



# 適航指令發布單

## Airworthiness Directive Issuance Form

民航局AD編號 AD number	CAA-2025-02-005	發布日期 Date issued	2025/02/13
適用之航空產品 Applied to (models, serial numbers or part numbers, as applicable)	This AD applies to The Boeing Company airplanes, certificated in any category, as identified in paragraphs (c)(1) through (9) of this AD, on which Collins GLU-2100 MMR, P/N 822-2532-100, with a software version earlier than COL4C-0087-0003 is installed. (1) Model MD-11 and MD-11F airplanes modified by supplemental type certificate (STC) ST01895WI. (2) Model 717-200 airplanes modified by STC ST04416AT. (3) All Model 737-8 and 737-9 airplanes. (4) All Model 737-600, -700, -700C, -800, -900, and -900ER series airplanes. (5) Model 747-400 and 747-400F series airplanes modified by STC ST01892WI. (6) Model 757-200, -200PF, -200CB, and -300 series airplanes modified by STC ST04436AT. (7) Model 767-200, -300, -300F, and -400ER series airplanes modified by STC ST04436AT or ST01883WI. (8) All Model 777-200, -200LR, -300, and -300ER series airplanes. (9) All Model 777F series airplanes.		
主旨摘要 Subject	This AD requires the actions in AD 2020-03-20 (CAA-2020-02-010), removes an airplane model from the applicability, and would also require installing certain MMR operational software (OPS).		
民航局 CAA	設計國民航主管機構 Original Authority		
<input type="radio"/> 本國產品 Native product	<input checked="" type="radio"/> FAA <input type="radio"/> Germany LBA <input type="radio"/> EASA <input type="radio"/> CAA-NL <input type="radio"/> Brazil <input type="radio"/> UK CAA <input type="radio"/> Transport Canada Civil Aviation <input type="radio"/> Japan CAB <input type="radio"/> DGAC <input type="radio"/> CAA of Israel <input type="radio"/> Other_____		
<input type="radio"/> 其他個案 Other			
	設計國AD編號 Original AD number	2025-02-07	
	1. 直接採用原AD之內容? (Is the original AD directly adopted?) <input checked="" type="radio"/> 是(Yes) <input type="radio"/> 否(No)_ a. 生效日期另訂為(Re-specify the effective date as): b. 執行時限另訂為(Re-specify the compliance time or period as):		
	2. 使用人是否需要將AD執行結果向民航局提出報告? (Do users need to report the status of compliance to the CAA?) <input type="radio"/> 需要(Yes) <input checked="" type="radio"/> 不需要(No)		

備註  
Note

This AD replaces AD 2020-03-20(CAA-2020-02-010)

註： 1. AD內容後附。  
2. 航空器產品使用人得向民航局提出豁免、替代符合方法、執行時限之展延之申請。  
3. 如有任何問題，請聯絡交通部民用航空局初始適航科。Tel：(02)2349-6330 / 6332, Fax：(02)2545-8464,  
[adcaa@mail.caa.gov.tw](mailto:adcaa@mail.caa.gov.tw)

Note： 1. The AD text is enclosed.  
2. Exemption, an alternative method of compliance or adjustment of the compliance time may be proposed to the CAA for approval.  
3. For further information, please contact Civil Aviation Administration on Tel：(02)2349-6330 / 6332,  
Fax：(02)2545-8464, [adcaa@mail.caa.gov.tw](mailto:adcaa@mail.caa.gov.tw)

[Federal Register, Volume 90 Number 26 (Monday, February 10, 2025)]

[Rules and Regulations]

[Pages 9189-9197]

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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

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

**[Docket No. FAA-2023-1993; Project Identifier AD-2023-00129-T; Amendment 39-22940; AD 2025-02-07]**

**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) 2020-03-20, which applied to certain The Boeing Company Model MD-11, MD-11F, and 717-200 airplanes; all Model 737-8 and 737-9 airplanes; all Model 737-600, -700, -700C, -800, -900, and -900ER series airplanes; certain Model 747-400 and 747-400F series airplanes; certain Model 757 and 767 airplanes; and all Model 777 airplanes. AD 2020-03-20 required revising the existing airplane flight manual (AFM) to include a limitation to prohibit operations that require less than 0.3 required navigational performance (RNP) within a specified area for airplanes having a certain multimode receiver (MMR) with certain software installed. This AD was prompted by reports from Boeing of simultaneous MMR resets related to an error in calculating Coordinated Universal Time (UTC). This AD requires the actions in AD 2020-03-20, removes an airplane model from the applicability, and would also require installing certain MMR operational software (OPS). The FAA is issuing this AD to address the unsafe condition on these products.

