



DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2023-1407; Project Identifier MCAI-2023-00788-T; Amendment 39-22501; AD 2023-14-01]

RIN 2120-AA64

Airworthiness Directives; Bombardier, Inc., Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule; request for comments.

SUMMARY: The FAA is superseding Airworthiness Directive (AD) 2023-06-13, which applied to all Bombardier, Inc., Model BD-700-2A12 airplanes. AD 2023-06-13 required revising the existing airplane flight manual (AFM) with new limitations to mitigate identified hazards due to interference from wireless broadband operations in the 3.7–3.98 GHz frequency band (5G C-Band) as identified by Notices to Air Missions (NOTAMs). Since the FAA issued AD 2023-06-13, the FAA determined that additional limitations are needed due to the continued deployment of new 5G C-Band stations whose signals are expected to cover most of the contiguous United States at transmission frequencies between 3.7-3.98 GHz. This AD requires revising the limitations section of the existing AFM to incorporate limitations prohibiting dispatch under certain master minimum equipment list (MMEL) items. The FAA is issuing this AD to address the unsafe condition on these products.

DATES: This AD is effective [INSERT DATE 15 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The FAA must receive comments on this AD by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE Federal Register].

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to [regulations.gov](https://www.regulations.gov). Follow the instructions for submitting comments.

- Fax: (202) 493-2251.

- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.

- Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

AD Docket: You may examine the AD docket at [regulations.gov](https://www.regulations.gov) under Docket No. FAA-2023-1407; 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 street address for Docket Operations is listed above.

FOR FURTHER INFORMATION CONTACT: Brett Portwood, Continued Operational Safety Technical Advisor, COS Program Management Section, Operational Safety Branch, FAA, 3960 Paramount Boulevard, Lakewood, CA 90712-4137; phone: 817-222-5390; email: operationalsafety@faa.gov.

SUPPLEMENTARY INFORMATION:

Comments Invited

The FAA invites you to send any written data, views, or arguments about this final rule. Send your comments to an address listed under ADDRESSES. Include “Docket No. FAA-2023-1407; Project Identifier MCAI-2023-00788-T” at the beginning of your comments. The most helpful comments reference a specific portion of the final rule, explain the reason for any recommended change, and include supporting data. The

FAA will consider all comments received by the closing date and may amend this final rule because of those comments.

Except for Confidential Business Information (CBI) as described in the following paragraph, and other information as described in 14 CFR 11.35, the FAA will post all comments received, without change, to regulations.gov, including any personal information you provide. The agency will also post a report summarizing each substantive verbal contact received about this final rule.

Confidential Business Information

CBI is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to this AD contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to this AD, it is important that you clearly designate the submitted comments as CBI. Please mark each page of your submission containing CBI as “PROPIN.” The FAA will treat such marked submissions as confidential under the FOIA, and they will not be placed in the public docket of this AD. Submissions containing CBI should be sent to Brett Portwood, Continued Operational Safety Technical Advisor, COS Program Management Section, Operational Safety Branch, FAA, 3960 Paramount Boulevard, Lakewood, CA 90712-4137; phone: 817-222-5390; email: operationalsafety@faa.gov. Any commentary that the FAA receives which is not specifically designated as CBI will be placed in the public docket for this rulemaking.

Background

The FAA issued AD 2021-23-12, Amendment 39-21810 (86 FR 69984, December 9, 2021) (AD 2021-23-12), to address the effect of interference from wireless broadband operations in the 5G C-Band on all transport and commuter category airplanes

equipped with a radio (also known as radar) altimeter. AD 2021-23-12 was prompted by a determination that radio altimeters cannot be relied upon to perform their intended function if they experience interference from wireless broadband operations in the 5G C-Band. AD 2021-23-12 required revising the limitations section of the existing AFM to incorporate limitations prohibiting certain operations, which require radio altimeter data to land in low visibility conditions, when in the presence of 5G C-Band interference as identified by NOTAMs. Transport Canada, which is the aviation authority for Canada, issued corresponding AD CF-2021-52, dated December 24, 2021, to prohibit certain flight operations requiring radio altimeter data in U.S. airspace affected by 5G C-Band wireless signals.

