Exemption No. 10274

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

In the matter of the petition of **Gulfstream Aerospace LP** for an exemption from § 25.813(e) of Title 14, Code of Federal Regulations	**Regulatory Docket No. FAA-2011-0113**

PARTIAL GRANT OF EXEMPTION

By Gulfstream letter FAA/11033/CG, dated January 29, 2011, Mr. Baruch Marom, Airworthiness and Certification Manager, Gulfstream Aerospace LP (GALP), Ben Gurion International Airport, IAI Dept. 4199, 70100, Israel, petitioned the Federal Aviation Administration (FAA) for an exemption from Title 14, Code of Federal Regulations (14 CFR) 25.813 (e). This exemption is requested for Gulfstream Model G250 airplanes used for air transportation under parts 91 and 135. The proposed exemption, if granted, would allow the installation of an interior door between the passenger seating area and the forward left hand entry door.

The petitioner requests relief from the following regulation:

Section 25.813(e), Amendment 25-116, which requires that no door may be installed between any passenger seat that is occupiable for takeoff and landing and any passenger emergency exit such that the door crosses any egress path (including aisles, crossaisles, and passageways).

The petitioner supports the request with the following:

This section quotes the relevant information from the petitioner's request with minor editorial changes for clarity. The complete petition is available in the Department of Transportation's Federal Docket Management System on the Internet at http://regulations.gov in Docket No. FAA-2011-0113.

Issue Statement and Petition Request

The Model G250 airplane will be equipped with multiple-passenger interior arrangements that will include doors between passenger seats and emergency exits. The

Model G250 airplane will most often be used for executive air transportation under parts 91 and 135 of the Federal Aviation Regulations. Due to the nature of the transportation involved, many operators request the installation of privacy cabin doors when outfitting of the aircraft is accomplished.

Section 25.813(e) states: "No door may be installed between any passenger seat that is occupiable for takeoff and landing and any passenger emergency exit, such that the door crosses any egress path (including aisles, crossaisles, and passageways)." According to the FAA, § 25.813(e) exists to ensure that passengers do not become isolated in a passenger compartment during an emergency. The intended means of ensuring this is the prohibition against doors between passenger seats and emergency exits. However, exemptions have been granted to this rule if sufficient compensation is provided to achieve an acceptable level of safety, and that the airplane be limited to private use, not-for-hire, not-for-common-carriage. One of the conditions is that the door must be latched open during taxi, takeoff, and landing. A second condition is that the door (or other suitably located partition or bulkhead) must be equipped with an emergency egress panel. An emergency egress panel is a panel that can be broken through by a passenger who may be inadvertently trapped behind the door (this is typically addressed by providing a "frangible door"). Therefore, in accordance with 14 CFR 11.25, Gulfstream Aerospace Corporation (GAC) and GALP petition for permanent exemption from the requirements of § 25.813(e), in order to allow installation of a forward compartment door in the Model G250 cabin interior. It is intended that this exemption will be included in the type certificate requirements as a part of the certification basis for the Model G250 airplane.

Justification and Safety Considerations

Specifications for the Model G250 cabin interior include an option for the installation of a pocket door on the aft side of the RH Fwd galley. This pocket door installation will separate the cabin passenger seats that are occupiable for taxi, takeoff, and landing from the main entry door of the aircraft, an emergency exit (refer to Figure 1). This pocket door installation will not be in compliance with the requirements of § 25.813 (e); therefore, GAC and GALP propose pursuing a request for exemption from demonstrating compliance to this requirement. During outfitting, the out fitter will demonstrate that there are sufficient compensating design features in the pocket door assembly and surrounding cabin interior installations such that an acceptable level of safety can be afforded to the occupants. A list of the proposed compensating features will comprise of, but may not be limited to, the following:

1. The door to be installed will be of a sliding type and will retract laterally into a pocket compartment located aft of the Fwd RH galley assembly. The door will not divide the passenger compartment, and the occupants will still have direct access to the RH Aft emergency exit (Type III). The door will be designed to be frangible, with features that will allow a 5th-percentile female to easily swing the door open in case of an emergency, resulting in an aperture large enough to allow for a 95th-percentile male to escape, in addition to having blowout capability for rapid

decompression events. The pocket door will provide no more resistance to a person passing through it than a normal cabin curtain.

