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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. FAA-2016-9522; Product Identifier 2016-NM-144-AD; Amendment 39-19065; AD 2017-20-08]**

**RIN 2120-AA64**

#### **Airworthiness Directives; Gulfstream Aerospace Corporation Airplanes**

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

**ACTION:** Final rule.

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**SUMMARY:** We are superseding Airworthiness Directive (AD) 2009-17-01, which applied to certain Gulfstream Model G-IV, GIV-X, GV-SP airplanes and Model GV airplanes. AD 2009-17-01 required an inspection for sealant applied to the exterior of the auxiliary power unit (APU) enclosure (firewall), and a revision of the airplane flight manual (AFM), as applicable. This AD requires revising the AFM and revising the applicability to include additional airplanes. This AD was prompted by a report indicating that the type design sealant applied to the APU enclosure failed certain tests. We are issuing this AD to address the unsafe condition on these products.

**DATES:** This AD is effective November 6, 2017.

The Director of the Federal Register approved the incorporation by reference of certain publications listed in this AD as of November 6, 2017.

**ADDRESSES:** 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](mailto:pubs@gulfstream.com); Internet [http://www.gulfstream.com/product\\_support/technical\\_pubs/pubs/index.htm](http://www.gulfstream.com/product_support/technical_pubs/pubs/index.htm). You may view this referenced service information at the FAA, Transport Standards Branch, 1601 Lind Avenue SW., Renton, WA. For information on the availability of this material at the FAA, call 425-227-1221. It is also available on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2016-9522.

#### **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-2016-9522; or in person at the Docket Management Facility between 9

a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this AD, the regulatory evaluation, any comments received, and other information. The address for the Docket Office (phone: 800-647-5527) is Docket Management Facility, 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:** Ky Phan, Aerospace Engineer, Propulsion and Services Section, FAA, Atlanta ACO Branch, 1701 Columbia Avenue, College Park, GA 30337; phone: 404-474-5536; fax: 404-474-5606; email: ky.phan@faa.gov.

## **SUPPLEMENTARY INFORMATION:**

### **Discussion**

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to supersede AD 2009-17-01, Amendment 39-15991 (74 FR 40061, August 11, 2009) (“AD 2009-17-01”). AD 2009-17-01 applied to certain Gulfstream Model G-IV, GIV-X, GV-SP airplanes, and Model GV airplanes. The NPRM published in the Federal Register on January 4, 2017 (82 FR 737) (“the NPRM”). The NPRM was prompted by a report indicating that the type design sealant (Aerospace Material Specification (AMS) 3374), applied to the APU enclosure, does not meet the requirement in 14 CFR 25.1191(b)(1) for a firewall to be fireproof, and failed a certification test and a company test. The NPRM proposed to require revising the AFM and revising the applicability to include additional airplanes. We are issuing this AD to provide the flight crew with operating procedures for airplanes that have AMS 3374 or Gulfstream Material Specification (GMS) 4107 sealant applied to the APU enclosure (firewall). Under certain anomalous conditions such as an APU failure/APU compartment fire, AMS 3374 or GMS 4107 sealant could ignite the exterior surfaces of the APU enclosure, and result in propagation of an uncontained fire to other critical areas of the airplane.

### **Comments**

We gave the public the opportunity to participate in developing this AD. The following presents the comments received on the NPRM and the FAA's response to each comment.

### **Request To Withdraw the NPRM**

Gulfstream requested that the NPRM be withdrawn. The commenter stated that the FAA's findings and decisions in the proposed AD are not based on analysis of the commenter's supporting data and accepted risk and safety assessment methodologies. The commenter asserted that its risk assessments, performed using the FAA's Transport Airplane Risk Assessment Methodology (TARAM) Handbook, are within the allowable guidelines of the FAA's TARAM Handbook.

