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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2018-0027; Product Identifier 2017-NM-118-AD; Amendment 39-19482; AD 2018-22-09]

RIN 2120-AA64

Airworthiness Directives; The Boeing Company Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: We are adopting a new airworthiness directive (AD) for all The Boeing Company Model 787 series airplanes. This AD was prompted by reports that, under certain conditions, the automatic dependent surveillance-broadcast (ADS-B) out function and air traffic control/traffic alert and collision avoidance system (ATC/TCAS) functions can transmit incorrect data. This AD requires an inspection or records review to determine if certain software is installed, the installation of new software for the integrated surveillance system (ISS) operational program software (OPS) if necessary, a software check, and applicable on-condition actions. For certain airplanes, this AD also requires the installation of new software for the ISS OPS, ISS option selection software (OSS) file, and ISS airline selectable option (ASO) file; and installation of a new ISS definition file database within the displays and crew alerting (DCA) system. We are issuing this AD to address the unsafe condition on these products.

DATES: This AD is effective December 10, 2018.

The Director of the Federal Register approved the incorporation by reference of certain publications listed in this AD as of December 10, 2018.

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, Transport Standards 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 on the internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2018-0027.

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-2018-0027; 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, the regulatory evaluation, any comments received, and other information. The address for Docket Operations (phone: 800-647-5527) 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: Nelson O. Sanchez, Aerospace Engineer, Systems and Equipment Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206-231-3543; email: nelson.sanchez@faa.gov.

SUPPLEMENTARY INFORMATION:

Discussion

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 by adding an AD that would apply to all The Boeing Company Model 787 series airplanes. The NPRM published in the Federal Register on February 9, 2018 (83 FR 5741). The NPRM was prompted by reports that, under certain conditions, the ADS-B out function and ATC/TCAS functions can transmit incorrect data. The NPRM proposed to require an inspection or records review to determine if certain software is installed, the installation of new software for the ISS OPS if necessary, a software check, and applicable on-condition actions. For certain airplanes, this AD also requires the installation of new software for the ISS OPS, ISS OSS file, ISS ASO file, and installation of a new ISS definition file database within the DCA database system.

We are issuing this AD to address the transmission of incorrect position and pressure altitude data, which could result in potential mid-air collisions.

Comments

We gave the public the opportunity to participate in developing this final rule. The following presents the comments received on the NPRM and the FAA's response to each comment. The Air Line Pilots Association, International (ALPA) expressed support for the NPRM. United Airlines had no objection to the NPRM.

Request To Allow for Later-Approved Service Bulletins in Paragraph (h)

American Airlines requested that we consider revising paragraph (h) of the proposed AD to include later-approved service bulletins regarding software loading. American said this change would eliminate the need to obtain alternative methods of compliance (AMOCs) when software is updated.

We partially agree with the commenter's request. We cannot allow operators to use later-approved revisions of the service bulletins, since we may not refer to any document that does not yet exist in an AD. To allow operators to use later revisions of service bulletins (issued after publication of the AD), we must revise the AD to reference specific later revisions, or operators must request approval to use later revisions as an AMOC to the AD. However, we may allow for later-approved software versions if they are approved as a replacement for the applicable software, and are approved as part of the type design by the FAA or the Boeing Commercial Airplanes Organization Designation Authorization (ODA) after issuance of the service bulletins specified in this AD. Therefore, we have revised paragraph (h) of this AD to allow for later-approved versions of the software. Since

paragraph (i) of this AD specifies a similar requirement for certain airplanes, we have also revised paragraph (i) of this AD to allow for later-approved software versions.

Request To Include Additional Software

Boeing suggested that we revise the Summary section and “Related Service Information under 1 CFR part 51” section of the NPRM and paragraph (i) of the proposed AD to include the following additional software: ISS OSS file, ISS ASO file, and installation of a new ISS definition file database within the DCA system. Boeing asserted that this would clarify which software may be impacted when considering all configurations in service.

We agree with the commenter's request. We have revised this final rule accordingly. We have also added this same information to the Discussion section of this final rule.

Request To Add Other Software Part Numbers to Paragraphs (g), (h), and (j) of the Proposed AD

Boeing suggested adding certain software part numbers to paragraphs (g), (h), and (j) of the proposed AD. Boeing observed that although the part numbers provided in the proposed AD represent the latest software installed in production, additional software might still be installed in-service. According to Boeing, the suggested additions would result in updates to paragraphs (g), (h), and (j) of the proposed AD to include all possible software part numbers.

