



[4910-13-P]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2018-0870; Product Identifier 2018-CE-047-AD; Amendment 39-19438; AD 2018-20-04]

RIN 2120-AA64

Airworthiness Directives; Gulfstream Aerospace Corporation Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule; request for comments.

SUMMARY: We are adopting a new airworthiness directive (AD) for all Gulfstream Aerospace Corporation (Gulfstream) Model GVI airplanes. This AD requires revising the Normal and Abnormal Procedures sections of the airplane flight manual (AFM). This AD was prompted by potential failure of the bi-directional data bus that sends and receives critical signals between the flight control computer (FCC) and the flight control surfaces. We are 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 Director of the Federal Register approved the incorporation by reference of certain publications listed in this AD as of [INSERT DATE 15 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

We 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 <http://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: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this final rule, contact Gulfstream Aerospace Corporation, Technical Publications Dept., P.O. Box 2206, Savannah, GA 31402-2206; telephone: 800-810-4853; fax: 912-965-3520; email: pubs@gulfstream.com; Internet: <http://www.gulfstream.com/product-support/technical-publications>. You may view this service information at the FAA, Policy and Innovation Division, 901 Locust, Kansas City, Missouri 64106. For information on the availability of this material at the FAA, call (816) 329-4148. It is also available on the internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2018-0870.

Examining the AD Docket

You may examine the AD docket on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2018-0870; 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 street address for Docket Operations (phone: 800-647-5527) is listed above. Comments will be available in the AD docket shortly after receipt.

FOR FURTHER INFORMATION CONTACT: Myles Jalalian, Aerospace Engineer, Systems and Equipment Section, AIR-7A3, Atlanta ACO Branch, FAA, 1701 Columbia Avenue, College Park, GA 30337; phone: 404-474-5572; fax: 404-474-5606; email: Myles.Jalalian@faa.gov.

SUPPLEMENTARY INFORMATION:

Discussion

On Gulfstream Model GVI airplanes, the FCC and the remote electronics unit (REU) communicate with each other by means of bi-directional data buses, referred to as BD429. Gulfstream notified us that loss of bi-directional (Transmit/Receive) BD429 communication, due to wire/connector failures, between the REU and the FCC would result in the display of a cyan "FCS MAINTENANCE REQUIRED" advisory message on the crew alerting system (CAS). Because this cyan advisory message does not directly indicate that BD429 communication has failed, the aircraft can be dispatched with this advisory message. The Model GVI system depends on the BD429 bus to assure signal transmission to address a linear variable differential transformer (LVDT) disconnect monitor and/or surface oscillatory monitor event.

During recent developmental testing, Gulfstream discovered that certain BD429 failures prevent the shutdown of a flight control surface that would normally occur during an oscillatory or LVDT disconnect event. The only indication of the failure is a cyan "FCS MAINTENANCE REQUIRED" advisory message on the CAS.

If the FCC cannot receive information from the REU that a particular flight control surface had an event, then the FCC cannot issue a command to place that particular flight control surface into standby/damped bypass mode. The REU will still

receive flight control commands from the FCC via the secondary (receive only) bus; however, because the secondary bus is receive-only for certain REUs, the FCC will no longer receive REU data needed for the LVDT disconnect monitor and/or surface oscillatory monitor for the impacted flight control surface.

This condition (results in a cyan CAS message, but does not indicate the exact reason) can remain latent for up to one year. To date, there have been no known events or failures of the BD429 communications bus wiring or connectors in the field. However, the Gulfstream GVI fleet has experienced multiple in-flight flight control events requiring a standby command sent over the BD429 bus to keep the airplane safe. Since the GVI system uses these monitors to mitigate potentially unsafe failure modes, dispatch with their loss leaves the aircraft one failure away from a potential loss of control event.

This condition, if not addressed, could result in the FCC's inability to identify when a problematic flight control surface needs to be damped, which could result in loss of control of the airplane.

Related Service Information under 1 CFR part 51

We reviewed Gulfstream Aerospace G650 AFM Supplement No. G650-2018-01, dated August 14, 2018; and Gulfstream Aerospace G650ER AFM Supplement No. G650ER-2018-01, dated August 14, 2018. For each applicable airplane configuration, the AFM supplement provides instructions and warnings to the Normal Procedures and Abnormal Procedures section of the AFM for the pilot to follow if a cyan "FCS MAINTENANCE REQUIRED" CAS message displays with the airplane on the ground or in flight. 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.

FAA's Determination

We are issuing this AD because we evaluated all the relevant information and determined the unsafe condition described previously is likely to exist or develop in other products of the same type design.

AD Requirements

This AD requires revising the Normal and Abnormal Procedures sections of the AFM by adding instructions and warnings for the pilot if a cyan "FCS MAINTENANCE REQUIRED" CAS message displays with the airplane on the ground or in flight.

