Exemption No. 10622

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
RENTON, WASHINGTON 98057-3356

In the matter of the petition of **Gulfstream Aerospace Corporation** for an exemption from § 25.981(a)(3) of Title 14, Code of Federal Regulations	**Regulatory Docket No. FAA-2012-0951**

GRANT OF EXEMPTION

On August 30, 2012, Mr. Robert Glasscock, Gulfstream Aerospace Corporation, P.O. Box 2206, M/S R-03, Savannah, GA, 31402-2206, petitioned for a time-limited exemption from the fuel-tank-ignition-prevention provisions of § 25.981(a)(3) of Title 14, Code of Federal Regulations (14 CFR) as it relates to this airplane's DC-powered fuel pumps. This time-limited exemption, if granted, would permit relief from those fuel-tank-ignition prevention requirements for Gulfstream Model GVI airplanes.

The petitioner requests relief from the following regulation:

Section 25.981(a)(3) as amended by Amendment 25-102:

(a) No ignition source may be present at each point in the fuel tank or fuel tank system where catastrophic failure could occur due to ignition of fuel or vapors. This must be shown by:

(3) Demonstrating that an ignition source could not result from each single failure, from each single failure in combination with each latent failure condition not shown to be extremely remote, and from all combinations of failures not shown to be extremely improbable. The effects of manufacturing variability, aging, wear, corrosion, and likely damage must be considered.

The petitioner supports its request with the following information:

This section quotes, in part, the relevant information from the petitioner's documentation. The complete documentation is available at the Department of Transportation's Federal Docket Management System, on the Internet at http://regulations.gov, in Docket No. FAA-2012-0951.

Background:

The model GVI fuel system incorporates four DC fuel boost pumps. The boost pumps are installed in the wing (2 each side), located next to each other in the fuel hopper area of the tank. The electric pumps feature a 28V brushless DC motor.

Gulfstream has always intended to comply with 14 CFR 25.981. However, during a review of Gulfstream's substantiating data for the DC fuel boost pumps, the FAA identified additional testing to demonstrate the effectiveness of certain ignition protection features within the pumps. Some of the design aspects that must be addressed by additional substantiation include, but may not be limited to, demonstrating that the fuel pump internal wiring conduits provide an arc proof barrier that won't be lost due to damage from any foreseeable wiring fault.

The Gulfstream GVI is nearing the conclusion of its Type Certification effort which began with initial application in September of 2005. It is impractical for Gulfstream to complete this substantiation in a timely manner.

Supportive Information:

Gulfstream respectfully submits this petition for a time-limited exemption from the provisions of 14 CFR 25.981(a)(3) as they apply to the DC fuel boost pumps. Gulfstream anticipates that all additional testing deemed necessary by the FAA will be completed within 12 months from the granting of this exemption, and that full compliance of the fuel pump design will be demonstrated no later than 18 months from the granting of this exemption. In the event that a retrofit is required, Gulfstream will begin introducing the change into production no later than 18 months from the granting of this exemption, and complete a retrofit of the entire fleet no later than 36 months from the granting of this exemption.

Gulfstream proposes that these dates are appropriate considering that:

- Gulfstream anticipates that approximately 40 to 65 aircraft will be delivered within 18 months of the granting of this exemption, and that those aircraft will be utilized less than 30,000 hours during this period. If a retrofit of those aircraft is required, Gulfstream anticipates that the time to complete that retrofit of these aircraft (i.e., an additional 18 months) would result in no more than 50,000 additional flight hours. This represents a negligible addition to the overall fleet risk;

- Some of the identified failure modes of concern require significant aircraft utilization and/or aging to potentially develop into noncompliant failure conditions, and the timeframe proposed for this exemption is not sufficient for the affected airplanes to accumulate the flight hours or cycles required for the components to exhibit these aging effects;
- The design of the pump ensures minimal opportunity for wire movement and chafing to occur, thus the potential for an arc is negligible.
- The wiring, insulation, and wire conduits are all made from industry leading materials that were specifically designed to prevent the concerns raised by the FAA.

Effect of the Exemption on Safety

While issuing an exemption implies a lower standard of safety, Gulfstream believes that the pump as designed is more robust and better suited to preventing ignition sources than those currently installed on thousands of business jets that do not currently have to meet the requirements of 14 CFR 25.981(a)(3) at Amendment 25-102. As such, Gulfstream believes there will be no negative impact on the current level of safety. Further, the robust design of the GVI fuel boost pumps in comparison to that of business jets not meeting the standards of 14 CFR 25.981(a)(3) at Amendment 25-102 will actually result in an increase in safety. In addition, the time limited nature of this exemption will ensure that the number of airplanes delivered is negligible to the overall fleet risk.