2. The door will be placarded to be latched open during taxi, takeoff, and landing. The door design will include dual internal latching mechanisms, which operate independently of one another. This redundant approach would minimize the probability of the door unlocking due to fuselage distortion in an emergency landing, and would be capable of supporting the inertia loads specified in 14 CFR 25.561.

3. The door will also feature a "quarter turn" positive manual latch (third in the door assembly), which will virtually prevent the door from deploying into the aisle when the lock is engaged. This "quarter turn" manual lock would also be capable of reacting the inertia load factors specified in § 25.561 due to the mass of the pocket door.

4. The nature of the Model G250 pocket door design will be such that in an unlatched condition the door will be spring-pushed and partially deployed into the aisle. This condition will be easily noticeable by the crew in preparation for taxi, takeoff, and landing (refer to Figure 2). Additionally, GAC proposes installing visual indicators on the pocket door to enhance identification of the unlatched condition. These indicators, or markers, will be added on the forward side and next to the inboard edge of the pocket door, and will only be visible to the crew when the door is not engaged in the latched position. Likewise, the position of the quarter-turn lock, described in item 3 above, will be easily identifiable by the crew. A "quarterturn" in the horizontal position will indicate a positive lock of the door.

5. Bulkhead divider type emergency exit sign(s) will be installed to ensure that the level of passenger guidance required to find an exit will be provided. This sign will also address FAA concerns regarding the recognition problem as it relates to the location of the emergency exit (MED) forward of the pocket door.

6. A placard describing the pocket door frangibility procedure will be added to the door installation.

7. Interior outfitters will be provided with an Interior Certification Requirements Document to ensure that they are aware of the special design requirements that they must comply with to be eligible to use this exemption.