Interim Action

We consider this AD interim action. Gulfstream is analyzing the failures and working to develop a terminating action that will address the unsafe condition identified in this AD. Once this action is developed, approved, and available, we might consider additional rulemaking.

FAA's Justification and Determination of the Effective Date

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 waiving notice and comment prior to adoption of this rule because the inability of the FCC to send a standby command when the BD429 bus is in a failed state could leave the airplane with only one level of protection from a catastrophic flight control failure. Therefore, we find good cause that notice and opportunity for prior public comment are impracticable. In addition, for the reason stated above, we find that good cause exists for making this amendment effective in less than 30 days.

Comments Invited

This AD is a final rule that involves requirements affecting flight safety and was not preceded by notice and an opportunity for public comment. However, we invite you to send any written data, views, or arguments about this final rule. Send your comments to an address listed under the ADDRESSES section. Include the docket number FAA-2018-0870 and Product Identifier 2018-CE-047-AD at the beginning of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of this final rule. We will consider all comments received by the closing date and may amend this final rule because of those comments.

We will post all comments we receive, without change, to <http://www.regulations.gov>, including any personal information you provide. We will also post a report summarizing each substantive verbal contact we receive about this final rule.

Costs of Compliance

We estimate that this AD affects 213 airplanes of U.S. registry.

We estimate the following costs to comply with this AD:

Estimated costs

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Revise Gulfstream AFM	1 work-hour X \$85 per hour = \$85	Not applicable	\$85	\$18,105

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.

We are 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 small airplanes, gliders, balloons, airships, domestic business jet transport airplanes, and associated appliances to the Director of the Policy and Innovation 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) Is not a “significant rule” under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979),
- (3) Will not affect intrastate aviation in Alaska, and
- (4) 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):

2018-20-04 **Gulfstream Aerospace Corporation**: Amendment 39-19438; Docket No. FAA-2018-0870; Product Identifier 2018-CE-047-AD.

(a) Effective Date

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

(b) Affected ADs

None.

(c) Applicability

This AD applies to Gulfstream Aerospace Corporation Model GVI airplanes, all serial numbers, certificated in any category.

(d) Subject

Joint Aircraft System Component (JASC)/Air Transport Association (ATA) of America Code 27, Flight Controls.

(e) Unsafe Condition

This AD was prompted by the potential for an un-annunciated failure of the bi-directional data bus that sends critical signals from the flight control computer to the flight controls. This unsafe condition, if not addressed, could result in the flight control computer's inability to identify when a problematic flight control surface needs to be damped, which could result in loss of control of the airplane.

(f) Compliance

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

(g) Airplane Flight Manual Revisions

Within 30 days after [INSERT DATE 15 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER] (the effective date of this AD), revise the Normal Procedures and Abnormal Procedures sections of the airplane flight manual by adding the information in Gulfstream Aerospace G650 Airplane Flight Manual Supplement No. G650-2018-01, dated August 14, 2018; or Gulfstream Aerospace G650ER Airplane Flight Manual Supplement No. G650ER-2018-01, dated August 14, 2018; as applicable to the model configuration of your airplane.

(h) Alternative Methods of Compliance (AMOCs)

(1) The Manager, Atlanta 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 the attention of the person identified in paragraph (i) of this AD.

(2) 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.

(i) Related Information

For more information about this AD, contact Myles Jalalian, Aerospace Engineer, Systems and Equipment Section, AIR-7A3, Atlanta ACO Branch, FAA, 1701 Columbia Avenue, College Park, GA 30337; phone: 404-474-5572; fax: 404-474-5606; email: Myles.Jalalian@faa.gov.

(j) Material Incorporated by Reference

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

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

(i) Gulfstream Aerospace G650 Airplane Flight Manual, Supplement No. G650-2018-01, dated August 14, 2018.

(ii) Gulfstream Aerospace G650ER Airplane Flight Manual, Supplement No. G650ER-2018-01, dated August 14, 2018.

(3) For service information identified in this AD, contact Gulfstream Aerospace Corporation, Technical Publications Dept., P.O. Box 2206, Savannah, GA 31402-2206; telephone: 800-810-4853; fax: 912-965-3520; email: pubs@gulfstream.com; Internet: <http://www.gulfstream.com/product-support/technical-publications>.

(4) You may view this service information at the FAA, Policy and Innovation Division, 901 Locust, Kansas City, Missouri 64106. For information on the availability of this material at the FAA, call (816) 329-4148.

(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, call 202-741-6030, or go to:
<http://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued in Kansas City, Missouri, on September 20, 2018.

Melvin J. Johnson
Aircraft Certification Service
Deputy Director, Policy and Innovation Division, AIR-601
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