#### **DATES:**

This AD is effective March 17, 2025.

The Director of the Federal Register approved the incorporation by reference of certain publications listed in this AD as of March 17, 2025.

#### **ADDRESSES:**

*AD Docket:* You may examine the AD docket at *regulations.gov* under Docket No. FAA-2023-1993; 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 Boeing material 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; websitemyboeingfleet.com.
- You may view this material 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-2023-1993.

**FOR FURTHER INFORMATION CONTACT:**

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

**SUPPLEMENTARY INFORMATION:**

**Background**

The FAA issued a notice of proposed rulemaking (NPRM) to amend [14 CFR part 39](#) to supersede AD 2020-03-20, Amendment 39-19844 ([85 FR 8717](#), February 18, 2020) (AD 2020-03-20). AD 2020-03-20 applied to certain The Boeing Company Model MD-11, MD-11F, and 717-200 airplanes; all Model 737-8 and 737-9 airplanes; all Model 737-600, -700, -700C, -800, -900, and -900ER series airplanes; certain Model 747-400 and 747-400F series airplanes; certain Model 757 and 767 airplanes; and all Model 777 airplanes. The NPRM published in the **Federal Register** on December 12, 2023 ([88 FR 86073](#)). The NPRM was prompted by reports from Boeing of simultaneous MMR resets related to an error in calculating UTC. In the NPRM, the FAA proposed to continue to require the actions in AD 2020-03-20 and to require installing certain MMR OPS. The FAA is issuing this AD to address loss of GPS data and degraded GPS positional accuracy, which, during a high-precision approach with this GPS error, could result in controlled flight into terrain, and to address UTC calculation errors that could result in simultaneous MMR resets on multiple airplanes, increased air traffic control workload, and consequent reduction in airplane separation and potential for mid-air collision.

**Discussion of Final Airworthiness Directive**

**Comments**

The FAA received a comment from Air Line Pilots Association, International, who supported the NPRM without change.

The FAA received additional comments from ten commenters: American Airlines, Aviation Partners Boeing (APB), Boeing, Delta Air Lines (Delta), FedEx, Korean Air, Ryanair, SIA Engineering,

United Parcel Service (UPS) Air, and an individual. The following presents the comments received on the NPRM and the FAA's response to each comment.

### **Request for Clarification of Applicability in Regards to Installed MMR Part Numbers and Software Versions**

American Airlines requested a revision to paragraph (c) of the proposed AD to clarify that only airplanes on which Collins GLU-2100 MMR having P/N 822-2532-100 and a software version earlier than COL4C-0087-0003 are installed are affected by the proposed requirements. American Airlines suggested revising the text of paragraph (c) of the proposed AD to specify only Collins GLU-2100 MMR part number and “34 MMR OPS” software versions that are earlier than the required software version.

The FAA agrees to clarify which airplane MMR and software configurations are affected by the requirements of this AD. The FAA has revised paragraph (c) of this AD to specify the Collins CLU-2100 MMR, having P/N 822-2532-100, with a software version earlier than COL4C-0087-0003.

### **Request To Exclude Certain Configurations of Airplanes**

FedEx requested revising paragraphs (c)(1) through (9) of the proposed AD to add the phrase “having MMRs with OPS software shown in Figure 1 to Paragraph (g).” FedEx explained that without the proposed wording, the proposed applicability could lead to unnecessary work on airplanes that are already in compliance with the proposed requirements.

The FAA agrees to revise paragraphs (c)(1) through (9) of this AD to add clarity on affected airplanes. As stated previously, the FAA has revised paragraph (c) of this AD to specify that the applicability includes airplanes equipped with Collins GLU-2100 MMR, having P/N 822-2532-100, with a software version earlier than COL4C-0087-0003.

### **Request To Align Applicability of This AD With AD 2020-03-20**

Korean Airlines requested a revision to the applicability of paragraphs (h) and (i) of the proposed AD to align it with the applicability of paragraph (g) of the proposed AD. Korean Airlines noted that paragraph (g) of AD 2020-03-20 was applicable to airplanes equipped with Collins GLU-2100 MMR having P/N 822-2532-100. Korean Airlines requested that the same applicability restriction be applied to paragraphs (h) and (i) of the proposed AD.

