



## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### 14 CFR Part 39

[Docket No. FAA-2020-0994; Project Identifier AD-2020-00687-T]

RIN 2120-AA64

#### Airworthiness Directives; Gulfstream Aerospace Corporation Airplanes

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Notice of proposed rulemaking (NPRM).

**SUMMARY:** The FAA proposes to adopt a new airworthiness directive (AD) for certain Gulfstream Aerospace Corporation (Gulfstream) Model GVII-G600 airplanes. This proposed AD was prompted by a report that a failure mode in the data concentration network (DCN) software causes the pitch attitude value to freeze on the primary flight display (PFD) for up to 20 seconds. This proposed AD would require updating the DCN and flight deck master operating system (MOS) software. The FAA is proposing this AD to address the unsafe condition on these products.

**DATES:** The FAA must receive comments on this proposed 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 <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.

For service information identified in this proposed rule, contact Gulfstream Aerospace Corporation, Technical Publications Dept., P.O. Box 2206, Savannah, GA

31402; phone: (800) 810-4853; email: [pubs@gulfstream.com](mailto:pubs@gulfstream.com); website: <https://www.gulfstream.com/en/customer-support/>. You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 901 Locust, Kansas City, Missouri 64106. For information on the availability of this material at the FAA, call (816) 329-4148.

### **Examining the AD Docket**

You may examine the AD docket at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2020-0994; 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 NPRM, any comments received, and other information. The street address for Docket Operations is listed above.

**FOR FURTHER INFORMATION CONTACT:** Myles Jalalian, Aviation Safety Engineer, Atlanta ACO Branch, FAA, 1701 Columbia Avenue, College Park, GA 30337; phone: (404) 474-5572; fax: (404) 474-5606; email: [myles.jalalian@faa.gov](mailto:myles.jalalian@faa.gov).

### **SUPPLEMENTARY INFORMATION:**

#### **Comments Invited**

The FAA invites you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under ADDRESSES. Include “Docket No. FAA-2020-0994; Project Identifier AD-2020-00687-T” at the beginning of your comments. The most helpful comments reference a specific portion of the proposal, 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 proposal 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 <https://www.regulations.gov>, including any personal information you provide. The agency will also post a report summarizing each substantive verbal contact received about this NPRM.

#### **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 Myles Jalalian, Aviation Safety Engineer, Atlanta ACO Branch, FAA, 1701 Columbia Avenue, College Park, GA 30337. 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 received a report that on certain Gulfstream Model GVII-G600 airplanes a failure mode in the DCN software causes the pitch attitude value to freeze on the PFD for up to 20 seconds.

During implementation of the DCN software update version 10.10.10 for certain Model GVII-G500 airplane configurations (“Block 1”), it was discovered the software supplier had incorrectly implemented one of Gulfstream's design requirements. At the time of this discovery on Model GVII-G500 Block 1 configurations, the DCN software version 10.10.10 had already been implemented on Model GVII-G600 airplanes in service. This airplane has three independent inertial reference systems (IRSs), identified as IRS1, IRS2, and IRS3, which are expected to provide identical pitch data. During flight testing, the GVII-G600 IRS1 was found to indicate a slightly different pitch from IRS2 and IRS3, at the same actual airplane pitch attitude. A DCN embedded function was created to correct the very minor pitch difference between IRS1, IRS2, and IRS3. DCN software version 10.10.10 implemented the new embedded function which computes a “PITCH\_DELTA correction factor” (pitch difference correction factor) between the IRS pitch angles being used by the PFDs. The system calculates pitch correction based in part on the IRS1 pitch angle. If the IRS1 is lost, it causes the embedded function to invalidate

the “PITCH\_DELTA output.” During this failure mode, the pitch attitude value freezes on the display for up to 20 seconds, which results in temporarily incorrect pitch indications. The effect is evident only if the pitch of the airplane changes during the 20 second reset window. After 20 seconds, the system returns to normal. The standby flight display and heads up display are unaffected by this failure mode and continue to display the correct pitch attitude.

There is not an alert or annunciation that informs the flight crew of a stale (frozen) pitch display or potentially misleading flight information.

