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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

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

**[Docket No. FAA-2022-0674; Project Identifier AD-2021-00373-T; Amendment 39-22559; AD 2023-19-09]**

**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) 2020-24-04, which applied to all The Boeing Company Model 787-8, 787-9, and 787-10 airplanes. AD 2020-24-04 required revising the existing airplane flight manual (AFM) to incorporate procedures for an approach with a localizer-based navigation aid, monitoring localizer raw data, calling out any significant deviations, and performing an immediate go around under certain conditions. This AD was prompted by the development of a modification to address the previously identified unsafe condition, and the identification of a separate unsafe condition where misleading vertical flight director (FD) guidance can be presented to the flightcrew under certain conditions. This AD continues to require the actions specified in AD 2020-24-04 and requires installing applicable software updates to the flight control module (FCM). Using updated software terminates the retained AFM requirement in this AD. The FAA is issuing this AD to address the unsafe condition on these products.

#### **DATES:**

This AD is effective November 6, 2023.

The Director of the Federal Register approved the incorporation by reference of certain publications listed in this AD as of November 6, 2023.

## ADDRESSES:

*AD Docket:* You may examine the AD docket at *regulations.gov* under Docket No. FAA–2022–0674; 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.

### *Material Incorporated by Reference:*

- 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; website *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 *regulations.gov* under Docket No. FAA–2022–0674.

## FOR FURTHER INFORMATION CONTACT:

Doug Tsuji, Aviation Safety Engineer, FAA, 2200 South 216th St., Des Moines, WA 98198; phone: 206–231–3548; email: [Douglas.Tsui@faa.gov](mailto:Douglas.Tsui@faa.gov).

## SUPPLEMENTARY INFORMATION:

### Background

The FAA issued a notice of proposed rulemaking (NPRM) to amend [14 CFR part 39](#) to supersede AD 2020–24–04, Amendment 39–21334 ([85 FR 77991](#), December 3, 2020; corrected December 14, 2020 ([85 FR 80589](#))) (AD 2020–24–04). AD 2020–24–04 applied to all The Boeing Company Model 787–8, 787–9, and 787–10 airplanes. The NPRM published in the **Federal Register** on June 29, 2022 ([87 FR 38682](#)). The NPRM was prompted by reports indicating that the autopilot flight director system (AFDS) failed to transition to the instrument landing system localizer (LOC) beam after the consistent localizer capture function in the FCMs initiated a transition to capture LOC during approach, and the manufacturer's development of a modification to address this unsafe condition. The NPRM was also prompted by the identification of a separate unsafe condition where misleading vertical FD guidance can be presented to the flightcrew under certain conditions. In the NPRM, the FAA proposed to continue to require the actions specified in AD 2020–24–04 and to require installing applicable software updates to the FCM. Installing updated software terminates the retained AFM requirement in this AD. The FAA is issuing this AD to address the AFDS failing to transition, which could result in localizer overshoot leading to glideslope descent on the wrong heading. Combined with a lack of flight deck effects for a consistent localizer capture mode failure, this condition could result in a controlled flight into terrain (CFIT). The NPRM was further prompted by reports of misleading vertical flight director guidance that in certain scenarios can be presented to the flightcrew during approach and could lead to CFIT or a runway overrun.

## Discussion of Final Airworthiness Directive

### Comments

The FAA received comments from the Air Line Pilots Association, International (ALPA), who supported the NPRM without change.

The FAA received additional comments from two commenters, including Boeing and an individual. The following presents the comments received on the NPRM and the FAA's response to each comment.

### Request To Remove Certain Line Numbers From the Applicability

Boeing requested that the proposed AD be revised to remove line numbers 1062 and 1076 from the applicability. Boeing noted that those airplanes would have the requirements of B787-81205-SB270053-00 RB, Issue 002, dated May 6, 2021, incorporated during production.