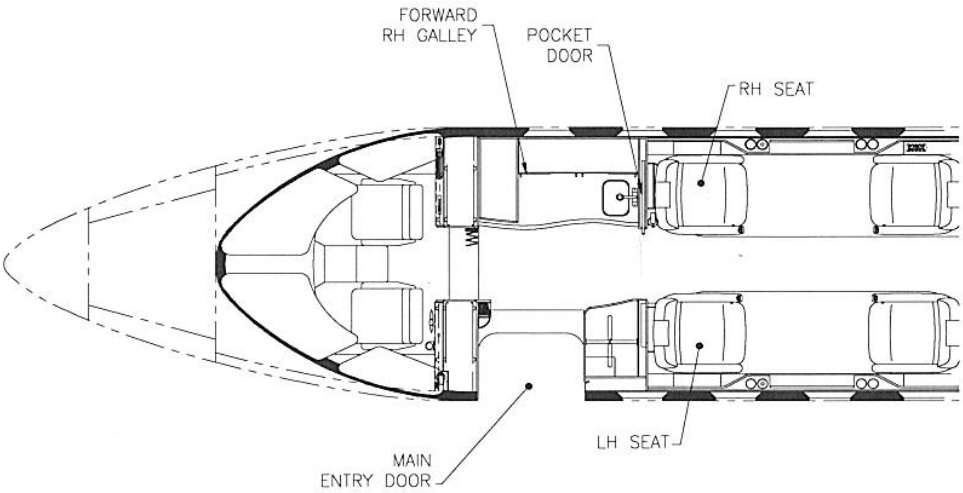

Figure 1 – Model G250 Fwd RH Pocket Door Installation

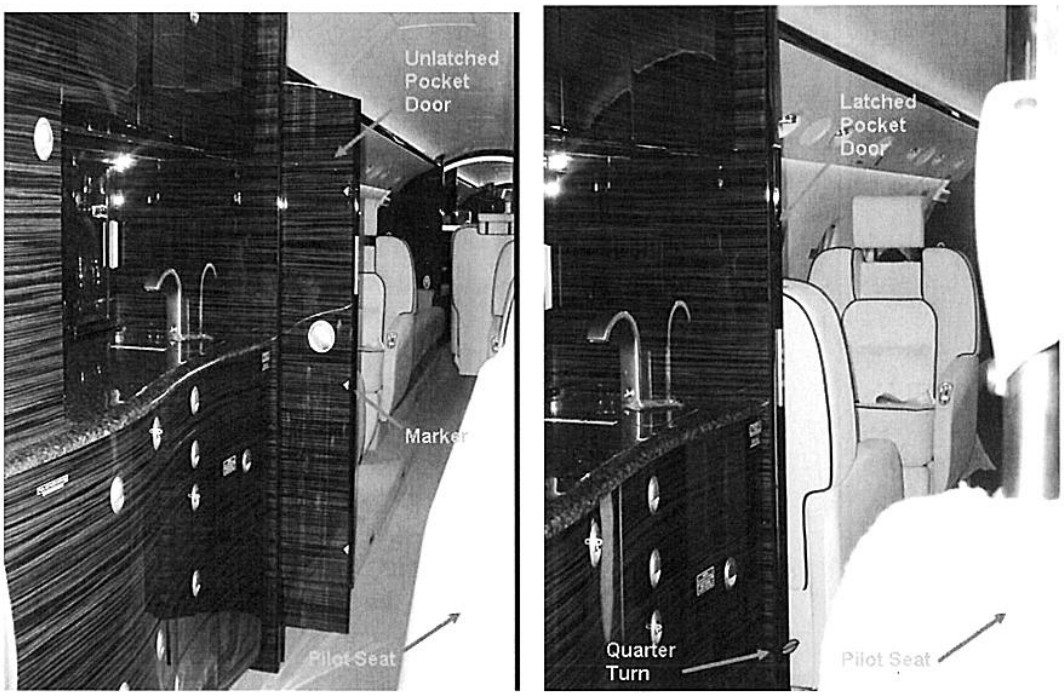

Figure 2 – Pocket Door Latched and Unlatched Condition

In the past, FAA's position regarding doors that cross an egress path has been that the operation of the aircraft be limited to private use, not-for-hire, not-for-common-carriage. However, GAC would respectfully like to request applicability of this exemption to aircraft that would be operated under part 135 certification. GAC is of the opinion that in

addition to the pocket door and cabin design features listed above, other provisions can be made to address FAA's concerns regarding the installation of this type of door in aircraft operated under part 135. The following provisions and rational are presented as the basis for this request:

a. FAA opposition to allow the exemption for aircraft under part 135 operation appears to be based on the potential lack of familiarity that passengers in these aircraft could exhibit regarding pocket door procedures during an emergency landing. GAC understands the concern; however, the proposed pocket door design would be such that the probability of failure with the door in the deployed position is highly unlikely due to the triple door latch approach specified in items 2 and 3 above. With a fail-resistant door design, the importance of how familiar a passenger needs to be with the emergency procedures for the pocket door is significantly diminished, and should allow for this exemption to be applicable for Model G250 aircraft operating under part 135.

b. Passenger knowledge of the pocket door emergency procedures would only be critical in the very unlikely event where the pocket door has deployed during an emergency landing. To that end, GAC has developed step-by-step procedures to educate passengers on the emergency operation of the pocket door. These procedures will be the same regardless of type of aircraft operation (private or for hire). Passenger instruction on the pocket door emergency operation will be achieved by requesting the crew (via the Aircraft Flight Manual Supplement (AFMS)) to perform a pre-flight de-briefing regarding the Model G250 pocket door emergency procedures. These procedures will be reviewed, coordinated, and approved by the FAA.

c. Furthermore, GAC proposes treating one of the seats (RH or LH) installed immediately aft and adjacent to the pocket door in similar fashion as seats next to an emergency exit. That is, this seat position would be required to meet similar requirements as those specified on 14 CFR 135.129, which requires operators to make a determination of whether the occupant seated at the emergency seat will be qualified to operate the emergency exit. Except, in this case the operator (via the crew) would be required to make a determination of whether the passenger at this seat is qualified to operate the pocket door after an emergency landing, in the very unlikely event that the pocket door has deployed.

d. The pocket door design features specified above (items1 through 6) make it highly unlikely that the pocket door be deployed during taxi, takeoff, and landing; and make it highly unlikely that the pocket door would deploy across the egress path during an emergency landing condition. In addition, instructional procedures and features as described in paragraphs b and c above will ensure that the occupants are well informed on pocket door emergency operation should the need arise. However, in order to validate the effectiveness of the pocket door design features and the operational procedures immediately after an emergency landing, GAC proposes performing a comparative cabin egress test, as follows:

