



[4910-13-P]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2019-0256; Product Identifier 2019-NM-027-AD; Amendment 39-19786; AD 2019-22-07]

RIN 2120-AA64

Airworthiness Directives; Bombardier, Inc., Airplanes

AGENCY: Federal Aviation Administration (FAA), Department of Transportation (DOT).

ACTION: Final rule.

SUMMARY: The FAA is adopting a new airworthiness directive (AD) for all Bombardier, Inc., Model CL-600-2B19 (Regional Jet Series 100 & 440) airplanes, Model CL-600-2C10 (Regional Jet Series 700, 701 & 702) airplanes, Model CL-600-2D15 (Regional Jet Series 705) airplanes, Model CL-600-2D24 (Regional Jet Series 900) airplanes, and Model CL-600-2E25 (Regional Jet Series 1000) airplanes. This AD was prompted by a report that during Automatic Flight Control System (AFCS) ALTS CAP or (V) ALTS CAP mode, the flight guidance/autopilot does not account for engine failure while capturing an altitude. This AD requires revising the existing airplane flight manual (AFM) to include a limitation and an abnormal operating procedure for the AFCS. The FAA is issuing this AD to address the unsafe condition on these products.

DATES: This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of certain publications listed in this AD as of [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: For service information identified in this final rule, contact Bombardier, Inc., 400 Côte-Vertu Road West, Dorval, Québec H4S 1Y9, Canada; Widebody Customer Response Center North America toll-free telephone 1-866-538-1247 or direct-dial telephone 1-514-855-2999; fax 514-855-7401; email ac.yul@aero.bombardier.com; Internet <https://www.bombardier.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 <https://www.regulations.gov> by searching for and locating Docket No. FAA-2019-0256.

Examining the AD Docket

You may examine the AD docket on the Internet at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2019-0256; 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 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: Steven Dzierzynski, Aerospace Engineer, Avionics and Electrical Systems Services Section, FAA, New York ACO

Branch, 1600 Stewart Avenue, Suite 410, Westbury, NY 11590; telephone 516-228-7367; fax 516-794-5531; email 9-avs-nyaco-cos@ faa.gov.

SUPPLEMENTARY INFORMATION:

Discussion

Transport Canada Civil Aviation (TCCA), which is the aviation authority for Canada, has issued Canadian AD CF-2018-32, dated December 10, 2018 (referred to after this as the Mandatory Continuing Airworthiness Information, or “the MCAI”), to correct an unsafe condition for all Bombardier, Inc., Model CL-600-2B19 (Regional Jet Series 100 & 440) airplanes, Model CL-600-2C10 (Regional Jet Series 700, 701 & 702) airplanes, Model CL-600-2D15 (Regional Jet Series 705) airplanes, Model CL-600-2D24 (Regional Jet Series 900) airplanes, and Model CL-600-2E25 (Regional Jet Series 1000) airplanes.

The FAA issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 by adding an AD that would apply to the airplanes identified in the MCAI. The NPRM published in the Federal Register on May 14, 2019 (84 FR 21276). The NPRM was prompted by a report that during AFCS ALTS CAP or (V) ALTS CAP mode the flight guidance/autopilot does not account for engine failure while capturing an altitude. The NPRM proposed to require revising the existing AFM to include a limitation and abnormal operating procedure for the AFCS.

The FAA is issuing this AD to address an engine failure, if it occurs during or before a climb while in ALTS CAP or (V) ALTS CAP mode, which may cause the airspeed to drop significantly below the safe operating speed, possibly resulting in reduced control of the airplane. See the MCAI for additional background information.

Comments

The FAA 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.

Support for the NPRM

The Air Line Pilots Association, International (ALPA) indicated its support for the NPRM. Endeavor Air stated that it has no objection to adding a requirement to revise the existing AFM to include the information in Subject 2, "Automatic Flight Control System (AFCS)," of Section 02-08, "System Limitations," of Chapter 2, "LIMITATIONS," of the applicable Bombardier AFM.

Request to Remove a Proposed Requirement

Endeavor Air stated that it disagreed with the proposed requirement to revise the existing AFM to include the information in Subject C, "Engine Failure in Climb During ALTS CAP," or "Engine Failure in Climb During (V) ALTS CAP," of Section 05-02, "In-flight Engine Failures," of Chapter 5, "ABNORMAL PROCEDURES," as applicable, of the applicable Bombardier AFM. The commenter stated that the increased pilot workload of having to accomplish two independent quick reference handbook procedures following an engine failure would reduce the safety margins. The commenter explained that when an engine failure occurs during (V) ALTS CAP mode, the resulting speed decay is minimal given a worst-case scenario of climbing at a slow airspeed with a high rate of climb, which could result in the greatest amount of time in (V) ALTS CAP mode. The commenter further explained that by the time the pilot flying the airplane called for the procedure and disconnected the autopilot, the (V) ALTS CAP phase would

be over and the airplane would be in level flight. The commenter mentioned that the decrease in automation and increase in pilot workload could reduce the pilot's situational awareness of the engine failure malfunction and the state of the airplane.

