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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2020-0103; Product Identifier 2019-NM-149-AD; Amendment 39-21718; AD 2021-18-17]

RIN 2120-AA64

Airworthiness Directives; The Boeing Company Airplanes

AGENCY:

Federal Aviation Administration (FAA), DOT.

ACTION:

Final rule.

SUMMARY:

The FAA is superseding Airworthiness Directive (AD) 2012-21-08, which applied to certain The Boeing Company Model 737-600, -700, -700C, -800, and -900 series airplanes. AD 2012-21-08 required inspecting for part numbers of the operational program software (OPS) of the flight control computers (FCCs) and installing and testing an updated version of the FCC OPS. This AD was prompted by reports that during autopilot coupled instrument landing system (ILS) approaches, the airplane did not capture or track the glideslope correctly. This AD retains the requirement to inspect for part numbers of the OPS of the FCCs, and adds a new requirement to update the version of the FCC OPS if necessary. This AD also expands the applicability to include The Boeing Company Model 737-900ER series airplanes. The FAA is issuing this AD to address the unsafe condition on these products.

DATES:

This AD is effective December 20, 2021.

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of December 20, 2021.

The Director of the Federal Register approved the incorporation by reference of certain other publications listed in this AD as of November 27, 2012 ([77 FR 64711](#), October 23, 2012).

ADDRESSES:

For service information identified in this final rule, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminister Blvd., MC 110-SK57, Seal Beach, CA 90740-5600; telephone 562-797-1717; internet <https://www.myboeingfleet.com>. You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206-231-3195. It is also available at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2020-0103.

Examining the AD Docket

You may examine the AD docket at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2020-0103; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this final rule, any comments received, and other information. The address for Docket Operations is 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:

Michael J. Tucker, Aerospace Engineer, Systems and Equipment Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206-231-3974; email: michael.j.tucker@faa.gov.

SUPPLEMENTARY INFORMATION:

Background

The FAA issued a notice of proposed rulemaking (NPRM) to amend [14 CFR part 39](#) to supersede AD 2012-21-08, Amendment 39-17224 ([77 FR 64711](#), October 23, 2012) (AD 2012-21-08). AD 2012-21-08 applied to certain The Boeing Company Model 737-600, -700, -700C, -800,

and -900 series airplanes. The NPRM published in the **Federal Register** on February 27, 2020 ([85 FR 11319](#)). The NPRM was prompted by reports that during autopilot coupled ILS approaches, the airplane did not capture or track the glideslope correctly. In the NPRM, the FAA proposed to continue to require inspecting for part numbers of the OPS of the FCCs, and to add a new requirement to update the version of the FCC OPS if necessary. The NPRM also proposed to expand the applicability to include The Boeing Company Model 737-900ER series airplanes. The FAA is issuing this AD to address the glideslope capture problem, which could allow the airplane to descend below the glideslope beam and result in controlled flight into terrain on airplanes that do not have the upgraded FCC OPS installed.

Discussion of Final Airworthiness Directive

Comments

The FAA received comments from two commenters, including Air Line Pilots Association, International (ALPA) and United Airlines, who supported the NPRM without change.

The FAA received additional comments from three commenters, including Boeing, Alaska Airlines, and Aviation Partners Boeing. The following presents the comments received on the NPRM and the FAA's response to each comment.

Effect of Winglets on Accomplishment of the Proposed Actions

Aviation Partners Boeing stated that the installation of winglets per Supplemental Type Certificate (STC) ST00830SE does not affect the actions specified in the NPRM.

The FAA agrees with the commenter that STC ST00830SE does not affect the accomplishment of the manufacturer's service instructions. Therefore, the installation of STC ST00830SE does not affect the ability to accomplish the actions required by this AD. The FAA has not changed this AD in this regard.

Request To Require Removal of Certain Software Versions

Alaska Airlines requested that the proposed AD be revised to require removing a particular version of the software or earlier versions, rather than require installing a particular version or later versions. The commenter asserted that Rockwell Collins software versions 9.0 and earlier are the cause of the unsafe condition.

The FAA does not agree with the suggested change to the requirements of this AD. Such a change would require operators who have certain acceptable earlier software to install different software unnecessarily. Paragraph (k) of this AD specifically prohibits installing Rockwell Collins FCC OPS software versions P1.1, P2.0, P3.0, P8.0, and P9.0. The unsafe conditions identified in AD 2012-21-08 and in this AD only exist with Rockwell Collins software versions P1.1, P2.0, P3.0, P8.0, and P9.0.