This condition, if not addressed, could result in loss of control of the airplane in certain phases of flight during instrument meteorological conditions.

### **Related Service Information under 1 CFR Part 51**

The FAA reviewed Gulfstream GVII-G600 Aircraft Service Change No. 901, Initial Issue, dated May 12, 2020. This service document specifies procedures for installing the MOS software update part number EB60001034-0106 and operationally checking the installation.

The FAA also reviewed Gulfstream GVII-G600 Aircraft Service Change No. 020, Initial Issue, dated May 12, 2020. This service document specifies procedures for updating the DCN software level to version 10.10.12, updating system software in support of the MOS software update, and operationally checking the installation.

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**

The FAA is issuing this NPRM after determining the unsafe condition described previously is likely to exist or develop in other products of the same type design.

### **Proposed AD Requirements in this NPRM**

This proposed AD would require accomplishing the actions specified in the service information described previously.

## Costs of Compliance

The FAA estimates that this AD, if adopted as proposed, would affect 43 airplanes of U.S. registry.

The FAA estimates the following costs to comply with this proposed AD:

### Estimated costs

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Update DNC software	30 work-hours X \$85 per hour = \$2,550	\$52	\$2,602	\$111,886
Update MOS software	10 work-hours X \$85 per hour = \$850	\$52	\$902	\$38,786

The FAA has included all known costs in its cost estimate. According to the manufacturer, however, some of the costs of this proposed AD may be covered under warranty, thereby reducing the cost impact on affected operators.

## 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 proposing 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

The FAA determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would 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 this proposed regulation:

(1) Is not a “significant regulatory action” under Executive Order 12866,

(2) Would not affect intrastate aviation in Alaska, and

(3) Would 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 Proposed Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 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:

**Gulfstream Aerospace Corporation:** Docket No. FAA-2020-0994; Project Identifier AD-2020-00687-T.

#### **(a) Comments Due Date**

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

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

None.

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

This AD applies to Gulfstream Aerospace Corporation Model GVII-G600 airplanes, serial numbers 73001 through 73043, certificated in any category.

**(d) Subject**

Joint Aircraft System Component Code 3400, Navigation System.

**(e) Unsafe Condition**

This AD was prompted by reports of software causing pitch attitude value freezing on the Primary Flight Display (PFD) for up to 20 seconds. The FAA is issuing this AD to prevent a stale pitch display or potentially misleading flight information. The unsafe condition, if not addressed, could result in loss of control of the airplane in certain phases of flight during instrument meteorological conditions.

**(f) Compliance**

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

**(g) Update Software**

Within 24 months after the effective date of this AD, update the data concentration network and flight deck master operating system software by using the Modification Instructions, Steps III. A through I, in Gulfstream GVII-G600 Aircraft Service Change No. 901, Initial Issue, dated May 12, 2020, concurrently with the Modification Instructions, Steps III. A through D, in Gulfstream GVII-G600 Aircraft Service Change No. 020, Initial Issue, dated May 12, 2020.

**(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 Related Information.

(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**

(1) For more information about this AD, contact Myles Jalalian, Aviation Safety Engineer, Atlanta ACO Branch, FAA, 1701 Columbia Avenue, College Park, GA 30337; phone: (404) 474-5572; fax: (404) 474-5606; email: myles.jalalian@faa.gov.

(2) For service information identified in this AD, contact Gulfstream Aerospace Corporation, Technical Publications Dept., P.O. Box 2206, Savannah, GA 31402; phone: (800) 810-4853; email: pubs@gulfstream.com; website: <https://www.gulfstream.com/en/customer-support/>. You may view this referenced service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 901 Locust, Kansas City, Missouri 64106. For information on the availability of this material at the FAA, call (816) 329-4148.

Issued on January 29, 2021.

Gaetano A. Sciortino, Deputy Director for Strategic Initiatives,  
Compliance & Airworthiness Division,  
Aircraft Certification Service.

[FR Doc. 2021-03483 Filed: 2/22/2021 8:45 am; Publication Date: 2/23/2021]