Transport Canada subsequently evaluated additional 5G-related hazards presented by 5G C-Band interference on Bombardier Model BD-700-2A12 airplanes and issued Transport Canada AD CF-2022-61, dated November 4, 2022 (AD CF-2022-61). AD CF-2022-61 was prompted by a determination that 5G C-Band interference can result in unavailable or misleading radio altimeter information, adversely affecting the performance of the automatic flight control system (AFCS) and fly-by-wire systems. Based on AD CF-2021-52, the FAA issued AD 2023-06-13, Amendment 39-22399 (88 FR 19811, April 4, 2023) (AD 2023-06-13), for all Bombardier, Inc., Model BD-700-2A12 airplanes. AD 2023-06-13 required revising the existing AFM to incorporate limitations prohibiting dispatch under a certain MMEL items and prohibiting autopilot and autothrottle operation below 400 feet above ground level when in the presence of 5G C-Band interference as identified by NOTAMs. The FAA issued AD 2023-06-13 to address the effects of 5G C-Band interference on the performance of the AFCS, which could result in increased flightcrew workload and adversely affect the safe operation of the airplane.

Actions Since AD 2023-06-13 was Issued

The FAA subsequently determined that NOTAMs identifying the 5G environment are no longer practical because of the continued deployment of new 5G C-Band base stations, whose signals are expected to cover most of the contiguous United States at transmission frequencies between 3.7-3.98 GHz. Accordingly, the FAA superseded AD 2021-23-12 and issued AD 2023-10-02 (88 FR 34065, May 26, 2023) (AD 2023-10-02). AD 2023-10-02 prohibits transport and commuter category airplanes from performing certain low-visibility landing operations at any airport unless they have upgraded their radio altimeters (i.e., are “radio altimeter tolerant”).

In addition, Transport Canada superseded AD CF-2022-61 and issued Transport Canada AD CF-2023-45, dated June 26, 2023 (Transport Canada AD CF-2023-45) (also referred to after this as “the MCAI”), for all Model BD-700-1A12 airplanes. Transport Canada determined that although anomalies with the AFCS and autothrottle remain possible in the presence of harmful interference, there are sufficient mitigating factors such that Transport Canada no longer considers this an unsafe condition. As a result, the MCAI removes the AFM limitation on the AFCS and autothrottle. The MCAI also replaces the prohibition of dispatch under certain MMEL items at airports identified by NOTAM with the same prohibition, for non-radio altimeter tolerant airplanes, at all airports in the contiguous United States. For radio altimeter tolerant airplanes, the MCAI does not prohibit dispatch under the MMEL items at 5G C-Band mitigated airports (CMAs) as identified in an FAA Domestic Notice. Transport Canada issued the MCAI to prevent dispatch under certain MMEL items which, in combination with 5G interference and a weight-on-wheels (WOW) signal failure, could result in inadvertent ground spoiler deployment in flight, reversion to ground mode control laws in the air, or air mode control laws on the ground.

You may examine the MCAI in the AD docket at [regulations.gov](https://www.regulations.gov) under Docket

No. FAA-2023-1407.

FAA's Determination

This product has been approved by the aviation authority of another country and is approved for operation in the United States. Pursuant to the FAA's bilateral agreement with this State of Design Authority, it has notified the FAA of the unsafe condition described in the MCAI referenced above. The FAA is issuing this AD after determining that the unsafe condition described previously is likely to exist or develop on other products of the same type design.

AD Requirements

This AD requires, before further flight, revising the AFM to incorporate limitations prohibiting dispatch with certain MMEL items at all airports for non-radio altimeter tolerant airplanes. For radio altimeter tolerant airplanes, the prohibited operations are allowed at 5G CMAs as identified in an FAA Domestic Notice.