Paragraph (k) of the proposed AD had inadvertently referred to software version "P1.0" as one of the affected versions that was prohibited for installation. Boeing Alert Service Bulletin 737-22A1211 correctly identifies this affected software version as "P1.1." The FAA has corrected this reference as version "P1.1" in paragraph (k) of this AD.

Request To Require Latest Service Information

Boeing requested that the FAA revise the NPRM to refer to Boeing Alert Requirements Bulletin 737-22A1322 RB, Revision 1, dated January 28, 2021, rather than Boeing Alert Requirements Bulletin 737-22A1322 RB, dated November 21, 2018. Boeing noted that Boeing Alert Requirements Bulletin 737-22A1322 RB, Revision 1, dated January 28, 2021, is the most current revision and has the correct FAA-only approval statement for The Boeing Company Model 737-700C airplanes.

The FAA agrees with the request. The changes in Revision 1 are non-substantive and do not affect the requirements as proposed in the NPRM for this AD. Therefore, the FAA has revised this final rule to refer to Boeing Alert Requirements Bulletin 737-22A1322 RB, Revision 1, dated January 28, 2021, as the appropriate source of service information for the newly required software installation. The FAA also has added paragraph (l) of this AD to provide credit for certain actions that were performed before the effective date of this AD using Boeing Alert Requirements Bulletin 737-22A1322 RB, dated November 21, 2018. Subsequent paragraphs have been re-identified accordingly.

Conclusion

The FAA reviewed the relevant data, considered any comments received, and determined that air safety requires adopting this AD as proposed. Except for minor editorial changes, and any other changes described previously, this AD is adopted as proposed in the NPRM. None of the changes will increase the economic burden on any operator.

Related Service Information Under [1 CFR Part 51](#)

The FAA reviewed Boeing Alert Requirements Bulletin 737-22A1322 RB, Revision 1, dated January 28, 2021. The service information describes procedures for installing and testing an updated version of the FCC OPS.

This AD also requires Boeing Alert Service Bulletin 737-22A1211, dated April 13, 2010; and Boeing Alert Service Bulletin 737-22A1224, dated May 18, 2012; which the Director of the Federal Register approved for incorporation by reference as of November 27, 2012 ([77 FR 64711](#), October 23, 2012).

This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in **ADDRESSES**.

Costs of Compliance

The FAA estimates that this AD affects 520 airplanes of U.S. registry. The FAA estimates the following costs to comply with this AD:

Estimated Costs

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Inspection and installation (retained actions from AD 2012-21-08)	3 work-hours × \$85 per hour = \$255 per inspection	\$0	\$255	\$52,785 (based on 207 affected airplanes).
Part number inspection (new action)	1 work-hour × \$85 per hour = \$85	0	85	\$44,200.

The FAA estimates the following costs to do any necessary on-condition actions that would be required. The FAA has no way of determining the number of aircraft that might need these on-condition actions:

On-Condition Costs

Action	Labor cost	Parts cost	Cost per product
Install upgraded software	1 work-hour × \$85 per hour = \$85	\$0	\$85

According to the manufacturer, all of the costs of this AD may be covered under warranty, thereby reducing the cost impact on affected operators. The FAA does not control warranty coverage for affected operators. As a result, the FAA has included all costs in this 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.

The FAA is 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) Will not affect intrastate aviation in Alaska, and
- (3) 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 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:

- a. Removing Airworthiness Directive (AD) 2012-21-08, Amendment 39-17224 ([77 FR 64711](#), October 23, 2012); and

b. Adding the following new AD:

2021-18-17 The Boeing Company: Amendment 39-21718; Docket No. FAA-2020-0103; Product Identifier 2019-NM-149-AD.

(a) Effective Date

This airworthiness directive (AD) is effective December 20, 2021.

(b) Affected ADs

This AD replaces AD 2012-21-08, Amendment 39-17224 ([77 FR 64711](#), October 23, 2012) (AD 2012-21-08).

(c) Applicability

This AD applies to all The Boeing Company Model 737-600, -700, -700C, -800, -900, and -900ER series airplanes, certificated in any category.

(d) Subject

Air Transport Association (ATA) of America Code 22, Auto flight.

(e) Unsafe Condition

This AD was prompted by reports that during autopilot coupled instrument landing system (ILS) approaches, the airplane did not capture or track the glideslope correctly. The FAA is issuing this AD to address this condition, which could allow the airplane to descend below the glideslope beam and result in controlled flight into terrain.