The FAA agrees with the request. Paragraphs (h) and (i) of this AD are intended only for those airplanes equipped with a Collins GLU-2100 MMR having P/N 822-2532-100. Paragraphs (h) and (i) of this AD have been revised to clarify airplane applicability.

### **Request To Clarify Affected Configurations**

Ryanair requested clarification on what configuration of Model 737-600, -700, -700C, -800, and -900 series airplanes are affected by the proposed requirements of paragraph (h) of the proposed AD. Ryanair pointed out that paragraph (c)(4) of the proposed AD includes all of the Model 737-600, 700, -700C, -800, and -900 series airplanes regardless of whether a Collins MMR was installed on those airplanes. Ryanair contrasted that with paragraphs (g) and (h) of the proposed AD, where paragraph (g) restricted the required actions to those airplane configurations equipped with the Collins GLU-2100 MMR, P/N 822-2532-100, with an applicable GLU-2100 OPS. Ryanair noted that paragraph (h) of the proposed AD would require installation of the OPS P/N COL4C-

0087-0003, on airplanes identified in paragraphs (h)(1) through (7) of the proposed AD, but paragraph (h)(3) of the proposed AD identified the Model 737-600, -700, -700C, -800, and -900 series airplanes without specifying the Collins MMR configuration. Ryanair explained that OPS P/N COL4C-0087-0003 is applicable only to Collins MMRs.

The FAA agrees to revise the applicability for clarification. As stated previously, the FAA has revised paragraphs (c) and (h) of this AD to specify the affected Collins MMR hardware and software configuration. This change results in only that configuration being affected by the requirements of this AD.

### **Request To Clarify Scope of Affected Collins MMRs**

SIA Engineering requested clarification on which Collins MMRs are affected by the proposed requirements of paragraph (h) of the proposed AD. SIA Engineering stated that paragraph (h) of the proposed AD would require installation of the MMR OPS P/N COL4C-0087-0003 or later-approved software version. SIA Engineering requested information on whether the requirements of paragraph (h) of the proposed AD would apply only to Collins GLU-2100 MMR, P/N 822-2532-100, that are installed on the airplanes identified in paragraphs (h)(1) through (7) of the proposed AD, or if the requirements would apply to any other Collins MMR installed on those identified airplanes.

The FAA agrees to clarify. The requirements of paragraph (h) of this AD are intended to apply only to the Collins GLU-2100 MMR having P/N 822-2532-100 installed on the identified airplanes. As stated previously, the FAA has revised paragraphs (c) and (h) of this AD to specify the affected Collins MMR hardware and software configuration.

### **Request To Revise Applicability or Provide Credit**

UPS Airlines requested that airplanes that were delivered with the Collins GLU-2100 MMU having OPS P/N COL4C-0087-0003 installed, or modified with the same MMU and OPS software via STC ST01943WI, be excluded from the applicability of the proposed AD. UPS Airlines also stated that if the request for exclusion cannot be granted, the FAA provide credit instead and also provide credit for the requirements of paragraph (g) of the proposed AD for airplanes if the AFM revision was previously removed as authorized via an alternative method of compliance (AMOC) to AD 2020-03-20.

The FAA partially agrees with the request. The intent of this AD is to require the software update. The FAA has revised paragraph (c) of this AD to restrict the applicability to airplanes with the affected Collins MMR software configuration. This change results in having only airplanes with that configuration being affected by the requirements of this AD. Paragraph (k) of this AD provides for terminating the AFM revision required by paragraph (g) of this AD after the software installation specified in paragraph (h) or (i) of this AD. Paragraph (f) of this AD provides relief for required actions that are accomplished before the effective date of this AD. In addition, Paragraph (m)(4) has been added to this AD to specify that AMOCs approved for AD 2020-03-20 are approved as AMOCs for the corresponding provisions of this AD.

### **Request To Clarify Terminating Action**

American Airlines requested a revision to paragraph (g) of the proposed AD to clarify that accomplishing the actions in paragraph (h) or (i) of the proposed AD would mean the AFM revision

requirement specified in paragraph (g) of the proposed AD would not be required.

The FAA disagrees. The FAA considers paragraphs (f) and (k) of this AD to be equivalents to the requested change. Paragraph (f) of this AD provides relief for actions done prior to the effective date of this AD, and paragraph (k) of this AD specifies that the AFM revision may be removed. The AD has not been revised in this regard.