The FAA agrees with the intent of the commenter's request. The FAA has added paragraph (j)(2) of this AD to specify that for airplanes on which Common Block Point (CBP) 5.1, 27 FCM Operational Program Software (OPS) part number HNP5A-AL01-5041 or later-approved software part number is installed on FCM-L, FCM-C, and FCM-R during production, the actions specified in paragraph (h) of this AD are not required. Additionally, the FAA has revised paragraph (g) of this AD to apply only to airplanes on which CBP 5.1, 27 FCM OPS part number HNP5A-AL01-5041 or later approved software part number is not installed on FCM-L, FCM-C, and FCM-R. Finally, the FAA has revised paragraph (k) of this AD to specify that installation of CBP 5.1, 27 FCM OPS part number HNP5A-AL01-5041 or later-approved software part number on FCM-L, FCM-C, and FCM-R in production terminates the AFM revision required by paragraph (g) of this AD. Since some airplanes had this software installed during production, the FAA has determined that revision of the existing AFM required by paragraph (g) of this AD is not applicable to those airplanes.

### Request To Allow Additional Terminating Action

An individual requested that the FAA clarify whether accomplishing the actions in Boeing Alert Requirements Bulletin B787-81205-SB270053-00 RB, Issue 001, dated February 19, 2021, terminates the AFM revision required by paragraph (g) of the proposed AD. The commenter noted that paragraph (l)(1) of the proposed AD provides credit for previous accomplishment of Boeing Alert Requirements Bulletin B787-81205-SB270053-00 RB, Issue 001, dated February 19, 2021, but does not specify whether that credit extends to the terminating actions specified in paragraph (k) of the proposed AD.

The FAA agrees to clarify. The FAA has revised paragraph (l)(1) of this AD to specify that the credit applies to the actions in both paragraphs (h) and (k) of this AD. Therefore, accomplishing the actions in Boeing Alert Requirements Bulletin B787-81205-SB270053-00 RB, Issue 001, dated February 19, 2021, terminates the AFM revision required by paragraph (g) of the proposed AD, provided the software update has been installed on all affected airplanes in an operator's fleet.

### Conclusion

The FAA reviewed the relevant data, considered any comments received, and determined that air safety requires adopting this AD as proposed. Accordingly, the FAA is issuing this AD to address the unsafe condition on these products. 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 B787-81205-SB270053-00 RB, Issue 002, dated May 6, 2021. This service information specifies procedures for updating flight control electronics (FCE) software to install CBP 5.1 OPS having part number HNP5A-AL01-5041 in the FCM, and doing a software configuration check.

Boeing Alert Requirements Bulletin B787-81205-SB270053-00 RB, Issue 002, dated May 6, 2021, specifies prior or concurrent accomplishment of Boeing Alert Service Bulletin B787-81205-SB270044-00, Issue 003, dated July 7, 2020; or Boeing Service Bulletin B787-81205-SB270046-00, Issue 002, dated October 24, 2019; as applicable, which specify procedures for installing FCE software update CBP 5.0.

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 214 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 |
|--|--|------------|------------------|------------------------|
| Revising the AFM (retained actions from AD 2020-24-04) | 1 work-hour × \$85 per hour = \$85         | \$0        | \$85             | \$18,190               |
| Updating the software                                  | Up to 4 work-hours × \$85 per hour = \$340 | (*)        | * 340            | * 72,760               |

*\* The table does not include the parts cost for the software.*

The FAA has determined that updating the software requires installing up to 8 software loads, at \$300 per load, per operator. For the parts cost, the FAA has determined that a per-operator estimate is more accurate than a per-airplane estimate. Therefore, the FAA estimates the total cost for software to be \$2,400 per operator.

The FAA has included all known costs in its cost estimate. According to the manufacturer, however, some of the costs of this AD may be covered under warranty, thereby reducing the cost impact on affected operators.

### 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) 2020–24–04, Amendment 39–21334 ( [85 FR 77991](#), December 3, 2020; corrected December 14, 2020 ([85 FR 80589](#))); and

**b.** Adding the following new AD:

**2023–19–09 The Boeing Company:** Amendment 39–22559; Docket No. FAA–2022–0674; Project Identifier AD–2021–00373–T.

#### **(a) Effective Date**

This airworthiness directive (AD) is effective November 6, 2023.