Interim Action

The FAA considers that this AD is an interim action. Once the Technical Standard Order (TSO) standard for radio altimeters is established, which will follow the existing international technical consensus on the establishment of the minimum operational performance standards (MOPS), the FAA anticipates that the MOPS will be incorporated into the TSO. Once a new radio altimeter TSO is developed, approved, and available, the FAA might consider additional rulemaking.

Justification for Immediate Adoption and Determination of the Effective Date

Section 553(b)(3)(B) of the Administrative Procedure Act (APA) (5 U.S.C. 551 *et seq.*) authorizes agencies to dispense with notice and comment procedures for rules when the agency, for "good cause," finds that those procedures are "impracticable, unnecessary, or contrary to the public interest." Under this section, an agency, upon finding good cause, may issue a final rule without providing notice and seeking comment

prior to issuance. Further, section 553(d) of the APA authorizes agencies to make rules effective in less than thirty days, upon a finding of good cause.

An unsafe condition exists that requires the immediate adoption of this AD without providing an opportunity for public comments prior to adoption. The FAA has found that the risk to the flying public justifies forgoing notice and comment prior to adoption of this rule because dispatch under certain MMEL items, in combination with 5G interference and a WOW signal failure, could result in inadvertent ground spoiler deployment in flight, reversion to ground mode control laws in the air, or air mode control laws on the ground. This may lead to loss of continued safe flight and landing. To address this unsafe condition, the actions required by this AD must be accomplished before further flight. The FAA based this compliance time on the changes to the 5G C-Band environment beginning on July 1, 2023. These changes include increased wireless broadband deployment and transmissions closer to the parameters authorized by the FCC. Accordingly, notice and opportunity for prior public comment are impracticable and contrary to the public interest pursuant to 5 U.S.C. 553(b)(3)(B), and this AD.

In addition, the FAA finds that good cause exists pursuant to 5 U.S.C. 553(d) for making this amendment effective in less than 30 days, for the same reasons the FAA found good cause to forgo notice and comment.

Regulatory Flexibility Act (RFA)

The requirements of the Regulatory Flexibility Act (RFA) do not apply when an agency finds good cause pursuant to 5 U.S.C. 553 to adopt a rule without prior notice and comment. Because FAA has determined that it has good cause to adopt this rule without prior notice and comment, RFA analysis is not required.

Costs of Compliance

The FAA estimates that this AD affects 52 airplanes of U.S. registry of U.S. registry. The FAA estimates 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
AFM revisions	1 work-hour X \$85 ¹ per hour = \$85	\$0	\$85	\$4,420 ²

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, and

¹ The labor rate of \$85 per hour is the average wage rate for an aviation mechanic.

² The estimated cost for this revision does not constitute a significant economic impact (even for small entities) because \$85 is a minimal cost compared to the regular costs of maintaining and operating a Model BD-700-2A12 transport category airplane.

(2) Will not affect intrastate aviation in Alaska.

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 2023-06-13, Amendment 39 22399 (88 FR 19811, April 4, 2023); and

b. Adding the following new airworthiness directive:

2023-14-01 Bombardier, Inc.: Amendment 39-22501; Docket No. FAA-2023-1407; Project Identifier MCAI-2023-00788-T.

(a) Effective Date

This airworthiness directive (AD) is effective [INSERT DATE 15 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

This AD replaces AD 2023-06-13, Amendment 39-22399 (88 FR 19811, April 4, 2023) (AD 2023-06-13).

(c) Applicability

This AD applies to all Bombardier, Inc., Model BD-700-2A12 airplanes, certificated in any category.

(d) Subject

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

(e) Reason

This AD was prompted by a determination that radio altimeters cannot be relied upon to perform their intended function if they experience interference from wireless broadband operations in the 3.7-3.98 GHz frequency band (5G C-Band), and a recent determination that this interference may affect the ground spoiler deployment system, ground mode control laws, and air mode control laws. The FAA is issuing this AD to address inadvertent ground spoiler deployment in flight that could lead to increased flightcrew workload and loss of continued safe flight and landing.