We do not agree with the commenter's request because this final rule is consistent with FAA policy and orders. The FAA's TARAM is used to assess risk associated with a wide variety of potential safety issues. The FAA typically follows the defined risk guidelines contained in the TARAM Handbook for transport category airplanes. However, occasionally, other factors affect the decision on whether to issue an AD. FAA Order 8110.107A, “Monitor Safety/Analyze Data,” paragraph 2-10.e. states:

In rare situations the Aviation Safety Engineer or FAA management may, based on factors unrelated to the risk analysis, make recommendations not consistent with risk guidelines for ADs or other mandatory corrective actions. The decision to accept or reject these recommendations is made during the CARB [Corrective Action Review Board].

One such factor, unrelated to risk analysis, is whether the affected system provides an emergency or safety function. Examples of emergency/safety systems include seatbelts, life rafts, oxygen systems, and firewalls. Failure of emergency systems typically do not cause an accident, but can greatly increase the probability of fatalities in the event of an additional unrelated failure. TARAM analyses of emergency/safety systems typically indicate a low TARAM risk. This is due to the fact that the precipitating event is very rare, for example, high-g decelerations due to an accident, ditching, explosive decompression, and engine fire. Ultimately, the decision regarding whether to mandate airworthiness action for a condition is the responsibility of the FAA's CARB, which for this AD was comprised of representatives from the Atlanta ACO Branch, Transport Airplane Directorate, Atlanta MIDO Section, and the Aircraft Evaluation Group. The CARB unanimously concluded that factors other than the TARAM risk indicated the need to mandate corrective action for Gulfstream APU firewalls assembled using AMS 3374 sealant, in addition to the previously mandated requirements for Gulfstream APU firewalls assembled using GMS 4107 sealant.

Several 14 CFR part 25 regulations are intended to prevent the spread of a fire to other critical areas of an airplane in the event of an in-flight or ground fire; one of these regulations is 14 CFR 25.1191 ("Firewalls"). The 14 CFR part 25 regulations include requirements for (1) fire detection, (2) fire suppression, and (3) fire containment by a firewall. The AMS 3374 sealant, as applied to the Gulfstream APU firewall type designs that are the subject of this AD, has been shown by fire testing to result in backside (cold side) ignition of the firewall when exposed to a 2,000 degree Fahrenheit flame for 15 minutes, thus violating the 14 CFR part 25 requirement for the firewall to be fireproof (refer to FAA Advisory Circular (AC) 20-135, "Powerplant Installation and Propulsion System Component Fire Protection Test Methods, Standards and Criteria," dated February 6, 1990 ("AC 20-135"), for firewall fire testing guidance.) Previous fire testing also confirmed that Gulfstream APU firewalls assembled with GMS 4107 exhibited backside ignition during those tests. The backside ignition of the Gulfstream APU firewalls occurred in an area of the airplane that does not have fire detection or fire suppression. This is a non-compliance with the requirements of 14 CFR 25.1191(b)(1) for firewalls to be fireproof. If an APU fire occurred in flight or on the ground on such a non-compliant airplane, it could result in backside ignition of the firewall, potentially resulting in propagation of an uncontained fire to other critical areas of the airplane. The area outside and adjacent to the Gulfstream APU firewall contains many airplane critical systems such as empennage structure, flight control components, fuel lines, and oil lines. The FAA finds that APU operations on the affected Gulfstream models without a firewall that is fireproof, as required by 14 CFR 25.1191, constitutes an unsafe condition. The FAA performed an additional TARAM analysis, which indicated a higher risk than the results of the original Gulfstream TARAM analysis. However, we want to point out that neither TARAM analysis was the sole consideration for mandating corrective action. We have made no changes to this AD in this regard.

### **Request for Separate AD Action for AMS 3374 Sealant**

Gulfstream requested that the FAA issue a separate rulemaking action to address the use of AMS 3374 sealant. The commenter deems it inaccurate to associate the GMS 4107 sealant unsafe condition with the application of the AMS 3374 sealant. Gulfstream also considers the corrective actions to be significantly different for the two types of sealants.