#### **(b) Affected ADs**

This AD replaces AD 2020–24–04, Amendment 39–21334 ([85 FR 77991](#), December 3, 2020; corrected December 14, 2020 ([85 FR 80589](#))) (AD 2020–24–04).

#### **(c) Applicability**

This AD applies to all The Boeing Company Model 787–8, 787–9, and 787–10 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 indicating that the autopilot flight director system (AFDS) failed to transition to the instrument landing system localizer (LOC) beam after the consistent localizer capture function in the flight control modules initiated a transition to capture LOC during approach. The FAA is issuing this AD to address the AFDS failing to transition, which could result in localizer overshoot leading to glideslope descent on the wrong heading. Combined with a lack of flight deck effects for a consistent localizer capture mode failure, this condition could result in a controlled flight into terrain (CFIT). This AD was further prompted by reports of misleading vertical flight director guidance that in certain scenarios can be presented to the flightcrew during approach and could lead to CFIT or a runway overrun.

#### **(f) Compliance**

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

## **(g) Retained Revision of the Existing Airplane Flight Manual (AFM), With New Terminating Action and Revised Affected Airplanes**

This paragraph restates the requirements of paragraph (g) of AD 2020–24–04, with new terminating action and revised affected airplanes. For airplanes on which Common Block Point (CBP) 5.1, 27 Flight Control Module (FCM) Operational Program Software (OPS) part number HNP5A–AL01–5041 or later approved software part number is not installed on FCM–L, FCM–C, and FCM–R: Within 14 days after December 18, 2020 (the effective date of AD 2020–24–04), revise the Operating Procedures chapter of the existing AFM and applicable corresponding operational procedures to incorporate the procedures specified in figure 1 to paragraph (g) of this AD. Revising the existing AFM to include the changes specified in paragraph (g) of this AD may be done by inserting a copy of figure 1 to paragraph (g) of this AD into the existing AFM. Installing the software required by paragraph (h) of this AD terminates the requirement for revising the existing AFM in this paragraph.

### **Figure 1 to paragraph (g) – Operating Instructions**

(Required by AD 2020-24-04)

#### **Autopilot Flight Director System – Operating Instructions:**

When conducting an approach with a localizer-based navigation aid, monitor localizer raw data and call out any significant deviations. If AFDS performance is not satisfactory, the flight crew must intervene. Perform an immediate go-around if the airplane has not intercepted the final approach course as shown by the localizer deviation.

## **(h) New Required Actions**

For airplanes identified in paragraph A, “Effectivity,” of Boeing Alert Requirements Bulletin B787–81205–SB270053–00 RB, Issue 002, dated May 6, 2021: Except as specified by paragraph (j) of this AD, at the applicable times specified in the “Compliance” paragraph of Boeing Alert Requirements Bulletin B787–81205–SB270053–00 RB, Issue 002, dated May 6, 2021, do all applicable actions identified in, and in accordance with, the Accomplishment Instructions of Boeing Alert Requirements Bulletin B787–81205–SB270053–00 RB, Issue 002, dated May 6, 2021.

### **Note 1 to paragraph (h):**

Guidance for accomplishing the actions required by paragraph (h) of this AD can be found in Boeing Alert Service Bulletin B787–81205–SB270053–00, Issue 002, dated May 6, 2021, which is referred to in Boeing Alert Requirements Bulletin B787–81205–SB270053–00 RB, Issue 002, dated May 6, 2021.

## **(i) Concurrent Actions**

For airplanes identified as Group 1, Configuration 1, and as Group 2, Configuration 1, in paragraph A, “Effectivity,” of Boeing Alert Requirements Bulletin B787–81205–SB270053–00 RB, Issue 002, dated May 6, 2021: Prior to or concurrently with accomplishing the actions required by paragraph (h) of this AD, do all applicable actions identified as “RC” (required for compliance) in, and in accordance with, the applicable service information identified in paragraphs (i)(1) and (2) of this AD.

(1) Boeing Alert Service Bulletin B787–81205–SB270044–00, Issue 003, dated July 7, 2020.