(f) Compliance

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

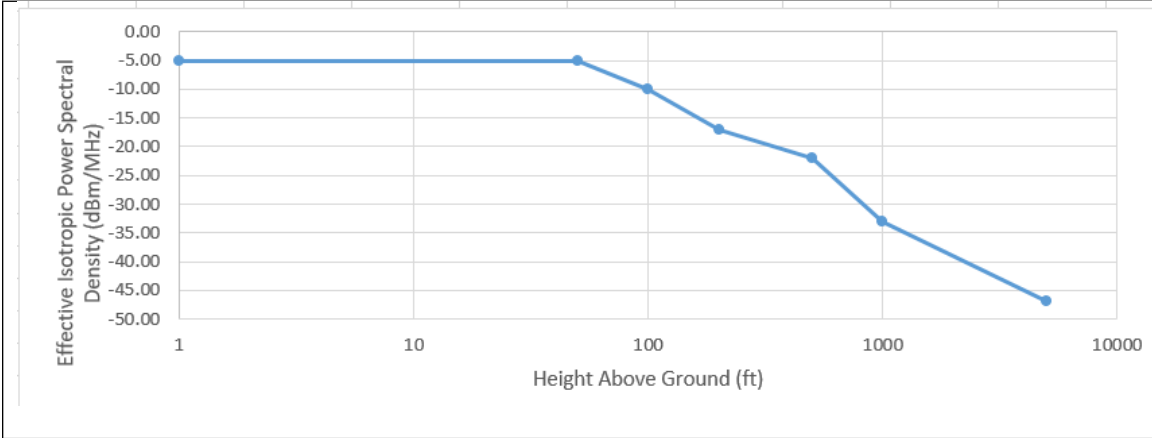
(g) Definitions

(1) For purposes of this AD, a “5G C-Band mitigated airport” (5G CMA) is an airport at which the telecommunications companies have agreed to voluntarily limit their 5G deployment at the request of the FAA, as identified by an FAA Domestic Notice.

(2) For purposes of this AD, a “radio altimeter tolerant airplane” is one for which the radio altimeter, as installed, demonstrates the tolerances specified in paragraphs (g)(2)(i) and (ii) of this AD, using a method approved by the FAA.

(i) Tolerance to radio altimeter interference, for the fundamental emissions (3.7–3.98 GHz), at or above the power spectral density (PSD) curve threshold specified in figure 1 to paragraph (g)(2)(i) of this AD.