We partially agree with the commenter's request because software part numbers COL40-0010-0010, COL41-0010-0011, and ISS SysIO OPS COL46-0007-0010, identified by Boeing, also have the potential to transmit incorrect data, which is the basis for the unsafe condition. However, we disagree with the suggestion to include more software part numbers because that would expand the scope of this AD and require a supplemental NPRM (SNPRM) and re-opening of the comment period, thereby delaying issuance of this final rule to address the identified unsafe condition. We are considering additional rulemaking applicable to all Boeing Model 787 airplanes to address the additional part numbers. This AD has not been changed with regard to this request.

Request To Give Credit for Prior Accomplishment of Requirements

Naftaly Wambugu requested that the FAA give credit to operators who will have accomplished Boeing Alert Service Bulletin B787-81205-SB340036-00, Issue 001, dated June 30, 2017, across their Boeing 787 fleet.

We acknowledge the commenter's request and agree to clarify. Paragraph (f) of this AD provides credit to operators who have already accomplished the AD requirements, including those involving Boeing Alert Service Bulletin B787-81205-SB340036-00, Issue 001, dated June 30, 2017, before the effective date of this AD. Therefore, this AD has not been changed with regard to this request.

Conclusion

We reviewed the relevant data, considered the comments received, and determined that air safety and the public interest require adopting this final rule 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 NPRM for addressing the unsafe condition; and
- Do not add any additional burden upon the public than was already proposed in the NPRM.

We also determined that these changes will not increase the economic burden on any operator or increase the scope of this final rule.

Related Service Information Under 1 CFR Part 51

We reviewed Boeing Alert Service Bulletin B787-81205-SB340036-00, Issue 001, dated June 30, 2017. This service information describes procedures for the installation of new software for the ISS OPS (which includes main input/output (IO) software and traffic transponder (XPDR) airborne collision avoidance system (ACAS) software), a software check, and applicable on-condition actions.

We also reviewed Boeing Service Bulletin B787-81205-SB340005-00, Issue 002, dated April 27, 2016. This service information describes procedures for the installation of new software for the ISS OPS, ISS OSS file, ISS ASO file, and for the ISS definition file database within the DCA system.

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 the ADDRESSES section.

Costs of Compliance

We estimate that this AD affects 136 airplanes of U.S. registry. We also estimate that 115 airplanes will require installation and check of new software, and 54 airplanes will require the concurrent installation of other software. We estimate the following costs to comply with this AD:

Estimated Costs for Required Actions

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Records Review/Inspection (136 airplanes)	1 work-hour × \$85 per hour = \$85	\$0	\$85	\$11,560
Installation and Check (115 airplanes)	4 work-hours × \$85 per hour = \$340	0	340	39,100
Concurrent Installation (54 airplanes)	1 work-hour × \$85 per hour = \$85	0	85	4,590

We estimate the following costs to do any necessary on-condition actions that would be required. We have no way of determining the number of aircraft that might need these on-condition actions:

Estimated Costs of On-Condition Actions

Labor cost	Parts cost	Cost per product
4 work-hours × \$85 per hour = \$340	\$0	\$340

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 available 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.

This AD is issued in accordance with authority delegated by the Executive Director, Aircraft Certification Service, as authorized by FAA Order 8000.51C. In accordance with that order, issuance of ADs is normally a function of the Compliance and Airworthiness Division, but during this transition period, the Executive Director has delegated the authority to issue ADs applicable to transport category airplanes and associated appliances to the Director of the System Oversight Division.

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):



AIRWORTHINESS DIRECTIVE

2018-22-09 The Boeing Company: Amendment 39-19482; Docket No. FAA-2018-0027; Product Identifier 2017-NM-118-AD.

(a) Effective Date

This AD is effective December 10, 2018.

(b) Affected ADs

None.

(c) Applicability

This AD applies to all The Boeing Company Model 787 series airplanes, certificated in any category.

(d) Subject

Air Transport Association (ATA) of America Code 34, Navigation.

(e) Unsafe Condition

This AD was prompted by reports that under certain conditions the automatic dependent surveillance-broadcast (ADS-B) out and air traffic control (ATC)/traffic alert and collision avoidance system (TCAS) functions can transmit incorrect position and pressure altitude information in the data that is used by ATC to coordinate aircraft separation. We are issuing this AD to address the transmission of incorrect position and pressure altitude data, which could result in potential mid-air collisions.

