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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

**[Docket No. FAA-2010-0853; Directorate Identifier 2010-NM-116-AD;
Amendment 39-16720; AD 2011-12-13]**

RIN 2120-AA64

Airworthiness Directives; The Boeing Company Model 737-600, -700, -700C, -800, -900, and -900ER Series Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: We are adopting a new airworthiness directive (AD) for the products listed above. This AD requires repetitive testing of the stabilizer takeoff warning switches, and corrective actions if necessary. This AD was prompted by reports that the warning horn did not sound during the takeoff warning system test of the S132 "nose up stab takeoff warning switch." We are issuing this AD to detect and correct a takeoff warning system switch failure, which could reduce the ability of the flightcrew to maintain the safe flight and landing of the airplane.

DATES: This AD is effective July 22, 2011.

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in the AD as of July 22, 2011.

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; e-mail 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: Jeffrey W. Palmer, Aerospace Engineer, Systems and Equipment Branch, ANM-130S, FAA, Seattle Aircraft Certification Office (ACO), 1601 Lind Avenue, SW., Renton, Washington 98057-3356; phone: 425-917-6472; fax: 425-917-6590; e-mail: jeffrey.w.palmer@faa.gov.

SUPPLEMENTARY INFORMATION:

Discussion

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to include an airworthiness directive (AD) that would apply to the specified products. That NPRM published in the Federal Register on September 14, 2010 (75 FR 55691). That NPRM proposed to require repetitive testing of the stabilizer takeoff warning switches, and corrective actions if necessary.

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

Continental Airlines, Delta Air Lines, and the Air Line Pilots Association (ALPA), International, support the NPRM.

Requests To Revise Costs of Compliance Section of the NPRM

American Airlines (AA) requested that we revise the Cost of Compliance section of the NPRM to show a more accurate cost to operators. Delta Air Lines noted that the actual cost to operators will be more than what is described in the Costs of Compliance section given in the NPRM.

AA explained that the Costs of Compliance estimate provided in the NPRM specifies 1 work-hour per product at an average labor rate of \$85 per hour. However, AA stated that Boeing Service Bulletin 737-27-1289, dated April 7, 2010, estimates 4.25 hours to accomplish the test of the switches and an additional 2.25 hours each to replace the switches. AA asserted that Boeing Service Bulletin 737-27-1289, dated April 7, 2010, estimates a cost to operators of \$361.25 to \$743.75 per product.

We agree to provide clarification of the Costs of Compliance section in this final rule. Since the issuance of the NPRM, Boeing has issued Service Bulletin Information Notice 737-27-1289 IN 02, dated September 27, 2010, which provides revised work-hours for testing (1 work-hour) and the on-condition replacement (2 work-hours) of the switches. We have revised the Costs of Compliance section of this final rule to reflect the latest cost information provided by the manufacturer.

Request To Add Terminating Action for Repetitive Inspections

ALPA requested that we revise the NPRM to include a terminating action for the repetitive inspections proposed by the NPRM. AA stated that the lack of a terminating action for the repetitive inspections proposed by the NPRM places pressure on the operator because it is required to continue the repetitive inspections at intervals of 750 flight cycles for the affected airplanes.

We disagree to include a terminating action in the final rule. The manufacturer has advised that extensive modifications would be required to eliminate the repetitive inspections. No terminating action is currently available. However, if a modification that addresses the unsafe condition addressed

by this AD is developed, approved, and available, operators could request approval of an alternative method of compliance (AMOC) to this AD for doing that modification. No change has been made to the final rule in regard to this issue.

Request To Allow Repair of Switch Before Replacing

AA questioned why operators could not attempt to repair a failed switch before being required to replace the failed switch. AA explained that the NPRM and Boeing Service Bulletin 737-27-1289, dated April 7, 2010, require the switch to be replaced if it fails the test. AA reasoned that the switches are adjustable per "AMM 31-51-02–Stabilizer Takeoff Warning Switches–Adjustment/Test."

From these statements, we infer that AA is requesting that we revise the NPRM to allow operators to repair a failed switch. We disagree. The intent of the test specified in paragraph (g) of the final rule is to find and, if necessary, replace switches that fail to electrically open or close properly regardless of adjustment [within the switch's allowable range of adjustment], not switches that are simply out of adjustment. For switches that are out of adjustment, it is acceptable to attempt to adjust a switch that fails the test, prior to replacing the switch. However, the allowable range of adjustment is limited. If the switch continues to fail the test within the switch's allowable range of adjustment, it must be replaced. To preclude test failures due to an out-of-adjustment switch, the manufacturer recommends doing the test with stabilizer trim set at least one unit outside the green band. Doing the test according to the manufacturer's recommendation will ensure that any test failures are due to a malfunctioning switch, not due to a switch that is simply out of adjustment. No change has been made to the final rule in regard to this issue.