We disagree with the commenter's request. Many of the Gulfstream airplanes affected by this AD have both GMS 4107 and AMS 3374 sealants used in the fabrication of APU firewalls. The use of GMS 4107 and/or AMS 3374 sealants, per the Gulfstream type design for the APU firewalls that are the subject of this AD action, has resulted in backside ignition of the APU firewall in fire tests that were intended to demonstrate that the firewalls are fireproof. The corrective action for both types of sealants is identical, applying restrictions on APU operations. The corrective actions specified in the AD being superseded, AD 2009-17-01, did not address APU firewalls fabricated using AMS 3374 sealant. Subsequent fire testing has shown that AMS 3374 sealant, used as specified in the Gulfstream type design, does not comply with the regulations that require a firewall to be fireproof; therefore, AD 2009-17-01 must be superseded to include APU firewalls fabricated using AMS 3374 sealant. Future rulemaking to incorporate a solution proposed by Gulfstream might be considered when and if a proposed solution is made available to the FAA. We have made no changes to this AD in this regard.

### **Request To Clarify Terminology**

Gulfstream requested that the FAA revise the NPRM by removing all of the statements that AMS 3374 sealant is flammable. The commenter stated that it is not accurate to make a general statement that AMS 3374 sealant is flammable because there are many applications where AMS 3374 sealants are compliant with applicable fireproof certification requirements.

We partially agree with the commenter's request. The FAA's certification requirement is that firewalls be fireproof, not that the sealant be fireproof. The FAA does not have specific requirements for sealant, apart from the requirement that its use in the assembly of firewalls must result in a fireproof firewall assembly.

Also, the commenter's statement that there are many applications where AMS 3374 sealants are compliant with applicable fireproof certification requirements may be partially correct. There could be firewalls assembled using AMS 3374 sealants that do meet the applicable fireproof certification requirements. The issue addressed by this final rule is that Gulfstream's application of AMS 3374 sealant to the APU firewall assemblies affected by this rulemaking action is not compliant with the airworthiness requirement for the firewall to be fireproof. The AMS 3374 sealant does meet the requirements of an industry specification, the Society of Automotive Engineers (SAE) Standard AMS 3374. Compliance with an SAE standard is not equivalent to, and does not satisfy, compliance with the FAA certification requirement that firewalls be fireproof. AC 20-135 is used throughout the aviation industry as guidance material for how to show compliance with the FAA's requirement that firewalls be fireproof. Regarding the use of sealants, AC 20-135 provides the following guidance:

**Outgassing.** A characteristic of bonded construction firewall materials and seal materials is the outgassing of the volatile constituents of the bonding resins or seal materials. This can occur from either the hot or cool side surface of the specimens during the test. These gasses are, in most instances, highly flammable. Ignition occurring on the cool side is unacceptable in passing the fire test. . . . For these types of construction, no "cool side" ignition is allowed and verification is required.

There are many variables that determine if a given firewall configuration meets the airworthiness requirement to be fireproof. Sealants are known to outgas volatile constituents. In the case of the Gulfstream APU firewall type design, outgassed constituents of AMS 3374 sealant ignited on the backside during fire testing, and therefore, the firewall does not meet the definition of fireproof per AC 20-135. We have changed the wording in this final rule to specify that the type design sealant (AMS 3374), as applied in the Gulfstream APU firewall, does not meet the airworthiness requirement in 14 CFR 25.1191(b)(1), for a firewall to be fireproof.

We do not agree that AMS 3374 sealant is compliant with applicable fireproof certification requirements because the FAA does not certificate sealants; the FAA certificates that firewalls are fireproof. Therefore, we have made no changes to this AD in this regard.