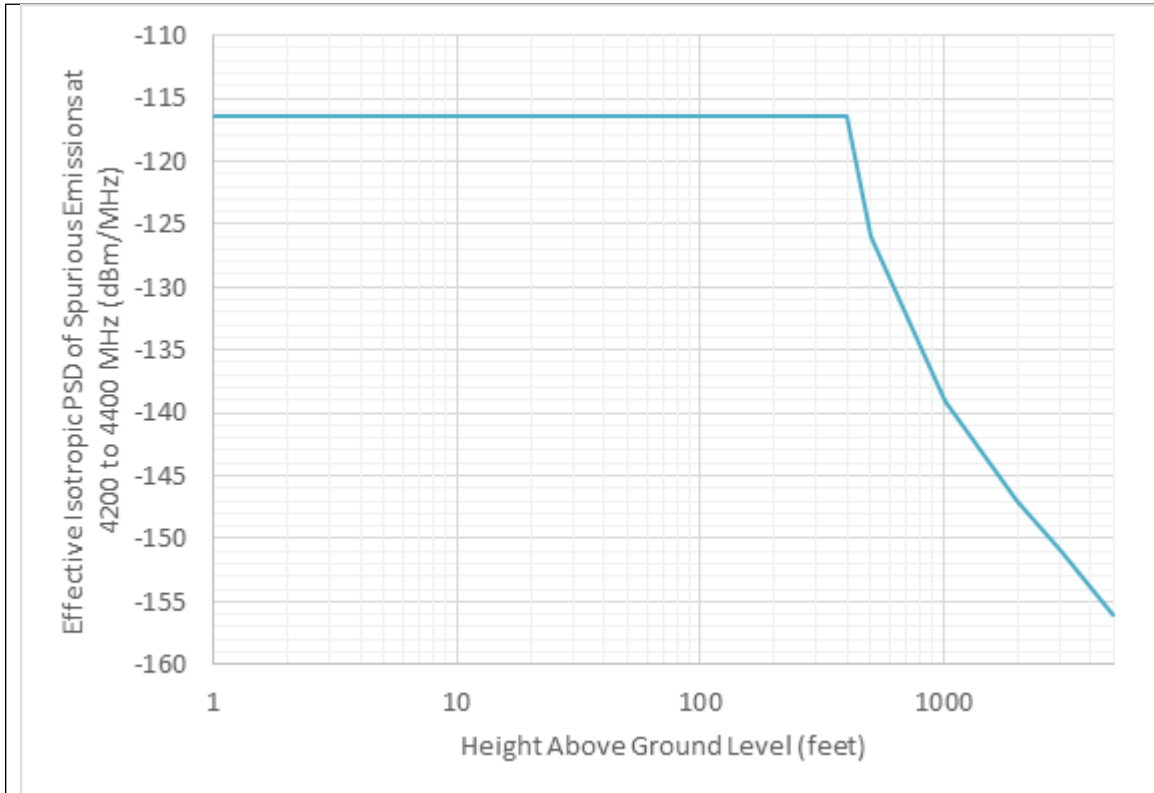
Figure 1 to paragraph (g)(2)(i) – Fundamental Effective Isotropic PSD at Outside Interface of Aircraft Antenna



Height above ground (ft)	Effective Isotropic PSD (dBm/MHz)
Aircraft on the ground	-5
50	-5
100	-10
200	-17
500	-22
1000	-33
5000	-47

(ii) Tolerance to radio altimeter interference, for the spurious emissions (4.2–4.4 GHz), at or above the PSD curve threshold specified in figure 2 to paragraph (g)(2)(ii) of this AD.

Figure 2 to paragraph (g)(2)(ii) – Spurious Effective Isotropic PSD at Outside Interface of Aircraft Antenna



<u>Aircraft Altitude (ft AGL)</u>	<u>Effective Isotropic PSD (dBm/MHz)</u>
1	-116.50
400	-116.50
500	-126.00
1000	-139.00
2000	-147.00
3000	-151.00
5000	-156.00

(3) For purposes of this AD, a “non-radio altimeter tolerant airplane” is one for which the radio altimeter, as installed, does not demonstrate the tolerances specified in paragraphs (g)(2)(i) and (ii) of this AD.

(h) Airplane Flight Manual (AFM) Revision for Non-Radio Altimeter Tolerant Airplanes: MMEL Restriction

For non-radio altimeter tolerant airplanes, before further flight, revise the Limitations Section of the existing AFM to include the information specified in figure 3 to paragraph (h) of this AD. This may be done by inserting a copy of figure 3 to paragraph (h) of this AD into the existing AFM.

**Figure 3 to paragraph (h) – AFM Revision for Non-Radio Altimeter Tolerant Airplanes:
MMEL Restriction**

Radio Altimeter 5G C-Band Interference, MMEL Restrictions

Due to the presence of 5G C-Band wireless broadband interference, dispatch or release is prohibited under the following MMEL Sections into or out of airports in the contiguous U.S. airspace.