The FAA infers that the commenter is requesting that the requirement to revise the existing AFM to include the information specified in Subject C, "Engine Failure in Climb During ALTS CAP," or "Engine Failure in Climb During (V) ALTS CAP," of Section 05-02, "In-flight Engine Failures," of Chapter 5, "ABNORMAL PROCEDURES," of the applicable Bombardier AFM be removed from this AD. The FAA disagrees with the commenter's request. In ALTS CAP mode the speed control is on thrust; therefore, the loss of a single engine would result in airspeed decay if the flight director guidance was followed by the autopilot or flight director commands.

Furthermore, for the Model CL-600-2C10 (Regional Jet Series 700, 701 & 702) airplanes, Model CL-600-2D15 (Regional Jet Series 705) airplanes, Model CL-600-2D24 (Regional Jet Series 900) airplanes, and Model CL-600-2E25 (Regional Jet Series 1000) airplanes, a simulation showed that at certain weights, V_{MCA} (the minimum control speed in the air) could be reached before the stall warning occurred, with the potential for loss of control of the airplane if the flight director commands were followed without any pilot action to otherwise control speed with pitch attitude. In some worst-case conditions, to ensure a safe speed, the automation (autopilot) must be disconnected.

In addition, the purpose of the AFM abnormal procedure is to ensure flightcrew awareness of the requirement to disconnect the autopilot and control the airspeed with pitch attitude. In regard to increased pilot workload, the FAA considered that a pilot of at least average skill would, in most cases, intuitively disconnect the autopilot and control

speed manually in the event of a large deceleration while in ALTS CAP mode. The intent of the AFM abnormal procedure is to provide instructions for the steps required to maintain speed control, as opposed to a checklist in a quick reference handbook to address such a situation if encountered. Furthermore, in some conditions, the duration of ALTS CAP mode may be short enough that the airspeed decay may not be large, but the AFM must address the worst-case conditions. The FAA has not revised this AD in regard to this issue.

Conclusion

The FAA reviewed the relevant data, considered the comments received, and determined that air safety and the public interest require adopting this final rule as proposed, except for minor editorial changes. The FAA has 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.

Related Service Information under 1 CFR part 51

Bombardier has issued the following service information, which describes procedures for revising the existing AFM by including a limitation that specifies a warning for the AFCS and an abnormal operating procedure if an engine failure occurs during or before a climb while in ALTS CAP mode or if an engine failure occurs during or before a climb while in (V) ALTS CAP mode. These documents are distinct since they apply to different airplane models.

- Subject 2, “Automatic Flight Control System (AFCS),” of Section 02-08, “System Limitations,” of Chapter 2, “LIMITATIONS;” and Subject 1.C, “Engine Failure in Climb During ALTS CAP,” and Subject 1.C, “Engine Failure in Climb During (V) ALTS CAP,” of Section 05-02, “In-flight Engine Failures,” of Chapter 5, “ABNORMAL PROCEDURES;” of the Bombardier CRJ Series Regional Jet Model CL-600-2B19 AFM, Volume 1, CSP A-012, Revision 70, dated July 13, 2018.

- Subject 2, “ Automatic Flight Control System (AFCS),” of Section 02-08, “System Limitations,” of Chapter 2, “LIMITATIONS;” and Subject 1.C, “Engine Failure in Climb During ALTS CAP,” and Subject 1.C, “Engine Failure in Climb During (V) ALTS CAP,” of Section 05-02, “In-flight Engine Failures,” of Chapter 5, “ABNORMAL PROCEDURES;” of the Bombardier CRJ Series Regional Jet CL-600-2C10, AFM CSP B-012, Revision 24, dated May 11, 2018.

- Subject 2, “Automatic Flight Control System (AFCS),” of Section 02-08, “System Limitations,” of Chapter 2, “LIMITATIONS;” and Subject 1.C, “Engine Failure in Climb During ALTS CAP,” and Subject 1.C, “Engine Failure in Climb During (V) ALTS CAP,” of Section 05-02, “In-flight Engine Failures,” of Chapter 5, “ABNORMAL PROCEDURES;” of the Bombardier CRJ Series Regional Jet Model CL-600-2D24 and CL-600-2D15 AFM, Volume 1, CSP C-012, Revision 19A, dated August 17, 2018.