### **Request To Revise the Estimated Costs of Compliance**

Gulfstream requested that the estimated costs of compliance in the NPRM be revised to include costs associated with an operator's inability to use the APU during normal operations, and the cost associated with a terminating action. The commenter noted that the estimated costs in the NPRM are associated with physically revising the AFM by inserting the applicable AFM supplement (AFMS). The commenter stated that the costs associated with a terminating action that would allow an operator to use its APU in flight is much more expensive, and depending on the number of airplanes that need to be retrofitted, the costs are likely to be tens of millions of dollars.

The FAA did not include any costs associated with an operator's inability to use the APU during normal operations because APU usage is not required by the FAA for the operation of any of the affected aircraft. This final rule does allow APU usage during certain emergencies.

We acknowledge that the costs associated with a terminating action, which would allow an operator to have use of its APU in flight, may be higher because the costs associated with retrofit of the airplane are likely to be higher than for implementing the change to the AFMS. This final rule only provides the costs associated with implementing the AFMS that restricts APU operations. There are no hardware or modification costs associated with this final rule.

We do not agree with the commenter's request to revise the estimated costs of compliance. The FAA uses a standard labor rate of \$85 per hour for evaluation of all airworthiness actions, regardless of who performs the corrective action. The only cost associated with this final rule is for revising the AFM by inserting the applicable AFMS. Therefore, we have made no changes to this final rule regarding this issue.

### **Additional Change Made to This Final Rule**

The FAA no longer considers this final rule to be an “interim action” and reference to “interim action,” which was included in the NPRM, has been omitted from this final rule. The FAA will accept the AFMS restrictions on APU operation as terminating action. If Gulfstream proposes design changes that would eliminate the APU firewall unsafe condition addressed by this AD, the FAA might consider further rulemaking.

### **Conclusion**

We reviewed the relevant data, considered the comments received, and determined that air safety and the public interest require adopting this AD with the changes described previously, and minor editorial changes. We have determined that these minor changes:

- Are consistent with the intent that was proposed in the NPRM for correcting the unsafe condition; and
- Do not add any additional burden upon the public than was already proposed in the NPRM.

We also determined that these changes will not increase the economic burden on any operator or increase the scope of this AD.

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

We reviewed the following Gulfstream AFMSs. The AFMSs provide operating limitations on the use of the APU during certain ground and flight operations. These documents are distinct since they apply to different airplane models.

- Gulfstream GIV/G300/G400 AFM Supplement GIV-2016-01, dated July 27, 2016, to the Gulfstream GIV AFM, dated April 22, 1987; the Gulfstream G300 AFM, dated January 15, 2003; and the Gulfstream G400 AFM, dated November 18, 2002.
- Gulfstream G450/G350 AFM Supplement G450-2016-01, dated July 27, 2016, to the Gulfstream G450 AFM, dated August 12, 2004; and the Gulfstream G350 AFM, dated October 28, 2004.
- Gulfstream GV AFM Supplement GV-2016-01, dated July 27, 2016, to the Gulfstream GV AFM, dated April 11, 1997.
- Gulfstream G550/G500 AFM Supplement G550-2016-01, dated July 27, 2016, to the Gulfstream G550 AFM, dated August 14, 2003; and the Gulfstream G500 AFM, dated December 5, 2003.
- Gulfstream GVI (G650) AFM Supplement G650-2016-01, dated July 27, 2016, to the Gulfstream GVI (G650) AFM, dated September 7, 2012.
- Gulfstream GVI (G650ER) AFM Supplement G650ER-2016-03, dated July 27, 2016, to the Gulfstream GVI (G650ER) AFM, dated October 2, 2014.

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

We estimate that this AD affects 1,220 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
AFM revision	1 work-hour × \$85 per hour = \$85	\$0	\$85	\$103,700

### 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 transport category airplanes to the Director of the System Oversight Division.