### **Request To Clarify Contents of Service Bulletins**

American Airlines requested a revision to paragraph (i) of the proposed AD to add a phrase that describes the software version specified by the requirements bulletins. American Airlines stated that this would clarify that the required software for compliance with the proposed AD is installed by the steps specified in the requirement bulletins.

The FAA disagrees with revising the AD as suggested by American Airlines. This information is described in the Material Incorporated by Reference under [1 CFR part 51](#) section of both the proposed AD and this AD; that material is required by paragraph (i) of this AD. The FAA has not changed this AD in this regard.

### **Effects of Winglets on Accomplishment of Proposed Actions**

Aviation Partners Boeing stated that the installation of winglets per Supplemental Type Certificate (STC) ST00830SE, ST01218SE, or ST01920SE does not affect the accomplishment of the manufacturer's service instructions.

The FAA agrees with the commenter that STCs ST00830SE, ST01218SE, and ST01920SE do not affect the accomplishment of the manufacturer's service instructions. Therefore, the installation of STC ST00830SE, ST01218SE, or ST01920SE 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 Provide Information on Which Methods Would Be Approved**

Delta requested clarification on what methods would be approved by the Manager, AIR-520, FAA, to meet the requirements for installation and check of MMR OPS P/N COL4C-0087-0003 as proposed in paragraph (h) of the proposed AD. Delta requested that the installation and check procedures identified in STCs ST04436AT and ST04416AT be identified as approved methods. Delta suggested adding “in accordance with applicable STCs” in the second sentence of paragraph (h) of the proposed AD.

The FAA disagrees with the request to revise paragraph (h) of this AD to add the phrase “in accordance with applicable STCs.” The FAA would need to evaluate individual STCs to consider an STC to be an acceptable means of compliance that contains the necessary installation and check procedures. Operators may use the AMOC procedures specified in paragraph (m) of this AD to submit, for example, STC ST04436AT or ST04416AT as a proposed AMOC. No change to this AD is necessary in this regard.

### **Request To Clarify Which Airplanes Are Identified in Paragraph (h)(3) of This AD**

Delta requested clarification on whether all of the airplanes identified in paragraph (h)(3) of the proposed AD would be required to do the actions proposed in paragraph (h) of the proposed AD. Delta pointed out that, unlike paragraphs (h)(1), (2), (4), (5), and (6) of the proposed AD, paragraph (h)(3) of the proposed AD does not identify Model 737-600, -700, -700C, -800, and

-900 series airplanes as being modified by an STC, specifically, STC ST04436AT. Delta also stated that it seems Model 737-900ER series airplanes have been omitted from paragraph (h)(3) of the proposed AD.

The FAA provides the following clarification of the airplanes affected by paragraph (h)(3) of this AD. Because there are Model 737-600, -700, -700C, 800, -900, and -900ER series airplanes that had the Rockwell Collins GLU-2100 installed by STC and Model 737-900ER series airplanes identified by Boeing Alert Requirements Bulletin 737-34A3572 RB, paragraphs (h)(3) and (i)(2) are intended to be applicable to these aircraft, respectively. Paragraph (h) of this AD requires the software to be installed in accordance with a method approved by the Manager, AIR-520, Continued Operational Safety Branch, FAA. Paragraph (h)(3) of this AD has been revised to include Model 737-900ER series airplanes that have been modified by STC ST04436AT. Operators may request an AMOC in accordance with the procedures specified in paragraph (m) of this AD.

### **Request for Clarification on Which Model 737-8 and -9 Series Airplanes Are Affected by Paragraph (i)(1) of This AD**

Delta requested clarification on the Model 737-8 and -9 series airplanes identified in paragraph (i)(1) of the proposed AD. Delta sought clarity on whether the proposed actions in paragraph (i)(1) of the proposed AD are applicable to Model 737-8 and -9 airplanes identified in Boeing Alert Requirements Bulletin 737-34A3572 only or applicable to any Model 737-8 or -9 series airplane that is equipped with a GLU-2100 MMR.

The FAA provides the following clarification. As indicated in the introductory text to paragraph (i) of this AD, paragraph (i)(1) of this AD is limited to Model 737-8 and -9 series airplanes equipped with a Collins GLU-2100 MMR, part number (P/N) 822-2532-100, having any applicable GLU-2100 operational software (OPS). No change to this AD is necessary in this regard.

