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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. FAA-2010-0856; Directorate Identifier 2010-NM-117-AD; Amendment 39-17224; AD 2012-21-08]**

**RIN 2120-AA64**

#### **Airworthiness Directives; The Boeing Company Airplanes**

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

**ACTION:** Final rule.

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**SUMMARY:** We are superseding an existing airworthiness directive (AD) for certain The Boeing Company Model 737-600, -700, -700C, -800, and -900 series airplanes. That AD currently requires installing and testing an updated version of the operational program software (OPS) of the flight control computers (FCCs). This new AD requires an inspection for part numbers of the operational program software of the flight control computers, and corrective actions if necessary. This AD was prompted by reports of undetected erroneous output from a single radio altimeter channel, which resulted in premature autothrottle retard during approach. We are issuing this AD to detect and correct an unsafe condition associated with erroneous output from a radio altimeter channel, which could result in premature autothrottle landing flare retard and the loss of automatic speed control, and consequent loss of control of the airplane.

**DATES:** This AD is effective November 27, 2012.

The Director of the Federal Register approved the incorporation by reference of certain publications listed in the AD as of November 27, 2012.

The Director of the Federal Register approved the incorporation by reference of a certain other publication listed in this AD as of May 12, 2005 (70 FR 17603, April 7, 2005).

**ADDRESSES:** 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 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:** Gregg Nesemeier, Senior Aerospace Engineer, Systems and Equipment Branch, ANM-130S, FAA, Seattle Aircraft Certification Office (ACO), 1601 Lind Avenue SW., Renton, Washington 98057-3356; phone: (425) 917-6479; fax: (425) 917-6590; email: [gregg.nesemeier@faa.gov](mailto:gregg.nesemeier@faa.gov).

## **SUPPLEMENTARY INFORMATION:**

### **Discussion**

We issued a supplemental Notice of Proposed Rulemaking (SNPRM) to amend 14 CFR part 39 to supersede airworthiness directive (AD) 2005-07-20, Amendment 39-14045 (70 FR 17603, April 7, 2005). That AD applied to the specified products. That SNPRM published in the Federal Register on May 30, 2012 (77 FR 31758). The original NPRM (75 FR 57885, September 23, 2010) proposed to require inspecting for part numbers of the OPS of the FCCs, and doing corrective actions if necessary. The SNPRM contained the same requirements as the original NPRM, but also proposed to supersede an existing AD to require new software.

### **Comments**

We gave the public the opportunity to participate in developing this AD. The following presents the comments received on the SNPRM (77 FR 31758, May 30, 2012) and the FAA's response to each comment.

### **Support for the SNPRM (77 FR 31758, May 30, 2012)**

Boeing supports the SNPRM (77 FR 31758, May 30, 2012).

### **Requests To Use Alternative Service Information**

Europe Airpost and Southwest Airlines requested that we revise the SNPRM (77 FR 31758, May 30, 2012) to include Boeing Alert Service Bulletin 737-22A1224, dated May 18, 2012, as an alternative method of compliance (AMOC) in the SNPRM.

Europe Airpost explained that Boeing Alert Service Bulletin 737-22A1224, dated May 18, 2012, takes into account the latest version (and later versions) of the OPS part number (P/N) 2274-COL-AC1-07 (P6.0 version number) and OPS software of the FCC.

Southwest Airlines explained that Boeing Alert Service Bulletin 737-22A1224, dated May 18, 2012, requires installation of FCC software P/N 2274-COL-AC1-07, and that its latest Model 737-800 deliveries have FCC software P/N 2274-COL-AC1-07 installed. Southwest Airlines stated that it has begun installing this version of the FCC software into all its airplanes, using Boeing Alert Service Bulletin 737-22A1224, dated May 18, 2012. Southwest Airlines also reasoned that Boeing Alert Service Bulletin 737-22A1224, dated May 18, 2012, has already been approved as an AMOC for AD 2005-07-20, Amendment 39-14045 (70 FR 17603, April 7, 2005).

We agree with the commenters' requests. We agree to allow use of Boeing Alert Service Bulletin 737-22A1224, dated May 18, 2012, for the installation actions specified in paragraphs (h)(1)(ii) and (h)(2) of this AD, although the compliance time for this final rule remains the same as proposed: Within 3 months after the effective date of this AD. We have reformatted and revised paragraphs (h)(1) and (h)(2) of this final rule accordingly.