### Regulatory Findings

We have determined that 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 removing Airworthiness Directive (AD) 2009-17-01, Amendment 39-15991 (74 FR 40061, August 11, 2009), and adding the following new AD:



**FAA**  
**Aviation Safety**

## **AIRWORTHINESS DIRECTIVE**

[www.faa.gov/aircraft/safety/alerts/](http://www.faa.gov/aircraft/safety/alerts/)  
[www.gpoaccess.gov/fr/advanced.html](http://www.gpoaccess.gov/fr/advanced.html)

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**2017-20-08 Gulfstream Aerospace Corporation:** Amendment 39-19065; Docket No. FAA-2016-9522; Product Identifier 2016-NM-144-AD.

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

This AD is effective November 6, 2017.

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

This AD replaces AD 2009-17-01, Amendment 39-15991 (74 FR 40061, August 11, 2009) (“AD 2009-17-01”).

### **(c) Applicability**

This AD applies to the Gulfstream Aerospace Corporation airplanes, certificated in any category, identified in paragraphs (c)(1) through (c)(5) of this AD.

- (1) Model G-IV airplanes, having serial numbers (S/Ns) 1000 and subsequent.
- (2) Model GIV-X airplanes, having S/Ns 4001 and subsequent.
- (3) Model GV airplanes, having S/Ns 501 and subsequent.
- (4) Model GV-SP airplanes, having S/Ns 5001 and subsequent.
- (5) Model GVI airplanes, having S/Ns 6001 and subsequent.

### **(d) Subject**

Air Transport Association (ATA) of America Code 49, Airborne Auxiliary Power; and 53, Fuselage.

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

This AD was prompted by a report indicating that the type design sealant (Aerospace Material Specification (AMS) 3374), as applied to the auxiliary power unit (APU) enclosure (firewall), does not meet the requirement in 14 CFR 25.1191(b)(1) for a firewall to be fireproof, and failed a certification test and a company test. We are issuing this AD to provide the flight crew with operating procedures for airplanes that have AMS 3374 or Gulfstream Material Specification (GMS) 4107 sealant applied to the APU enclosure. Under certain anomalous conditions such as an APU failure/APU compartment fire, AMS 3374 or GMS 4107 sealant could ignite the exterior surfaces of the APU enclosure and result in propagation of an uncontained fire to other critical areas of the airplane.

### **(f) Compliance**

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



### **(g) Airplane Flight Manual (AFM) Revision**

Within 30 days after the effective date of this AD, revise the Limitations Section of the applicable Gulfstream AFM specified in paragraphs (h)(1) through (h)(6) of this AD to include the information in the applicable Gulfstream AFM supplement (AFMS) specified in paragraphs (h)(1) through (h)(6) of this AD. These AFMSs introduce operating limitations on the use of the APU during certain ground and flight operations. This AFM revision may be done by inserting a copy of the applicable AFMS into the applicable AFM specified in paragraphs (h)(1) through (h)(6) of this AD. When the AFMS has been included in the general revision of the AFM, the general revision may be inserted into the AFM, provided the relevant information in the general revision is identical to that in the applicable AFMS specified in paragraphs (h)(1) through (h)(6) of this AD.

### **(h) AFMSs**

For the AFM revision required by paragraph (g) of this AD, insert the applicable AFMS into the applicable Gulfstream AFM identified in paragraphs (h)(1) through (h)(6) of this AD.

(1) Gulfstream GIV/G300/G400 AFM Supplement GIV-2016-01, dated July 27, 2016, to the Gulfstream GIV AFM, dated April 22, 1987; the Gulfstream G300 AFM, dated January 15, 2003; and the Gulfstream G400 AFM, dated November 18, 2002.

(2) Gulfstream G450/G350 AFM Supplement G450-2016-01, dated July 27, 2016, to the Gulfstream G450 AFM, dated August 12, 2004; and the Gulfstream G350 AFM, dated October 28, 2004.

(3) Gulfstream GV AFM Supplement GV-2016-01, dated July 27, 2016, to the Gulfstream GV AFM, dated April 11, 1997.

(4) Gulfstream G550/G500 AFM Supplement G550-2016-01, dated July 27, 2016, to the Gulfstream G550 AFM, dated August 14, 2003; and the Gulfstream G500 AFM, dated December 5, 2003.