(2) Boeing Service Bulletin B787–81205–SB270046–00, Issue 002, dated October 24, 2019.

## **(j) Exceptions to Requirements of Paragraph (h) of This AD**

(1) Where the Compliance Time columns of the tables in the “Compliance” paragraph of Boeing Alert Requirements Bulletin B787–81205–SB270053–00 RB, Issue 002, dated May 6, 2021, use the phrase “the Issue 001 date of the Requirements Bulletin B787–81205–SB270053–00 RB,” this AD requires using “the effective date of this AD.”

(2) For airplanes on which CBP 5.1, 27 FCM OPS part number HNP5A–AL01–5041 or later-approved software part number was installed on FCM–L, FCM–C, and FCM–R in production, the actions specified in paragraph (h) of this AD are not required.

## **(k) Terminating Action for AFM Revision**

Installation of the software update specified in the Accomplishment Instructions of Boeing Alert Requirements Bulletin B787–81205–SB270053–00 RB, Issue 002, dated May 6, 2021, or installation of CBP 5.1, 27 FCM OPS part number HNP5A–AL01–5041 or later-approved software part number on FCM–L, FCM–C, and FCM–R in production, terminates the AFM revision required by paragraph (g) of this AD, and the AFM revision may be removed, provided that this software update has been installed on all affected airplanes in an operator's fleet.

## **(l) Credit for Previous Actions**

(1) This paragraph provides credit for the actions specified in paragraphs (h) and (k) of this AD, if those actions were performed before the effective date of this AD using Boeing Alert Requirements Bulletin B787–81205–SB270053–00 RB, Issue 001, dated February 19, 2021.

(2) This paragraph provides credit for the actions specified in paragraph (i)(1) of this AD, if those actions were performed before the effective date of this AD using Boeing Alert Service Bulletin B787–81205–SB270044–00, Issue 001, dated December 18, 2018; or Boeing Alert Service Bulletin B787–81205–SB270044–00, Issue 002, dated November 20, 2019.

(3) This paragraph provides credit for the actions specified in paragraph (i)(2) of this AD, if those actions were performed before the effective date of this AD using Boeing Service Bulletin B787–81205–SB270046–00, Issue 001, dated November 30, 2018.

## **(m) Alternative Methods of Compliance (AMOCs)**

(1) The Manager, AIR–520, Continued Operational Safety 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 responsible Flight Standards 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](mailto: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 responsible Flight Standards 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 Organization Designation



Authorization (ODA) that has been authorized by the Manager, AIR-520, Continued Operational Safety 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.

(4) AMOCs approved for AD 2020-24-04 are approved as AMOCs for the corresponding provisions of paragraph (g) of this AD.

(5) Except as specified by paragraph (j) of this AD: For service information that contains steps that are labeled as Required for Compliance (RC), the provisions of paragraphs (m)(5)(i) and (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

#### **(n) Related Information**

(1) For more information about this AD, contact Doug Tsuji, Aviation Safety Engineer, FAA, 2200 South 216th St., Des Moines, WA 98198; phone: 206-231-3548; email: [Douglas.Tsui@faa.gov](mailto:Douglas.Tsui@faa.gov).

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

(i) Boeing Alert Service Bulletin B787-81205-SB270044-00, Issue 003, dated July 7, 2020.

(ii) Boeing Service Bulletin B787-81205-SB270046-00, Issue 002, dated October 24, 2019.

(iii) Boeing Alert Requirements Bulletin B787-81205-SB270053-00 RB, Issue 002, dated May 6, 2021.

(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; website [myboeingfleet.com](http://myboeingfleet.com).

(4) 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.

(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, email [fr.inspection@nara.gov](mailto:fr.inspection@nara.gov), or go to: [www.archives.gov/federal-register/cfr/ibr-locations.html](http://www.archives.gov/federal-register/cfr/ibr-locations.html).

Issued on September 27, 2023.

Victor Wicklund,

Deputy Director, Compliance & Airworthiness Division, Aircraft Certification Service.

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