator PCP having P/N 327400-1009, on any airplane.

**(k) Credit for Actions Accomplished Previously**

This paragraph provides credit for the actions required by paragraph (h) of this AD if those actions were performed before the effective date of this AD using Boeing Alert Service Bulletin 747-27A2513, dated February 4, 2014, which is not incorporated by reference in this AD.

**(l) Alternative Methods of Compliance (AMOCs)**

(1) The Manager, Seattle Aircraft Certification Office (ACO), 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 paragraph (m)(1) 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) If the service information contains steps that are labeled as RC (Required for Compliance), those steps must be done to comply with this AD; any steps that are not labeled as RC are recommended. Those steps that are not labeled as RC may be deviated from, done as part of other actions, or done using accepted methods different from those

identified in the specified service information without obtaining approval of an AMOC, provided the steps labeled as RC can be done and the airplane can be put back in a serviceable condition. Any substitutions or changes to steps labeled as RC require approval of an AMOC.

**(m) Related Information**

(1) For more information about this AD, contact Doug Tsuji, Senior Aerospace Engineer, Systems and Equipment Branch, ANM-130S, Seattle Aircraft Certification Office, FAA, 1601 Lind Avenue SW., Renton, WA 98057-3356; phone: 425-917-6546; fax: 425-917-6590; email: douglas.tsuji@faa.gov.

(2) For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Data & Services Management, P. O. Box 3707, MC 2H-65, Seattle, WA 98124-2207; telephone 206-544-5000, extension 1; fax 206-766-5680; Internet <https://www.myboeingfleet.com>. You may view this referenced service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue, SW., Renton, WA. For information on the availability of this material at the FAA, call 425-227-1221.

Issued in Renton, Washington, on December 10, 2014.

Jeffrey E. Duven,  
Manager,  
Transport Airplane Directorate,  
Aircraft Certification Service.

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