(5) Gulfstream GVI (G650) AFM Supplement G650-2016-01, dated July 27, 2016, to the Gulfstream GVI (G650) AFM, dated September 7, 2012.

(6) Gulfstream GVI (G650ER) AFM Supplement G650ER-2016-03, dated July 27, 2016, to the Gulfstream GVI (G650ER) AFM, dated October 2, 2014.

### **(i) Credit for Previous Actions**

This paragraph provides credit for the action required by paragraph (g) of this AD, if that action was performed before the effective date of this AD using the applicable service information specified in paragraphs (i)(1) through (i)(4) of this AD. This service information was incorporated by reference in AD 2009-17-01.

(1) Gulfstream G-IV/G300/G400 AFM Supplement G-IV-2009-02, Revision 1, dated June 25, 2009, to the Gulfstream GIV AFM, the Gulfstream G300 AFM, and the Gulfstream G400 AFM.

(2) Gulfstream G450/G350 AFM Supplement G450-2009-03, Revision 1, dated June 25, 2009, to the Gulfstream G450 AFM and the Gulfstream G350 AFM.

(3) Gulfstream GV AFM Supplement GV-2009-03, Revision 1, dated June 25, 2009, to the Gulfstream GV AFM.

(4) Gulfstream G550/G500 AFM Supplement G550-2009-03, Revision 1, dated June 25, 2009, Gulfstream G550 AFM and the Gulfstream G500 AFM.

### **(j) 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 (k)(1) 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.

(3) AMOCs approved previously for paragraph (h) of AD 2009-17-01 are approved as AMOCs for the corresponding provisions of paragraph (g) of this AD.

#### **(k) Related Information**

(1) For more information about this AD, contact Ky Phan, Aerospace Engineer, Propulsion and Services Section, FAA, Atlanta ACO Branch, 1701 Columbia Avenue, College Park, GA 30337; phone: 404-474-5536; fax: 404-474-5606; email: ky.phan@faa.gov.

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

#### **(l) 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 GIV/G300/G400 Airplane Flight Manual (AFM) Supplement GIV-2016-01, dated July 27, 2016, to the Gulfstream GIV AFM, dated April 22, 1987; the Gulfstream G300 AFM, dated January 15, 2003; and the Gulfstream G400 AFM, dated November 18, 2002.

(ii) Gulfstream G450/G350 Airplane Flight Manual (AFM) Supplement G450-2016-01, dated July 27, 2016, to the Gulfstream G450 AFM, dated August 12, 2004; and the Gulfstream G350 AFM, dated October 28, 2004.

(iii) Gulfstream GV Airplane Flight Manual (AFM) Supplement GV-2016-01, dated July 27, 2016, to the Gulfstream GV AFM, dated April 11, 1997.

(iv) Gulfstream G550/G500 Airplane Flight Manual (AFM) Supplement G550-2016-01, dated July 27, 2016, to the Gulfstream G550 AFM, dated August 14, 2003; and the Gulfstream G500 AFM, dated December 5, 2003.

(v) Gulfstream GVI (G650) Airplane Flight Manual (AFM) Supplement G650-2016-01, dated July 27, 2016, to the Gulfstream GVI (G650) AFM, dated September 7, 2012.

(vi) Gulfstream GVI (G650ER) Airplane Flight Manual (AFM) Supplement G650ER-2016-03, dated July 27, 2016, to the Gulfstream GVI (G650ER) AFM, dated October 2, 2014.

(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\\_pubs/pubs/index.htm](http://www.gulfstream.com/product_support/technical_pubs/pubs/index.htm).

(4) You may view this service information at the FAA, Transport Standards Branch, 1601 Lind Avenue SW., Renton, WA. For information on the availability of this material at the FAA, call 425-227-1221.

(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 Renton, Washington, on September 18, 2017.

Dionne Palermo,  
Acting Director, System Oversight Division,  
Aircraft Certification Service.