Request To Allow Additional Replacement Switch

Delta Air Lines (the commenter) requested that we revise the NPRM to allow switch part number (P/N) 35EN27-4 to be an additional acceptable replacement switch for failed switches. The commenter explained that paragraph (h) of the NPRM specifies that a stabilizer takeoff warning switch which fails the required test must be replaced with a new switch prior to further flight, in accordance with Boeing Service Bulletin 737-27-1289, dated April 7, 2010. The commenter further explained that "Section 3.B 'Work Instructions' " of this service information does not specify replacement switches by part number. The commenter also explained that replacement switch part numbers are found in "Section 2.C.2 'Parts and Materials Supplied by the Operator' of the SB," and that this section lists only three part numbers. The commenter expressed that it is aware of an additional switch, which is not listed in Boeing Service Bulletin 737-27-1289, dated April 7, 2010.

We do not agree to allow switch P/N 35EN27-4 to be an additional acceptable replacement switch. This part has not been validated as an acceptable replacement part at this time. The manufacturer is currently assessing the acceptability of this part as a replacement part and might revise the service information at a later time to include this part number. If this part number is found to be acceptable at a later date, its use might be approved as an AMOC to this AD. No change has been made to the final rule in regard to this issue.

Effect of This AD on AD 88-22-09

Paragraph (b) ("Affected ADs") of this AD has been revised to note that this AD affects AD 88-22-09, Amendment 39-6054 (Docket No. 88-NM-132-AD; 53 FR 41313, October 21, 1988). In addition, we have revised paragraph (g) of this AD to state that accomplishment of the repetitive tests required by this AD terminates the operational and functional checks of the takeoff configuration warning system required by paragraph A., required item 3 ("Elevator out of Green Band switches") of AD 88-22-09 for the airplanes affected by this new AD.

Conclusion

We reviewed the relevant data, considered the comments received, and determined that air safety and the public interest require adopting the AD as proposed.

Costs of Compliance

We estimate that this AD would affect 963 airplanes of U.S. registry. We also estimate that it would take about 1 work-hour per product to comply with this AD. The average labor rate is \$85 per work-hour. Based on these figures, we estimate the cost of this AD to the U.S. operators to be \$81,855, or \$85 per product, per inspection cycle.

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

On-Condition Costs

Action	Labor cost	Parts cost	Cost per product
2 work-hours X \$85 per hour = \$170	Replacement	\$0	\$170

According to the manufacturer, some 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

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):



2011-12-13 The Boeing Company: Amendment 39-16720; Docket No. FAA-2010-0853; Directorate Identifier 2010-NM-116-AD.

Effective Date

(a) This AD is effective July 22, 2011.

Affected ADs

(b) This AD affects AD 88-22-09, Amendment 39-6054 (Docket No. 88-NM-132-AD). This AD does not supersede the requirements of AD 88-22-09.

Applicability

(c) This AD applies to The Boeing Company Model 737-600, -700, -700C, -800, -900, and -900ER series airplanes, certificated in any category; as identified in Boeing Service Bulletin 737-27-1289, dated April 7, 2010.

Subject

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

Unsafe Condition

(e) This AD was prompted by reports that the warning horn did not sound during the takeoff warning system test of the S132 "nose up stab takeoff warning switch." The Federal Aviation Administration is issuing this AD to detect and correct a takeoff warning system switch failure, which could reduce the ability of the flightcrew to maintain the safe flight and landing of the airplane.

Compliance

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

Test

(g) Within 6 months after the effective date of this AD, test the stabilizer takeoff warning switches, in accordance with the Accomplishment Instructions of Boeing Service Bulletin 737-27-1289, dated April 7, 2010. Repeat the test thereafter at intervals not to exceed 750 flight hours. Accomplishment of the repetitive tests required by paragraph (g) of this AD terminates the operational and functional checks of the takeoff configuration warning system required by paragraph A., required item 3 ("Elevator out of Green Band switches") of AD 88-22-09.

Replacement and Re-test

(h) If any stabilizer takeoff warning switch fails the test required in paragraph (g) or (h) of this AD, replace the stabilizer takeoff warning switch with a new switch and test the new switch before further flight, in accordance with the Accomplishment Instructions of Boeing Service Bulletin 737-27-1289, dated April 7, 2010. Within 750 flight hours after replacement of any switch, test the replaced switch, in accordance with the Accomplishment Instructions of Boeing Service Bulletin 737-27-1289, dated April 7, 2010; and repeat this test on the replaced switch thereafter at intervals not to exceed 750 flight hours.

Special Flight Permit

(i) Special flight permits, as described in Section 21.197 and Section 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199), are not allowed.

Alternative Methods of Compliance (AMOCs)

(j)(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 e-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.

Related Information

(k) For more information about this AD, contact Jeffrey W. Palmer, Aerospace Engineer, Systems and Equipment Branch, ANM-130S, FAA, Seattle Aircraft Certification Office (ACO), 1601 Lind Avenue, SW., Renton, Washington 98057-3356; phone: 425-917-6472; fax: 425-917-6590; e-mail: jeffrey.w.palmer@faa.gov.

Material Incorporated by Reference

(1) You must use Boeing Service Bulletin 737-27-1289, dated April 7, 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 Boeing Service Bulletin 737-27-1289, dated April 7, 2010, 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; phone: 206-544-5000, extension 1; fax: 206-766-5680; e-mail: 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 June 3, 2011.
Ali Bahrami,
Manager, Transport Airplane Directorate,
Aircraft Certification Service.