Proposed Test Criteria and Guidelines

i. This test will demonstrate that the pocket door deployed into the egress path has minimal effect on the ability of the occupants to rapidly egress the aircraft after an emergency landing.

ii. The evacuation test will consist of performing a baseline cabin egress test (based on a FAA defined criteria) where no pocket door installation is included as part of the aircraft interior, and comparing the results against a similar evaluation where the pocket door is installed in the aircraft.

iii. The pass/fail criteria will be agreed upon with the FAA, and could consist of demonstrating that both evacuation evaluations were completed within a pre-defined maximum time (t_{max}). GAC would propose that the t_{max} be determined based on the maximum passenger capacity for the Model G250 airplane and the passenger evacuation flow rate (pax flow rate) according to § 25.803(c), i.e., pax flow rate = 90 sec/44 pax = 2.05 sec/pax. Thus, the proposed t_{max} would be 2.05 x (G250 max pax capacity), or t_{max} = 2.05 x (19) = 38.9 seconds. For the actual test the number of test subjects may be reduced to minimize the risk of injuries, therefore, t_{max} will be based on the actual test subject count. Both tests would be performed using test subjects who are not familiar with aircraft operations (worst case scenario), and who would be selected according to FAA defined criteria. The test subjects would be separated into two groups, with the same number of people, not to exceed the Model G250 maximum passenger capacity.

iv. The test would be performed in accordance with the principle of Latin Square testing, where each aircraft interior configuration (with and without the pocket door) is tried once by each group and appear once in each possible order. That is, one group would try first the baseline configuration and then the pocket door configuration. The other group would make the trials in the reverse order. The elapsed escape time will be recorded for each group and each test configuration.

v. The effectiveness of egress for the interior configuration with the pocket door will be compared to that of the interior without pocket door by comparing the average time of the groups to evacuate the aircraft. However, the intent of the tests will be to demonstrate that both configurations can be evacuated with an averaged time less than the t_{max} defined above.

GAC is of the opinion that these tests will demonstrate that the pocket door installation has minimal effect on the evacuation rate of the aircraft, and more importantly, that cabin safety has not been compromised by the installation of the pocket door. The aforementioned Latin Square evaluation is similar to evaluation procedures described in Appendix 4 of AC 25-17A for non-standard exit doors on transport category airplanes. The approach has been adapted to support the pocket door evaluation.

Statement of Public Interest

GAC and GALP provide marketing, sales, aircraft completion, and product support services for the Gulfstream Model 250 airplane. GAC and GALP employ a very large staff to design, manufacture, and install the executive interiors for the Model G250 airplanes that are operated worldwide. The owners of business jet aircraft very often prefer a configuration that includes compartment doors, which reduce cabin ambient noise and provide for privacy or a comfortable rest area when needed.

The importance of business aviation to the well being of the United States economy cannot be overstated. Business aviation enables a company to maximize its two most important assets, time, and people. A business aircraft reduces not only flight time but total business travel time, allowing a higher degree of productivity through greater point-to-point service and the ability to better utilize the existing national airport network, in essence bringing the business closer to its intended customer. The office-like environment that exists on board the business aircraft allows the travel time of busy executives to be a more productive time.

Current trends in the world economies show that the business aircraft market is expected to grow again. Therefore, the demand for these corporate aircraft and the benefits they present to business makes it essential that the petitioner be granted the regulatory relief requested. Failure to achieve this goal will result in a significant loss of income, both in domestic and foreign trade for the Unite States, the petitioner, and the intended business operators of these aircraft. The stabilizing effect that manufacture and support of corporate aircraft has on the job market is significant and definitely in the public interest.

Lastly, since customers desire to have these interior doors, they may opt for aircraft designed to an earlier certification basis, in lieu of the Model G250 airplane. This will restrict advancements in safety introduced by GAC with the Model G250 airplane, not only in the areas of cabin safety, but throughout the aircraft. This is counter productive to both GAC/GALP and the FAA's goal of continuous improvement in overall aircraft safety. The advancement of aircraft safety is in the best interest of the public.

Operation Outside of the United States

The European Aviation Safety Administration (EASA) Certification Specification (CS) 25.813 is not currently harmonized with § 25.813 and does not restrict these types of door installations.