### **Request To Clarify Affected Model 737-900ER Airplanes for Paragraph (i)(2) of This AD**

Delta requested clarification on the Model 737-900ER series airplanes identified in paragraph (i)(2) of the proposed AD. Delta sought clarity on whether the proposed actions in paragraph (i)(2) of the proposed AD are applicable to Model 737-900ER series airplanes identified in Boeing Alert Requirements Bulletin 737-34A3573 only or applicable to any Model 737-900ER series airplane that is equipped with a GLU-2100 MMR. Delta stated that it is concerned that the paragraph, as written, would only apply to a subset of 737-900ER series airplanes that are identified in the Boeing requirements bulletin and not to airplanes that would be modified by STC ST04436AT and subsequently have a GLU-2100 MMR installed.

The FAA provides the following clarification. Paragraph (i)(2) of this AD applies to those Model 737-900ER series airplanes identified in Boeing Alert Requirements Bulletin 737-34A3572 RB. No change to this AD in this regard.

### **Request To Provide Clarification on Showing Compliance for Actions Accomplished Prior to Effective Date**

Delta requested clarification on how to show compliance with the proposed requirements in paragraph (h) of the proposed AD. Delta stated a concern for airplanes modified to be equipped with the approved part number (MMR OPS P/N COL4C-0087-0003 or later version) but were

modified before the effective date of the AD. Delta requested revising the proposed AD to allow a review of airplane maintenance records.

The FAA provides the following clarification. Airplanes equipped with the approved part number (MMR OPS P/N COL4C-0087-0003 or later version) are in compliance with this AD. Paragraph (f) of this AD provides relief for actions done prior to the effective date of this AD. No change to this AD is necessary in this regard.

### **Request To Remove Model 767-2C From Proposed AD**

Boeing requested that Model 767-2C series airplanes be removed from the applicability and other paragraphs of the proposed AD such as in the Summary and Background of the NPRM, and figure 1 to paragraph (g) of the proposed AD. Boeing explained that the GLU-2100 MMR had not been certified for installation or use on Model 767-2C series airplanes.

The FAA agrees to remove reference to Model 767-2C series airplanes from paragraph (c)(7) of this AD and figure 1 to paragraph (g) of this AD. The FAA has revised paragraph (c)(7), figure 1 to paragraph (g), and paragraph (h)(6) of this AD.

### **Request To Clarify Software Requirements**

UPS Airlines requested a clarification on the software requirements in the third sentence of paragraph (h) of the proposed AD. UPS Airlines noted that paragraph (h) of the proposed AD referred to “Boeing software versions” when defining later-approved software versions. UPS Airlines asked if the FAA means MMR OPS software versions intended for Boeing airplane models or if the FAA means Boeing-approved software versions. UPS Airlines noted that operators who used the STCs are using OPS software under a Collins STC, not a Boeing STC. UPS Airlines suggested that the FAA either remove the reference to Boeing or change the reference to Boeing/Collins.

The FAA provides the following clarification. The proposed requirements would have meant only Boeing-approved software versions. The FAA has revised paragraph (h) of this AD to include Collins-approved software versions.

### **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.

### **Material Incorporated by Reference Under [1 CFR Part 51](#)**

The FAA reviewed the following Boeing requirements bulletins:

- Boeing Alert Requirements Bulletin 737-34A3572 RB, dated October 15, 2020.
- Boeing Alert Requirements Bulletin 737-34A3573 RB, dated August 5, 2020.
- Boeing Alert Requirements Bulletin 777-34A0385 RB, Revision 1, dated March 8, 2021.

This material specifies procedures for installation of MMR OPS part number (P/N) COL4C-0087-0003 (or later-approved software P/N) in MMR 1 and MMR 2, installation of MMR option

selection software (OSS) P/N BCG27-U000-0730 or BCG48-U000-05W9, and software configuration checks. This material also specifies taking concurrent actions, including replacement of MMRs, replacement of GPS antennas, and installation of additional software.

These documents are distinct since they apply to different airplane models and configurations. This material 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

The FAA estimates that this AD affects 409 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
AFM revision (retained action from AD 2020-03-20)	1 work-hour × \$85 per hour = \$85	\$0	\$85	\$34,765.
Software installation and check (new action)	2 work-hours × \$85 per hour = \$170	265	435	\$177,915.
Concurrent actions	5 work-hours × \$85 = \$425	795	1,220	Up to \$498,980.*

*\* Not all airplanes would be required to do the concurrent actions. However, the FAA does not have an estimate of how many airplanes are in a configuration that would require concurrent actions.*

### 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) 2020-03-20, Amendment 39-19844 ( [85 FR 8717](#), February 18, 2020); and

- b. Adding the following new AD:

**2025-02-07 The Boeing Company:** Amendment 39-22940; Docket No. FAA-2023-1993; Project Identifier AD-2023-00129-T.

#### (a) Effective Date

This airworthiness directive (AD) is effective March 17, 2025.