- Subject 2, “Automatic Flight Control System (AFCS),” of Section 02-08, “System Limitations,” of Chapter 2, “LIMITATIONS;” and Subject 1.C, “Engine Failure in Climb During ALTS CAP,” and Subject 1.C, “Engine Failure

in Climb During (V) ALTS CAP,” of Section 05-02, “In-flight Engine Failures,” of Chapter 5, “ABNORMAL PROCEDURES;” of the Bombardier CRJ Series Regional Jet Model CL-600-2E25 AFM CSP D-012, Revision 20, dated September 28, 2018.

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

The FAA estimates that this AD affects 985 airplanes of U.S. registry. The FAA estimates the following costs to comply with this AD:

Estimated costs for required actions

Labor cost	Parts cost	Cost per product	Cost on U.S. operators
1 work-hour X \$85 per hour = \$85	\$0	\$85	\$83,725

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.

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) 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.

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):

2019-22-07 Bombardier, Inc.: Amendment 39-19786; Docket No. FAA-2019-0256;

Product Identifier 2019-NM-027-AD.

(a) Effective Date

This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

None.

(c) Applicability

This AD applies to the Bombardier, Inc. airplanes identified in paragraphs (c)(1) through (5) of this AD, certificated in any category, all manufacturer serial numbers.

(1) Model CL-600-2B19 (Regional Jet Series 100 & 440) airplanes.

(2) Model CL-600-2C10 (Regional Jet Series 700, 701 & 702) airplanes.

(3) Model CL-600-2D15 (Regional Jet Series 705) airplanes.

(4) Model CL-600-2D24 (Regional Jet Series 900) airplanes.

(5) Model CL-600-2E25 (Regional Jet Series 1000) airplanes.

(d) Subject

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

(e) Reason

This AD was prompted by a report that during Automatic Flight Control System (AFCS) ALTS CAP or (V) ALTS CAP mode the flight guidance/autopilot does not account for engine failure while capturing an altitude. The FAA is issuing this AD to address an engine failure, if it occurs during or before a climb while in ALTS CAP or (V) ALTS CAP mode, which may cause the airspeed to drop significantly below the safe operating speed, possibly resulting in reduced control of the airplane.

(f) Compliance

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

(g) Revision of the Airplane Flight Manual (AFM)

Within 30 days after the effective date of this AD: Revise the existing AFM to include the information in Subject 2, “Automatic Flight Control System (AFCS),” of Section 02-08, “System Limitations,” of Chapter 2, “LIMITATIONS;” and Subject 1.C, “Engine Failure in Climb During ALTS CAP,” or Subject 1.C, “Engine Failure in Climb During (V) ALTS CAP,” of Section 05-02, “In-flight Engine Failures,” of Chapter 5, “ABNORMAL PROCEDURES;” as applicable; of the applicable AFM identified in figure 1 to paragraph (g) of this AD.

Figure 1 to paragraph (g) - AFM Revision

Bombardier Airplane Model	AFM Number	CRJ Series Regional Jet AFM Revision
CL-600-2B19	CSP A-012, Volume 1	Revision 70, dated July 13, 2018.
CL-600-2C10	CSP B-012	Revision 24, dated May 11, 2018.
CL-600-2D15 CL-600-2D24	CSP C-012, Volume 1	Revision 19A, dated August 17, 2018.

Bombardier Airplane Model	AFM Number	CRJ Series Regional Jet AFM Revision
CL-600-2E25	CSP D-012	Revision 20, dated September 28, 2018.

(h) Credit for Previous Actions

This paragraph provides credit for actions required by paragraph (g) of this AD, if those actions were performed before the effective date of this AD using the applicable AFM specified in figure 2 to paragraph (h) of this AD.

Figure 2 to paragraph (h) - Credit for Previous AFM Revision

Bombardier Airplane Model	AFM Number	CRJ Series Regional Jet AFM Revision
CL-600-2B19	CSP A-012	Revision 68, dated August 4, 2017; or Revision 69, dated January 5, 2018.
CL-600-2C10	CSP B-012	Revision 22, dated September 15, 2017; Revision 22A, dated January 3, 2018; Revision 23, dated March 2, 2018; or Revision 23A, dated April 30, 2018.
CL-600-2D15 CL-600-2D24	CSP C-012	Revision 17, dated October 13, 2017; Revision 17A, dated November 15, 2017; Revision 17B, dated January 3, 2018; Revision 18, dated March 29, 2018; Revision 18A, dated April 30, 2018; or Revision 19, dated June 15, 2018.
CL-600-2E25	CSP D-012	Revision 17, dated June 16, 2017; Revision 18, dated November 10, 2017; Revision 18A, dated January 3, 2018; or Revision 19, dated April 27, 2018.