Regardless of EASA requirements, in accordance with 14 CFR 11.81(h), GAC petitions consideration be given to extending this exemption for operation outside of the United States. GAC/GALP aircraft are routinely registered and operated outside of the United States and projections are the same for the Model G250 airplane. Granting this extension of privileges will allow for operations based within foreign countries, including European Union member countries, having bilateral agreements with the United States accepting FAA 14 CFR part 25 as equivalent to their airworthiness standards for transport category

aircraft. GAC believes that limiting this exemption to use within the U.S. would put unfair restrictions on the marketability of the Model G250 airplane.

Conclusion

GAC and GALP believe that the above arguments justify an exemption from § 25.813(e) that would allow installation of cabin interior doors on the Model G250 airplane, operated under both part 91 and part 135. GAC and GAP further believe that this exemption is in the public interest and will provide a level of occupant safety consistent with the current Federal Aviation Regulations.

Federal Register publication

A summary of the petition was not published in the Federal Register. The FAA determined that good cause existed for waiving the publication requirement because this exemption would not set a precedent. This exemption is effectively identical to previous petitions for which no public comments were received.

The FAA's analysis

We consider the petitioner's proposal to be in the public interest for the reasons stated previously by the petitioner.

We note that the petitioner contends the Gulfstream Model G250 airplane will most often be used for executive air transportation under parts 91 and 135 of the Federal Aviation Regulations. The term "executive air transportation" has no regulatory basis. However, it is understood that the aircraft might be operated under parts 91 or 135.

With limited exception, interior door installations between passenger seats occupiable during takeoff and landing and passenger emergency exits have not been eligible under part 135 operation. In the rare case where interior doors have been allowed, the applicant provided sufficient compensating features to ensure airplane passengers had access to the minimum required exits without having to egress past the interior door. In all other cases, there has been an explicit limitation that the airplanes are only to be operated in "private use," that is, not-for-hire, not-for-common-carriage. It is our intent to continue to apply that limitation to this petition as well. Any interior door installed would be required to be deactivated (requiring tools and a maintenance action to reactivate it) before the Gulfstream Model G250 could be operated in part 135 service.

The FAA's decision

In consideration of the foregoing, I find that a partial 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, I grant Gulfstream Aerospace LP an exemption from § 25.813(e) to the extent necessary to allow installation of an interior door on private use, not-for-hire, not-for-common-carriage Gulfstream Model G250 airplanes. Specifically, this exemption allows

relief from the requirement that no interior doors be installed between any passenger seat that is occupiable for takeoff and landing and any passenger emergency exit such that the door crosses any egress path (including aisles, crossaisles, and passageways). This exemption is subject to the following provisions listed below. Provisions 1, 3, 4, and 6 must be documented as operating limitations in the Limitations Section of the Airplane Flight Manual.

1. The airplane must not be operated for hire or offered for common carriage. This provision does not preclude the operator from receiving remuneration to the extent consistent with 14 CFR parts 125 and 91, subpart F, as applicable.

2. Each door must be frangible from both sides. A placard describing the pocket door frangibility procedure must be installed in a conspicuous location on both sides of the door. A demonstration is required to show that a 5th-percentile female test subject can break through the door from both sides resulting in an aperture large enough to allow for a 95th-percentile male to escape. The 5th-percentile female test subject should be subjected to a typical pre-flight briefing, and then may only use the information on the placard for determining how to break through the door.

3. The door must be latched in the open position during taxi, takeoff, and landing. A placard requiring the door to be latched open during taxi, takeoff, and landing must be installed in a conspicuous location on both sides of the door.

4. Appropriate procedures must be established to signal the flightcrew that the door is open and latched prior to taxi, takeoff, and landing, and to prohibit taxi, takeoff, or landing when the door is not in the open and latched position.

5. The doors must have dual means to retain it in the open position. Each means must be capable of withstanding the inertia loads specified in § 25.561.

6. The door must be deactivated so that it would require tools and a maintenance action in order to reactivate it, before the airplane can be operated in part 135 service.

Issued in Renton, Washington, on May 24, 2011.

Ali Bahrami
Manager, Transport Airplane Directorate
Aircraft Certification Service