(f) Compliance

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

(g) Inspection or Records Review

For airplanes that have an original certificate of airworthiness or export certificate of airworthiness issued on or before the effective date of this AD: Within 12 months after the effective date of this AD, inspect to determine if integrated surveillance system (ISS) operational program software (OPS) part number (P/N) COL40-0010-0100 or COL46-0007-0100 is installed. A review of airplane maintenance records is acceptable in lieu of this inspection if the part number of the software can be conclusively determined from that review.

(h) Required Actions

If, during any inspection or records review required by paragraph (g) of this AD, any ISS OPS P/N COL40-0010-0100 or COL46-0007-0100 is found: Within 12 months after the effective date of this AD, do all applicable actions identified as “RC” (required for compliance) in, and in accordance with, the Accomplishment Instructions of Boeing Alert Service Bulletin B787-81205-SB340036-00, Issue 001, dated June 30, 2017; except where Boeing Alert Service Bulletin B787-81205-SB340036-00, Issue 001, dated June 30, 2017, specifies installing software P/Ns COL41-0010-0101 and COL44-0007-0102, this AD requires installing P/Ns COL41-0010-0101 and COL44-0007-0102, or later-approved software versions. Later-approved software versions are only those Boeing software versions that are approved as a replacement for the applicable software, and are approved as part of the type design by the FAA or the Boeing Commercial Airplanes Organization Designation Authorization (ODA) after issuance of Boeing Alert Service Bulletin B787-81205-SB340036-00, Issue 001, dated June 30, 2017.

(i) Additional Actions for Group 1 Airplanes

For Group 1 airplanes identified in Boeing Alert Service Bulletin B787-81205-SB340036-00, Issue 001, dated June 30, 2017: Prior to accomplishment of the actions required by paragraph (h) of this AD, install new software for the ISS OPS, ISS option selection software (OSS) file, and ISS airline selectable option (ASO) file; and install a new ISS definition file database within the displays and crew alerting (DCA) system; in accordance with the Accomplishment Instructions of Boeing Service Bulletin B787-81205-SB340005-00, Issue 002, dated April 27, 2016; except where Boeing Service Bulletin B787-81205-SB340005-00, Issue 002, dated April 27, 2016, specifies installing certain software, this AD requires installing that software or later-approved software versions. Later-approved software versions are only those Boeing software versions that are approved as a replacement for the applicable software, and are approved as part of the type design by the FAA or the Boeing Commercial Airplanes ODA after issuance of Boeing Service Bulletin B787-81205-SB340005-00, Issue 002, dated April 27, 2016.

(j) Parts Installation Prohibition

As of the effective date of this AD, no person may install ISS OPS part number COL40-0010-0100 or COL46-0007-0100 on any airplane, except in accomplishment of the actions required by paragraph (i) of this AD.

(k) Credit for Previous Actions

This paragraph provides credit for the actions specified in paragraph (i) of this AD, if those actions were performed before the effective date of this AD using Boeing Service Bulletin B787-81205-SB340005-00, Issue 001, dated December 11, 2015.

(l) 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 (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, modification, or alteration required by this AD if it is approved by the Boeing Commercial Airplanes ODA that has been authorized by the Manager, Seattle ACO Branch, 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.

(4) For service information that contains steps that are labeled as RC, the provisions of paragraphs (l)(4)(i) and (l)(4)(ii) of this AD apply.

(i) The steps labeled as RC, including substeps under an RC step and any figures identified in an RC step, must be done to comply with the AD. If a step or substep is labeled “RC Exempt,” then the RC requirement is removed from that step or substep. An AMOC is required for any deviations to RC steps, including substeps and identified figures.

(ii) Steps not labeled as RC may be deviated from using accepted methods in accordance with the operator's maintenance or inspection program without obtaining approval of an AMOC, provided the RC steps, including substeps and identified figures, can still be done as specified, and the airplane can be put back in an airworthy condition.

(m) Related Information

(1) For more information about this AD, contact Nelson O. Sanchez, Aerospace Engineer, Systems and Equipment Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206-231-3543; email: nelson.sanchez@faa.gov.

(2) Service information identified in this AD that is not incorporated by reference is available at the addresses specified in paragraphs (n)(3) and (n)(4) of this AD.

(n) 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.

(i) Boeing Alert Service Bulletin B787-81205-SB340036-00, Issue 001, dated June 30, 2017.

(ii) Boeing Service Bulletin B787-81205-SB340005-00, Issue 002, dated April 27, 2016.

(3) 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>.

(4) You may view this service information at the FAA, Transport Standards Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206-231-3195.

(5) 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 Des Moines, Washington, on October 22, 2018.

Michael Kaszycki,
Acting Director, System Oversight Division,
Aircraft Certification Service.