### **Request To Remove the Phrase "Fully Interchangeable"**

Paragraph (h)(1) of the SNPRM (77 FR 31758, May 30, 2012) specified installation of certain software that is "fully interchangeable" with the software specified in table 2 of the Accomplishment Instructions of Boeing Alert Service Bulletin 737-22A1211, dated April 13, 2010. Southwest Airlines requested that we revise the SNPRM by removing the phrase "fully interchangeable" from paragraph (h)(1) of the SNPRM and allowing, as acceptable in paragraphs (h)(1) and (h)(2) of the SNPRM, "subsequent software versions that have been approved by the Boeing Commercial Airplanes Organization Designation Authorization (ODA) after April 13, 2010." Southwest Airlines explained that Section 2.C.2., Note (b), of Boeing Alert Service Bulletin 737-22A1211, dated April 13, 2010, which says, "Do not install previous versions of this software after installation of the new software part number," could be conflicting with the phrase "fully interchangeable."

We partially agree with the commenter. We agree that previous versions of the software may not be reinstalled after installation of the version specified in this service information because some previous versions contain unsafe conditions. The SNPRM (77 FR 31758, May 30, 2012) only allowed installation of software approved after April 13, 2010, by the Boeing Commercial Airplanes ODA. However, for clarity, we have removed the phrase "fully interchangeable" from this final rule.

Although we agree with the intent of the commenter's other suggested changes, we disagree with the proposed wording and find that further clarification is necessary. We have removed the reference to installing later-approved software in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 737-22A1211, dated April 13, 2010, because that service bulletin only specifies to install FCC OPS software P/N 2276-COL-AC1-05 or P/N 2275-COL-AC1-06. Also, as stated previously, FCC OPS software P/N 2274-COL-AC1-07 may be installed in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 737-22A1224, dated May 18, 2012.

Therefore, in this final rule, the April 13, 2010, date for later-approved software has been changed to May 18, 2012, to remove redundancy and confusion. We have also added the Manager, Seattle Aircraft Certification Office (ACO), FAA, and the Manager, Boeing Aviation Safety Oversight Office (BASOO), FAA, as additional approval authorities for later software versions. We have revised paragraph (h) of the final rule and added a new paragraph (i) to the final rule to reflect these changes.

### **Removed Paragraph Identifier of Note**

We have removed the "Note 1" designation from Note 1 of the SNPRM (77 FR 31758, May 30, 2012) and we have included that text in paragraph (c) of this AD.

### **Added AMOC Delegation**

We have added new paragraph (j)(3) to this AD to allow delegation of repair to the Boeing Commercial Airplanes ODA. We have revised subsequent designated paragraph identifiers as appropriate.

## 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-and minor editorial changes. We have determined that these minor changes:

- Are consistent with the intent that was proposed in the SNPRM (77 FR 31758, May 30, 2012) for correcting the unsafe condition; and
- Do not add any additional burden upon the public than was already proposed in the SNPRM (77 FR 31758, May 30, 2012).

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

<b>Estimated Costs</b>				
<b>Action</b>	<b>Labor cost</b>	<b>Parts cost</b>	<b>Cost per product</b>	<b>Cost on U.S. operators</b>
Installation [retained actions from existing AD 2005-07-20, Amendment 39-14045 (70 FR 17603, April 7, 2005)].	2 work-hours × \$85 per hour = \$170.	\$0	\$170	\$35,190
Repetitive Inspection	1 work-hour × \$85 per hour = \$85 per inspection cycle.	N/A	\$85 per inspection cycle	\$17,595 per inspection cycle

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

<b>On-condition Costs</b>			
<b>Action</b>	<b>Labor cost</b>	<b>Parts cost</b>	<b>Cost per product</b>
Installation	1 work-hour × \$85 per hour = \$85	\$0	\$85

According to the manufacturer, some of the costs of this 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**

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) 2005-07-20, Amendment 39-14045 (70 FR 17603, April 7, 2005), and adding the following new AD:



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**2012-21-08 The Boeing Company:** Amendment 39-17224; Docket No. FAA-2010-0856; Directorate Identifier 2010-NM-117-AD.

**(a) Effective Date**

This AD is effective November 27, 2012.

**(b) Affected ADs**

This AD supersedes AD 2005-07-20, Amendment 39-14045 (70 FR 17603, April 7, 2005).

**(c) Applicability**

This AD applies to The Boeing Company Model 737-600, -700, -700C, -800, and -900 series airplanes, certificated in any category; delivered with the Rockwell Collins Enhanced Digital Flight Control System (EDFCS), as identified in the variable number table in Section 1.A.1., Effectivity, of Boeing Alert Service Bulletin 737-22A1211, dated April 13, 2010. This AD is applicable to all airplanes listed in the variable number table, and is not defined by the "Group 1" description in Section 1.A. of Boeing Alert Service Bulletin 737-22A1211, dated April 13, 2010.

**(d) Subject**

Joint Aircraft System Component (JASC)/Air Transport Association (ATA) of America Code 22, Auto Flight.