#### (b) Affected ADs

This AD replaces AD 2020-03-20, Amendment 39-19844 ([85 FR 8717](#), February 18, 2020) (AD 2020-03-20).

#### (c) Applicability

This AD applies to The Boeing Company airplanes, certificated in any category, as identified in paragraphs (c)(1) through (9) of this AD, on which Collins GLU-2100 MMR, P/N 822-2532-100, with a software version earlier than COL4C-0087-0003 is installed.

(1) Model MD-11 and MD-11F airplanes modified by supplemental type certificate (STC) ST01895WI.

(2) Model 717-200 airplanes modified by STC ST04416AT.

(3) All Model 737-8 and 737-9 airplanes.

(4) All Model 737-600, -700, -700C, -800, -900, and -900ER series airplanes.

(5) Model 747-400 and 747-400F series airplanes modified by STC ST01892WI.

(6) Model 757-200, -200PF, -200CB, and -300 series airplanes modified by STC ST04436AT.

(7) Model 767-200, -300, -300F, and -400ER series airplanes modified by STC ST04436AT or ST01883WI.

(8) All Model 777-200, -200LR, -300, and -300ER series airplanes.

(9) All Model 777F series airplanes.

#### **(d) Subject**

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

#### **(e) Unsafe Condition**

This AD was prompted by reports of the loss of global positioning system (GPS) data or degraded GPS positional accuracy and additional reports of an error in calculating Coordinated Universal Time (UTC) while using a certain multi-mode receiver (MMR) with certain software installed. The FAA is issuing this AD to address loss of GPS data and degraded GPS positional accuracy, which, during a high-precision approach with this GPS error, could result in controlled flight into terrain, and to address UTC calculation errors that could result in simultaneous MMR resets on multiple airplanes, increased air traffic control workload, and consequent reduction in airplane separation and potential for mid-air collision.

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

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

#### **(g) Retained Airplane Flight Manual (AFM) Revision, With No Changes**

This paragraph restates the requirements of paragraph (g) of AD 2020-03-20, with no changes. For airplanes equipped with Collins GLU-2100 MMR, part number (P/N) 822-2532-100, having any applicable GLU-2100 operational software (OPS) identified in figure 1 to paragraph (g) of this AD installed: At the applicable time specified in paragraphs (g)(1) and (2) of this AD, revise the limitations or certificate limitations section, as applicable, of the existing AFM to include the information specified in figure 2 to paragraph (g) of this AD and revise the procedures or normal procedures section, as applicable, of the existing AFM to include the information specified in figure 3 to paragraph (g) of this AD. This may be done by inserting a copy of figures 2 and 3 to paragraph (g) of this AD into the existing AFM.

(1) For Model 737-8 and 737-9 airplanes: Before further flight.

(2) For all airplanes except Model 737-8 and 737-9 airplanes: Within 7 days after February 18, 2020 (the effective date of AD 2020-03-20).

**Figure 1 to Paragraph (g)—Affected OPS Software**

<b>Airplanes</b>	<b>OPS Software Number</b>
Model 777-200, 777-200LR, 777-300, 777-300ER, and 777F series airplanes	COL4D-0087-0002
Model 737-600, 737-700, 737-700C, 737-800, 737-900, and 737-900ER series airplanes; and Model 737-8, and 737-9 airplanes	COL4E-0087-0001
All airplanes	COL48-0087-0700
Model MD-11, MD-11F, and 717-200 airplanes; and Model 737-600, 737-700, 737-700C, 737-800, 737-900, 737-900ER, 747-400F, 747-400, 757-200, 757-200PF, 757-200CB, 757-300, 767-200, 767-300, 767-300F, 767-400ER, 777-200, 777-200LR, 777-300, 777-300ER, and 777F series airplanes	COL49-0087-0701

**Figure 2 to Paragraph (g)—AFM—Limitations or Certificate Limitations**

**Electronics – Global Landing Unit (GLU)****(Required by AD 2020-03-20)**

Operations that require less than 0.3 RNP (For example, 0.1, 0.11, 0.15, etc.) in the region identified below are prohibited with GLU-2100 OPS software number COL4D-0087-0002, COL4E-0087-0001, COL48-0087-0700, or COL49-0087-0701 installed.