Issue of Public Interest

Gulfstream Aerospace Corporation designs, develops, manufactures, markets and services the world's most technologically advanced business jet aircraft to an international market. Gulfstream’s leadership position in the global business jet market is due to the efforts of its more than nine thousand employees in the manufacturing plants, completion centers, and service centers across North America. The corporation utilizes numerous products, such as avionics and environmental control systems, from scores of suppliers located through out the United States. Gulfstream competes for new business all over the world. This exemption will directly impact the ability to certify the Gulfstream model GVI aircraft thereby having a direct effect on aircraft sales. Manufacture, completion, and support of Gulfstream aircraft aids in the stabilization of the job market as well as the growth of the American economy. This is certainly in the interest of the public.

While the nature of an exemption implies a lowering of safety standards, the model GVI is an all new aircraft design which introduces to the flying public a number of advancements in safety that come with meeting the most recent regulatory requirements. Delaying the introduction of the GVI will restrict the advancement in safety introduced by this aircraft, not only in the areas of fuel system protection, but throughout the airplane. The advancement of aircraft safety is in the interest of the public.

Request to Forego Publication in the Federal Register

Gulfstream respectfully requests that, and believes that good cause exists why; action on this petition should not be delayed by publication and comment procedures. Gulfstream requests that the 120-day FAA review and processing period specified in 14 CFR 11.63 (d) be reduced to support Gulfstream's requested date of type certification. Gulfstream feels this request is appropriate because it does not set a precedent, and because the relief requested herein is identical to exemptions granted previously. Specifically, similar relief has been granted to Embraer S.A. via Exemption Number 10180A (regulatory docket number FAA-2010-1265).

***Federal Register* Publication**

The FAA has determined that good cause exists for waiving the requirement for *Federal Register* publication because the exemption, if granted, would not set a precedent, and any delay in acting on this petition would be detrimental to Gulfstream.

The FAA's analysis

The petitioner estimates that at most 65 airplanes with a potentially noncompliant type design will be delivered. Even the first of these airplanes produced would still be expected to fly fewer than a few thousand hours before their compliance with the subject rule can be assured, either by finding that they already comply, or by bringing all Model GVI airplanes into conformity with a new compliant design. These airplanes, even if noncompliant, are expected to provide a level of safety equal to or better than much of the existing transport-category fleet. Based on the service history demonstrated by existing fleets and the limited time in which the new airplanes will be allowed to operate under this exemption, the risk to safety within the U.S. fleet of granting this time-limited exemption is very low.

Consequently, the foreseeable risk does not appear to warrant the adverse impacts on U.S. interests of requiring that all GVI aircraft be found to be of a fully compliant design before delivery. Further, the petitioner's type-certificate application for the GVI is about to expire. Any significant delay in type certification could have a significant impact on the certification basis and hence require substantially more redesign.

The FAA's Decision

In consideration of the foregoing, I find that a grant of exemption is in the public interest. Therefore, pursuant to the authority contained in 49 U.S.C. 40113 and 44701, delegated to me by the Administrator, Gulfstream is hereby granted a time-limited exemption from the requirements of 14 CFR 25.981(a)(3) to the extent necessary to permit type certification of the DC fuel pump installations on Gulfstream Model GVI airplanes with the following conditions and limitations:

1) Prior to initial FAA type certification of any Model GVI airplane, Gulfstream must obtain FAA approval of the critical design-configuration-control limitations (CDCCL), inspections, or other procedures required by 14 CFR 25.981(b). These CDCCLs must include all practicable actions to minimize the potential for any adverse effects on safety associated with granting this petition.

2) The "Airworthiness Limitation" section of the "Instructions for Continued Airworthiness" will state that these airplanes cannot be operated after September 7, 2015, unless Gulfstream has shown that the airplane's existing type design complies with § 25.981(a)(3) at Amendment 25-102 or later, or the FAA-approved service information submitted in accordance with limitation 4 (below) is incorporated.

3) On or before March 7, 2014, Gulfstream must show that the existing Model GVI airplane type design complies with § 25.981(a)(3) at Amendment 25-102 or later, or Gulfstream must obtain FAA type-certification approval of an amendment to the GVI type certificate for a design that fully complies with the provisions of § 25.981(a)(3) at Amendment 25-102 or later.

4) On or before September 5, 2014, Gulfstream will develop, validate, and submit for FAA approval all service information necessary to incorporate any design changes and/or operating and maintenance limitations developed to meet the provision of § 25.981(a)(3), as identified in limitation 3 (above).

5) Airplanes for which application for airworthiness certificate is made after March 7, 2014, must incorporate any design changes and/or operating and maintenance limitations developed to meet the provisions of § 25.981(a)(3), as identified in limitation 3 (above).

6) The FAA will not issue original airworthiness approvals for Model GVI airplanes after September 7, 2015, unless Gulfstream has shown full compliance with the provisions of this exemption by that date.

Issued in Renton, Washington, on September 6, 2012.

/s/ Ali Bahrami

Ali Bahrami
Manager, Transport Airplane Directorate
Aircraft Certification Service