**(e) Unsafe Condition**

This AD was prompted by reports of undetected erroneous output from a single radio altimeter channel, which resulted in premature autothrottle retard during approach. We are issuing this AD to detect and correct an unsafe condition associated with erroneous output from a radio altimeter channel, which could result in premature autothrottle landing flare retard and the loss of automatic speed control, and consequent loss of control of the airplane.

**(f) Compliance**

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

**(g) Retained Software Installation and Test**

This paragraph restates the requirements of paragraph (f) of AD 2005-07-20, Amendment 39-14045 (70 FR 17603, April 7, 2005). For airplanes identified in Boeing Alert Service Bulletin 737-22A1164, dated May 20, 2004: Within 12 months after May 12, 2005 (the effective date of AD 2005-07-20), install and test an updated version of the operational program software (OPS) of the EDFCS flight control computers (FCCs), in accordance with Boeing Alert Service Bulletin 737-22A1164, dated May 20, 2004. Installing software as required by paragraph (h)(1)(i) or (h)(1)(ii) of this AD, or

verifying that the software is installed as specified by paragraph (h)(2) of this AD, or doing the actions specified in paragraph (i) of this AD, terminates the requirements of this paragraph.

### **(h) New Requirements**

Within 3 months after the effective date of this AD: Inspect to determine the part number of the OPS of the FCCs, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 737-22A1211, dated April 13, 2010. Installing software as required by paragraph (h)(1)(i) or (h)(1)(ii) of this AD, or verifying that the software is installed as specified by paragraph (h)(2) of this AD, terminates the requirements of paragraph (g) of this AD. Doing the actions specified in paragraph (i) of this AD, terminates the requirements of this paragraph.

(1) For any OPS having a part number identified in table 1 of the Accomplishment Instructions of Boeing Alert Service Bulletin 737-22A1211, dated April 13, 2010: Before further flight, do the actions specified in paragraph (h)(1)(i) or (h)(1)(ii), as applicable.

(i) Install software identified in table 2 of the Accomplishment Instructions of Boeing Alert Service Bulletin 737-22A1211, dated April 13, 2010, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 737-22A1211, dated April 13, 2010.

(ii) Install software identified in table 2 of the Accomplishment Instructions of Boeing Alert Service Bulletin 737-22A1224, dated May 18, 2012, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 737-22A1224, dated May 18, 2012.

(2) For any OPS having a part number identified in table 2 of the Accomplishment Instructions of Boeing Alert Service Bulletin 737-22A1211, dated April 13, 2010; or in table 2 of the Accomplishment Instructions of Boeing Alert Service Bulletin 737-22A1224, dated May 18, 2012: No further action is required by this paragraph.

### **(i) New Optional Software Installation**

Installing a version of the FCC OPS approved after May 18, 2012 (the issue date of Boeing Alert Service Bulletin 737-22A1224) terminates the requirements of paragraphs (g) and (h) of this AD, provided that the conditions specified in paragraphs (i)(1) and (i)(2) of this AD are met.

(1) The version of the FCC OPS must be approved by the Manager, Seattle Aircraft Certification Office (ACO), FAA; the Manager, Boeing Aviation Safety Oversight Office (BASOO), FAA; or the Boeing Commercial Airplanes Organization Designation Authorization (ODA).

(2) The installation must be done in accordance with a method approved by the Manager, Seattle ACO, FAA; the Manager, BASOO, FAA; or the Boeing Commercial Airplanes ODA.

### **(j) 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 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 approved previously in accordance with AD 2005-07-20, Amendment 39-14045 (70 FR 17603, April 7, 2005), are approved as AMOCs for the corresponding provisions of this AD.

**(k) Related Information**

For more information about this AD, contact Gregg Nesemeier, Senior Aerospace Engineer, Systems and Equipment Branch, ANM-130S, FAA, Seattle Aircraft Certification Office (ACO), 1601 Lind Avenue SW., Renton, Washington 98057-3356; phone: (425) 917-6479; fax: (425) 917-6590; email: [gregg.nesemeier@faa.gov](mailto:gregg.nesemeier@faa.gov).

**(l) Material Incorporated by Reference**

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

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

(3) The following service information was approved for IBR on November 27, 2012.

(i) Boeing Alert Service Bulletin 737-22A1211, dated April 13, 2010.

(ii) Boeing Alert Service Bulletin 737-22A1224, dated May 18, 2012.

(4) The following service information was approved for IBR on May 12, 2005 (70 FR 17603, April 7, 2005).

(i) Boeing Alert Service Bulletin 737-22A1164, dated May 20, 2004.

(ii) Reserved.

(5) For The Boeing Company 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>.

(6) You may view this service information at 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 view this service information that is incorporated by reference 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 October 5, 2012.

Ali Bahrami,  
Manager, Transport Airplane Directorate,  
Aircraft Certification Service.