(f) Compliance

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

(g) Retained Part Numbers Inspection, With Revised Paragraph References and Removed Terminating Action

This paragraph restates the requirements of paragraph (h) of AD 2012-21-08, with revised paragraph references and removed terminating action. For 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, and not defined by the "Group 1" description in Section 1.A. of Boeing Alert Service Bulletin 737-22A1211, dated April 13, 2010: Within 3 months after November 27, 2012 (the effective date of AD 2012-21-08), inspect to determine the part number of the operational program software (OPS) of the flight control computers (FCCs), in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 737-22A1211, dated April 13, 2010, and install the software as required by paragraph (g)(1) of this AD, or verify that the software is installed as specified by paragraph (g)(2) of this AD, as applicable.

(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 (g)(1)(i) or (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 737-22A1211, dated April 13, 2010.

(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.

(h) Retained Optional Software Installation, With Revised Paragraph References

This paragraph restates the requirements of paragraph (i) of AD 2012-21-08, with revised paragraph references. 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 paragraph (g) of this AD, provided that the conditions specified in paragraphs (h)(1) and (2) of this AD are met.

(1) The version of the FCC OPS must be approved by the Manager, Seattle ACO Branch, FAA; the Manager, Boeing Aviation Safety Oversight Office (BASOO), FAA; or The Boeing Company Organization Designation Authorization (ODA). If approved by the ODA, the approval must include the ODA-authorized signature.

(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 Company ODA. If approved by the ODA, the approval must include the ODA-authorized signature.

(i) New Requirement of This AD: Inspection

For all airplanes: Within 12 months after the effective date of this AD, inspect to determine the FCC OPS vendor and version installed on FCC A and FCC B. A review of airplane maintenance records is acceptable in lieu of this inspection if the FCC OPS vendor and version can be conclusively determined from that review.

(j) New Requirement of This AD: Software Installation

(1) For airplanes equipped with Rockwell Collins FCCs with FCC OPS version P8.0 or P9.0 software: Within 12 months after the effective date of this AD, do all applicable actions identified in, and in accordance with, the Accomplishment Instructions of Boeing Alert Requirements Bulletin 737-22A1322 RB, Revision 1, dated January 28, 2021.

Note 1 to paragraph (j)(1): Guidance for accomplishing the actions required by paragraph (j)(1) of this AD can be found in Boeing Alert Service Bulletin 737-22A1322, Revision 1, dated January 28, 2021, which is referred to in Boeing Alert Requirements Bulletin 737-22A1322 RB, Revision 1, dated January 28, 2021.

(2) For airplanes not equipped with Rockwell Collins FCCs with FCC OPS version P8.0 or P9.0 software: No further action is required by this paragraph.

(k) New Requirement of This AD: Parts Installation Prohibition

For all airplanes: As of the effective date of this AD, no person may install Rockwell Collins FCC OPS software version P1.1, P2.0, P3.0, P8.0, or P9.0, on any airplane.

(l) Credit for Previous Actions

This paragraph provides credit for the actions specified in paragraph (j) of this AD, if those actions were performed before the effective date of this AD using Boeing Alert Requirements Bulletin 737-22A1322 RB, dated November 21, 2018.

(m) Alternative Methods of Compliance (AMOCs)

(1) The Manager, Seattle ACO Branch, 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 certification office, send it to the attention of the person identified in paragraph (n)(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, modification, or alteration required by this AD if it is approved by The Boeing Company ODA that has been authorized by the Manager, Seattle ACO Branch, FAA, to make those findings. To be approved, the repair method, modification deviation, or alteration deviation must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

(n) Related Information

(1) For more information about this AD, contact Michael J. Tucker, Aerospace Engineer, Systems and Equipment Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206-231-3974; email: michael.j.tucker@faa.gov.

(2) Service information identified in this AD that is not incorporated by reference is available at the addresses specified in paragraphs (o)(5) and (6) of this AD.

(o) 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 this AD specifies otherwise.

(3) The following service information was approved for IBR on December 20, 2021.

(i) Boeing Alert Requirements Bulletin 737-22A1322 RB, Revision 1, dated January 28, 2021.

(ii) [Reserved]

(4) The following service information was approved for IBR on November 27, 2012 ([77 FR 64711](#), October 23, 2012).

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

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

(5) For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminister Blvd., MC 110-SK57, Seal Beach, CA 90740-5600; telephone 562-797-1717; internet <https://www.myboeingfleet.com>.

(6) You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206-231-3195.

(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, email fr.inspection@nara.gov, or go to: <https://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued on August 30, 2021.

Gaetano A. Sciortino,

Deputy Director for Strategic Initiatives, Compliance & Airworthiness Division, Aircraft Certification Service.

[[FR Doc. 2021-24864](#) Filed 11-12-21; 8:45 am]

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