



**DATE: November 22, 2022**  
**AD #: 2022-25-51**

Emergency Airworthiness Directive (AD) 2022-25-51 is sent to owners and operators of Airbus Canada Limited Partnership (Type Certificate previously held by C Series Aircraft Limited Partnership (CSALP); Bombardier, Inc.) Model BD-500-1A10 and BD-500-1A11 airplanes.

### **Background**

Transport Canada, which is the aviation authority for Canada, has issued Transport Canada Emergency AD CF-2022-64, dated November 17, 2022 (Transport Canada Emergency AD CF-2022-64) (referred to after this as the mandatory continuing airworthiness information, or the MCAI), to correct an unsafe condition on all Airbus Canada Limited Partnership Model BD-500-1A10 and BD-500-1A11 airplanes.

There have been 38 in-service events, including two nearly catastrophic events, whereby the flightcrew inadvertently engaged the autopilot while attempting to engage the autothrottle late into the take-off phase or when re-engaging the autothrottle. Engaging the autopilot below 400 feet (ft) above ground level is prohibited by the existing airplane flight manual (AFM). The control panel for autothrottle and autopilot engagement is structured in such a way that it is possible for the flightcrew to mistakenly engage the autopilot when attempting to re-engage the autothrottle. The autothrottle system is prone to disconnect due to different sources for airspeed between the autothrottle and the flight control system monitor, which can occur during turbulence. The disconnect may also occur due to different sources for pressure altitude between autothrottle application and autothrottle monitor. Additionally, the autopilot engagement is not currently inhibited during takeoff and with sufficient speed will cause the airplane to command a pitch increase to capture the pitch target marker, which may cause premature rotation, including at speeds below V<sub>1</sub> at the time of autopilot engagement. Premature airplane pitch up will require the flightcrew to intervene immediately, and depending on the speed, could lead to a tail strike. If the flightcrew does not reject the takeoff, premature rotation due to autopilot engagement below V<sub>r</sub> may result in low-energy liftoff.

In September 2022, there was an incident in which the autothrottle disengaged during takeoff, and when the flightcrew attempted to re-engage the autothrottle, they mistakenly engaged the autopilot, which resulted in the aircraft rotating below the V<sub>1</sub> speed. This resulted in a low-energy takeoff, which is extremely hazardous as it could lead to the airplane stalling and/or impacting terrain.

Existing procedures provide operational recommendations and procedures to follow for autothrottle selection and in the event of an autothrottle disconnect during takeoff. The autothrottle cannot be re-engaged if it becomes disconnected on takeoff above 60 knots and below 400 ft above ground level. Therefore, the flightcrew should not attempt to re-engage the autothrottle if it becomes disconnected on takeoff. As previously mentioned, trying to re-engage autothrottle below 400 ft above ground level may result in inadvertent engagement of the autopilot. The MCAI requires revising the existing autopilot engagement airplane flight limitation to include an associated warning statement alerting flightcrew to possible outcomes from the inadvertent engagement of the autopilot during takeoff roll.

This emergency AD is intended to address inadvertent engagement of the autopilot below 400 ft above ground level by adopting the autopilot engagement warning statement specified in Transport Canada Emergency AD CF-2022-64. However, this AD differs from the Transport Canada Emergency AD by also requiring revising the existing AFM to include an additional limitation to avoid inadvertent engagement of autopilot during takeoff by prohibiting selecting or reselecting autothrottle after the thrust levers are advanced to the takeoff setting until the aircraft is at or above 400 ft above ground level. This condition, if not addressed, could result in premature rotation due to inadvertent autopilot engagement, possibly leading to tail-strike, inability to climb, and loss of control of the airplane.

### **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 the State of Design Authority, it has notified the FAA of the unsafe condition described in the MCAI described above. The FAA is issuing this AD after determining that the unsafe condition described previously is likely to exist or develop in other products of the same type design.

### **Emergency AD Requirements**

This emergency AD requires revising the Limitations section of the existing AFM to include a new warning to the existing autopilot engagement limitations and a new limitation prohibiting selecting or reselecting autothrottle during takeoff after thrust levers are advanced to the takeoff setting.

### **Interim Action**

The FAA considers that this emergency AD is an interim action. If final action is later identified, the FAA might consider further rulemaking then.