(i) Other FAA AD Provisions

The following provisions also apply to this AD:

(1) *Alternative Methods of Compliance (AMOCs)*: The Manager, New York 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 ATTN: Program Manager, Continuing Operational Safety, FAA, New York ACO Branch, 1600 Stewart Avenue, Suite 410, Westbury, NY 11590; telephone 516-228-7300; fax 516-794-5531. 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.

(2) *Contacting the Manufacturer*: For any requirement in this AD to obtain corrective actions from a manufacturer, the action must be accomplished using a method approved by the Manager, New York ACO Branch, FAA; or Transport Canada Civil Aviation (TCCA); or Bombardier, Inc.'s TCCA Design Approval Organization (DAO). If approved by the DAO, the approval must include the DAO-authorized signature.

(j) Related Information

(1) Refer to Mandatory Continuing Airworthiness Information (MCAI) Canadian AD CF-2018-32, dated December 10, 2018, for related information. This MCAI may be found in the AD docket on the Internet at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2019-0256.

(2) For more information about this AD, contact Steven Dzierzynski, Aerospace Engineer, Avionics and Electrical Systems Services Section, FAA, New York ACO

Branch, 1600 Stewart Avenue, Suite 410, Westbury, NY 11590; telephone 516-228-7367; fax 516-794-5531; email 9-avs-nyaco-cos@faa.gov.

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

(k) Material Incorporated by Reference

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

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

(i) Bombardier CRJ Series Regional Jet Model CL-600-2B19 Airplane Flight Manual (AFM), Volume 1, CSP A-012, Revision 70, dated July 13, 2018.

(A) Subject 2, “Automatic Flight Control System (AFCS),” of Section 02-08, “System Limitations,” of Chapter 2, “LIMITATIONS.”

(B) Subject 1.C, “Engine Failure in Climb During ALTS CAP,” and Subject 1.C, “Engine Failure in Climb During (V) ALTS CAP,” of Section 05-02, “In-flight Engine Failures,” of Chapter 5, “ABNORMAL PROCEDURES.”

(ii) Bombardier CRJ Series Regional Jet Model CL-600-2C10 AFM, CSP B-012, Revision 24, dated May 11, 2018.

(A) Subject 2, “Automatic Flight Control System (AFCS),” of Section 02-08, “System Limitations,” of Chapter 2, “LIMITATIONS.”

(B) Subject 1.C, “Engine Failure in Climb During ALTS CAP,” and Subject 1.C, “Engine Failure in Climb During (V) ALTS CAP,” of Section 05-02, “In-flight Engine Failures,” of Chapter 5, “ABNORMAL PROCEDURES.”

(iii) Bombardier CRJ Series Regional Jet Model CL-600-2D24 and Model CL-600-2D15 AFM, Volume 1, CSP C-012, Revision 19A, dated August 17, 2018.

(A) Subject 2, “Automatic Flight Control System (AFCS),” of Section 02-08, “System Limitations,” of Chapter 2, “LIMITATIONS.”

(B) Subject 1.C, “Engine Failure in Climb During ALTS CAP,” and Subject 1.C, “Engine Failure in Climb During (V) ALTS CAP,” of Section 05-02, “In-flight Engine Failures,” of Chapter 5, “ABNORMAL PROCEDURES.”

(iv) Bombardier CRJ Series Regional Jet Model CL-600-2E25 AFM, CSP D-012, Revision 20, dated September 28, 2018.

(A) Subject 2, “Automatic Flight Control System (AFCS),” of Section 02-08, “System Limitations,” of Chapter 2, “LIMITATIONS.”

(B) Subject 1.C, “Engine Failure in Climb During ALTS CAP,” and Subject 1.C, “Engine Failure in Climb During (V) ALTS CAP,” of Section 05-02, “In-flight Engine Failures,” of Chapter 5, “ABNORMAL PROCEDURES.”

(3) For service information identified in this AD, contact Bombardier, Inc., 400 Côte Vertu Road West, Dorval, Québec H4S 1Y9, Canada; Widebody Customer Response Center North America toll-free telephone 1-866-538-1247 or direct-dial telephone 1-514-855-2999; fax 514-855-7401; email ac.yul@aero.bombardier.com; Internet <https://www.bombardier.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, email fedreg.legal@nara.gov, or go to: <https://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued in Des Moines, Washington, on November 18, 2019.

Jeffrey E. Duven,
Director,
System Oversight Division,
Aircraft Certification Service.

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