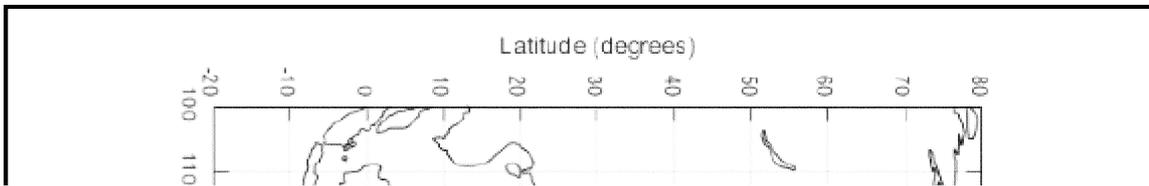
Exception: Anchorage (PANC) approach procedures that allow less than RNP 0.3 are authorized provided the instructions outlined in the Electronics – Global Landing Unit Section of Normal Procedures Chapter are followed.

Note: Currently, Fairbanks (PAFA) and Anchorage (PANC) are the only airports in the region with an RNP approach that requires better than 0.3 nmi performance.

Region bounded by the following coordinates:

<b>Latitude Range (degrees)</b>	<b>Longitude Range (degrees)</b>
80 N to 70 N	40 E to 40 W
70 N to 69 N	134.5 E to 134.38 W
69 N to 68 N	134.5 E to 137.28 W
68 N to 67 N	134.5 E to 139.50 W
67 N to 66 N	134.5 E to 141.58 W
66 N to 65 N	134.5 E to 144.23 W
65 N to 64 N	134.5 E to 145.48 W
64 N to 63 N	134.5 E to 146.44 W
63 N to 62 N	134.5 E to 148.33 W
62 N to 61 N	134.5 E to 149.50 W
61 N to 60 N	134.5 E to 150.35 W
60 N to 59 N	134.5 E to 151.00 W
59 N to 58 N	134.5 E to 151.40 W
58 N to 57 N	134.5 E to 152.62 W
57 N to 56 N	134.5 E to 153.42 W
56 N to 30 N	154 E to 154 W
30 N to 5 N	163 E to 163 W
5 N to 10 S	166 E to 166 W
10 S to 15 S	170 E to 170 W

**Figure 2 to Paragraph (g)—AFM—Limitations or Certificate Limitations Continued**



**Figure 3 to Paragraph (g)—AFM—Procedures or Normal Procedures**

**Electronics – Global Landing Unit (GLU)****(Required by AD 2020-03-20)**

To conduct an approach procedure with GLU-2100 OPS software number COL4D-0087-0002, COL4E-0087-0001, COL48-0087-0700, or COL49-0087-0701, installed at Anchorage (PANC) with less than 0.3 RNP, accomplish the following prior to dispatch in accordance with AC 90-101A:

Perform a RNP GPS prediction to ensure the predicted availability of GPS Horizontal Integrity Limit (HIL) is less than MAX HIL for the planned operation time frame at Anchorage (PANC).

MAX HIL = 1.8 (RNP – 0.0726 nm) for LNAV with A/P engaged

MAX HIL = 1.8 (RNP – 0.0926 nm) for LNAV with F/D

**(h) Software Installation for Certain Airplanes**

For airplanes identified in paragraphs (h)(1) through (7) of this AD with Collins GLU-2100 MMR, part number (P/N) 822-2532-100, having any applicable GLU-2100 operational software (OPS): Within 12 months after the effective date of this AD, install MMR OPS P/N COL4C-0087-0003, or later-approved software version, and do a software configuration check to confirm that P/N COL4C-0087-0003 or later-approved software version is installed. Both the installation and the check must be done in accordance with a method approved by the Manager, AIR-520, Continued Operational Safety Branch, FAA. Later-approved software versions are those Boeing or Collins software versions that are approved as a replacement for MMR OPS P/N COL4C-0087-0003 and are approved as part of the type design by the FAA or by The Boeing Company Organization Designation Authorization (ODA).

(1) Model MD-11 and MD-11F airplanes modified by STC ST01895WI.

(2) Model 717-200 airplanes modified by STC ST04416AT.