### **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 emergency AD to all known U.S. owners and operators of these airplanes. Due to an autopilot/autothrottle system design, the flightcrew has inadvertently engaged the autopilot while attempting to engage the autothrottle during a critical phase of flight. The most recent incident in September 2022, resulted in a low-energy takeoff when the flightcrew attempted to re-engage the autothrottle but mistakenly engaged the autopilot. Such a result is extremely hazardous as it could lead to the aircraft stalling and/or impacting terrain. The FAA has found that the risk to the flying public justifies forgoing notice and comment prior to adoption of this rule because inadvertent autopilot engagement below 400 ft above ground level could result in premature rotation due to inadvertent autopilot engagement, possibly leading to tail-strike, inability to climb, and loss of control of the airplane. 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).

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.

### **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.

### **Presentation of the Actual Emergency Airworthiness Directive**

The FAA is issuing this emergency airworthiness directive under 49 U.S.C. 106(g), 40113, and 44701 according to the authority delegated to me by the Administrator.

**2022-25-51 Airbus Canada Limited Partnership (Type Certificate Previously Held by C Series Aircraft Limited Partnership (CSALP); Bombardier, Inc.): Project Identifier**  
MCAI-2022-01486-T.

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

This emergency airworthiness directive (AD) is effective upon receipt.

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

None.

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

This emergency AD applies to all Airbus Canada Limited Partnership (Type Certificate previously held by C Series Aircraft Limited Partnership (CSALP); Bombardier, Inc.) Model BD-500-1A10 and BD-500-1A11 airplanes, certificated in any category.

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

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

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

This emergency AD was prompted by reports of the autopilot/autothrottle system design resulting in inadvertent engagement of the autopilot when the flightcrew was attempting to engage the autothrottle late into the take-off phase or when attempting to re-engage the autothrottle during takeoff after uncommanded disconnect. The FAA is issuing this AD to address inadvertent engagement of the autopilot below 400 feet above ground level when the flightcrew attempts to engage autothrottle. The unsafe condition, if not addressed, could result in premature rotation due to inadvertent autopilot engagement, possibly leading to tail-strike, inability to climb, and loss of control of the airplane.

**(f) Compliance**

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

**(g) Revision of Existing AFM**

Within 7 days after the effective date of this emergency AD, revise the Limitations section of the existing airplane flight manual (AFM) to include the information specified in figure 1 to paragraph (g) of this AD. This may be accomplished by inserting a copy of figure 1 to paragraph (g) of this AD into the existing AFM. Using an AFM revision that includes information identical to that in figure 1 to paragraph (g) of this AD is acceptable for compliance with the requirement of this paragraph.

**Figure 1 to paragraph (g): Autopilot and Autothrottle Engagement Limitation**

**AUTOPILOT and AUTOTHROTTLE ENGAGEMENT**

**WARNING**

Autopilot engagement during takeoff roll can result in premature rotation, possibly leading to tail-strike, inability to climb or loss of control. Immediate crew intervention is required.

The minimum height for engagement of autopilot is 400 feet AGL.

The minimum height for use of autopilot is 80 feet AGL.

To avoid inadvertent engagement of autopilot, during takeoff, the autothrottle must not be selected or re-selected after the thrust levers are advanced to the takeoff setting until the aircraft is at or above 400 feet AGL.

**(h) Additional Emergency AD Provisions**

The following provisions also apply to this emergency 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 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; email: 9-avs-nyaco-cos@faa.gov, telephone 516-228-7300. Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the responsible Flight Standards Office.

(2) *Contacting the Manufacturer*: For any requirement in this emergency AD to obtain instructions from a manufacturer, the instructions must be accomplished using a method approved by the Manager, New York ACO Branch, FAA; or Transport Canada; or Airbus Canada Limited Partnership's Transport Canada Design Approval Organization (DAO). If approved by the DAO, the approval must include the DAO-authorized signature.

**(i) Additional Information**

(1) Refer to Mandatory Continuing Airworthiness Information (MCAI) Transport Canada Emergency AD CF-2022-64, dated November 17, 2022, for related information.

(2) For more information about this emergency AD, contact Steven Dzierzynski, Aerospace Engineer, Avionics and Electrical Systems Section, FAA, New York ACO Branch, 1600 Stewart Avenue, Suite 410, Westbury, NY 11590; telephone 516-228-7367; email 9-avs-nyaco-cos@faa.gov

Issued on November 22, 2022.

Ross Landes, Deputy Director for Regulatory Operations,  
Compliance & Airworthiness Division,  
Aircraft Certification Service.