- a. Section 1 Line Replaceable Unit (LRU) Component Relief:
 - i. 32-43-33 – MAIN WHEEL AXLE-INTERFACE-MODULE/WHEEL SPEED TRANSDUCER 1) WHEEL SPEED TRANSDUCER
 - ii. 32-61-09 – MAIN LANDING GEAR WEIGHT ON WHEELS PROXIMITY SWITCHES
 - iii. 34-44-00 – RADIO ALTIMETER SYSTEM
- b. Section 2 Crew Alerting System (CAS) Message Relief:
 - i. 27-0645 – 27 FLT CTRL – PFCC BCU INPUT REDUND LOSS
 - ii. 27-0660 – 27 FLT CTRL – PFCC LGSCU INPUT REDUND LOSS
 - iii. 27-0665 – 27 FLT CTRL – PFCC RAD ALT INPUT REDUND LOSS
 - iv. 32-0048 – 32 GEAR – GEAR WOW / WOFFW REDUND LOSS
 - v. 32-1005 – ANTISKID DEGRADED (CAUTION)
 - vi. 34-1200 – RAD ALT 1 FAIL (Advisory)

(i) AFM Revision for Radio Altimeter Tolerant Airplanes: MMEL Restriction

For radio altimeter tolerant airplanes, before further flight, revise the Limitations Section of the existing AFM to include the information specified in figure 4 to paragraph (i) of this AD. This may be done by inserting a copy of figure 4 to paragraph (i) of this AD into the existing AFM.

**Figure 4 to paragraph (i) – AFM Revision for Radio Altimeter Tolerant Airplanes:
MMEL Restriction**

Radio Altimeter 5G C-Band Interference, MMEL Restriction

Due to the presence of 5G C-Band wireless broadband interference, dispatch or release is prohibited under the following MMEL Sections into or out of airports in the contiguous U.S. airspace, unless operating at a 5G C-Band mitigated airport as identified in an FAA Domestic Notice.

- a. Section 1 Line Replaceable Unit (LRU) Component Relief:
 - i. 32-43-33 – MAIN WHEEL AXLE-INTERFACE-MODULE/WHEEL SPEED TRANSDUCER 1) WHEEL SPEED TRANSDUCER
 - ii. 32-61-09 – MAIN LANDING GEAR WEIGHT ON WHEELS PROXIMITY SWITCHES
 - iii. 34-44-00 – RADIO ALTIMETER SYSTEM
- b. Section 2 Crew Alerting System (CAS) Message Relief:
 - i. 27-0645 – 27 FLT CTRL – PFCC BCU INPUT REDUND LOSS
 - ii. 27-0660 – 27 FLT CTRL – PFCC LGSCU INPUT REDUND LOSS
 - iii. 27-0665 – 27 FLT CTRL – PFCC RAD ALT INPUT REDUND LOSS
 - iv. 32-0048 – 32 GEAR – GEAR WOW / WOFFW REDUND LOSS
 - v. 32-1005 – ANTISKID DEGRADED (CAUTION)
 - vi. 34-1200 – RAD ALT 1 FAIL (Advisory)

(j) Additional AD Provisions

The following provisions also apply to this AD:

(1) *Alternative Methods of Compliance (AMOCs)*: The Manager, 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 Operational Safety Branch, send it to the attention of the person identified in paragraph (k)(2) of this AD. Information may be emailed to: 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.

(k) Additional Information

(1) Refer to Transport Canada AD CF-2023-45, dated June 26, 2023, for related information. This Transport Canada AD may be found in the AD docket at [regulations.gov](https://www.regulations.gov) under Docket No. FAA-2023-1407.

(2) For more information about this AD, contact Brett Portwood, Continued Operational Safety Technical Advisor, COS Program Management Section, Operational Safety Branch, FAA, 3960 Paramount Boulevard, Lakewood, CA 90712-4137; phone: 817-222-5390; email: operationalsafety@faa.gov.

(l) Material Incorporated by Reference

None.

Issued on July 3, 2023.

Michael Linegang, Acting Director,
Compliance & Airworthiness Division,
Aircraft Certification Service.

[FR Doc. 2023-14770 Filed: 7/7/2023 4:15 pm; Publication Date: 7/12/2023]