(3) Model 737-600, -700, -700C, -800, -900, and -900ER series airplanes modified by STC ST04436AT.

(4) Model 747-400 and 747-400F series airplanes modified by STC ST01892WI.

(5) Model 757-200, -200PF, -200CB, and -300 series airplanes modified by STC ST04436AT.

(6) Model 767-200, -300, -300F, and -400ER series airplanes modified by STC ST04436AT or ST01883WI.

(7) Model 777-200, -200LR, and -300 series airplanes.

**(i) Software Installation for Certain Other Airplanes**

For Model 737-8 and -9 airplanes, Model 737-900ER series airplanes, and Model 777-300ER and 777F series airplanes equipped with Collins GLU-2100 MMR, part number (P/N) 822-2532-100, having any applicable GLU-2100 operational software (OPS): Within 12 months after the effective date of this AD, except as specified in paragraph (j) of this AD, do all applicable actions identified in, and in accordance with, the Accomplishment Instructions of the applicable requirements bulletin identified in paragraphs (i)(1) through (3) of this AD.

(1) For Model 737-8 and -9 airplanes: Boeing Alert Requirements Bulletin 737-34A3572 RB, dated October 15, 2020.

**Note 1 to paragraph (i)(1):** Guidance for accomplishing the actions required by paragraph (i)(1) of this AD can be found in Boeing Alert Service Bulletin 737-34A3572, dated October 15, 2020, which is referred to in Boeing Alert Requirements Bulletin 737-34A3572 RB, dated October 15, 2020.

(2) For Model 737-900ER series airplanes: Boeing Alert Requirements Bulletin 737-34A3573 RB, dated August 5, 2020.

**Note 2 to paragraph (i)(2):** Guidance for accomplishing the actions required by paragraph (i)(2) of this AD can be found in Boeing Alert Service Bulletin 737-34A3573, dated August 5, 2020, which is referred to in Boeing Alert Requirements Bulletin 737-34A3573 RB, dated August 5, 2020.

(3) For Model 777-300ER and 777F series airplanes: Boeing Alert Requirements Bulletin 777-34A0385 RB, Revision 1, dated March 8, 2021.

**Note 3 to paragraph (i)(3):** Guidance for accomplishing the actions required by paragraph (i)(3) of this AD can be found in Boeing Alert Service Bulletin 777-34A0385, Revision 1, dated March 8, 2021, which is referred to in Boeing Alert Requirements Bulletin 777-34A0385 RB, Revision 1, dated March 8, 2021.

#### **(j) Exceptions to Service Information Specifications**

Where the requirements bulletins identified in paragraphs (i)(1) through (3) of this AD specify installing MMR option selection software (OSS) P/N BCG27-U000-0730 or BCG48-U000-05W9 and doing the associated software configuration check, this AD does not require those actions.

#### **(k) Terminating Action**

After accomplishing the actions required by paragraph (h) or (i) of this AD, as applicable, you may remove the AFM revision required by paragraph (g) of this AD.

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

This paragraph provides credit for the actions required by paragraph (i)(3) of this AD, if the actions were performed before the effective date of this AD using Boeing Alert Requirements Bulletin 777-34A0385 RB, dated August 7, 2020.

#### **(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: [AMOC@faa.gov](mailto:AMOC@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 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 2020-03-20 are approved as AMOCs for the corresponding provisions of this AD.

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

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

(2) Material identified in this AD that is not incorporated by reference is available at the addresses specified in paragraph (o)(3) of this AD.

#### **(o) Material Incorporated by Reference**

(1) The Director of the Federal Register approved the incorporation by reference of the material listed in this paragraph under [5 U.S.C. 552\(a\)](#) and [1 CFR part 51](#).

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

(i) Boeing Alert Requirements Bulletin 737-34A3572 RB, dated October 15, 2020.

(ii) Boeing Alert Requirements Bulletin 737-34A3573 RB, dated August 5, 2020.

(iii) Boeing Alert Requirements Bulletin 777-34A0385 RB, Revision 1, dated March 8, 2021.

(3) For Boeing material 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 material 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 material at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, visit [www.archives.gov/federal-register/cfr/ibr-locationsoremailfr.inspection@nara.gov](http://www.archives.gov/federal-register/cfr/ibr-locationsoremailfr.inspection@nara.gov).

Issued on January 16, 2025.

Suzanne Masterson,

Deputy Director, Integrated Certificate Management Division, Aircraft Certification Service.

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