

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 § 25.813(e) of
Title 14, Code of Federal Regulations

Regulatory Docket No. FAA-2016-0079

GRANT OF EXEMPTION

By letter dated November 20, 2015, Mr. Robert Glasscock, Director of ODA Programs, Gulfstream Aerospace Corporation, P.O. Box 2206, Savannah, Georgia, 31402-2206, petitioned the Federal Aviation Administration (FAA) for an exemption from the requirements of § 25.813(e) of Title 14, Code of Federal Regulations (14 CFR). This exemption, if granted, would permit the installation of mid-cabin pocket doors in Gulfstream Model GVII-G500 airplanes and derivatives when operated for private-use only (not for hire, not for common carriage).

The petitioner requests relief from the following regulation(s):

Section 25.813(e) at Amendment 25-128 – 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 its request with the following information:

This section quotes the relevant information from the petitioner's request, with minor edits for clarity. The complete petition is available at the Department of Transportation's Federal Docket Management System, on the Internet at <http://regulations.gov>, in Docket No. FAA-2016-0079.

Relief from Section 14 CFR 25.813(e), Amdt. 25-128

Gulfstream Aerospace Corporation (Gulfstream) of Savannah, Georgia, has submitted an application to the Atlanta Aircraft Certification Office for type certification of a new,

twin-engine, transport category airplane to be known as the Gulfstream Model GVII-G500 (project number TC-01-2010-0024). The cabin interior of the GVII-G500, and its derivatives, relies on installation of mid-cabin pocket doors to divide different sections of the passenger cabin areas and provide certain amenities and configuration options that have become the standard for executive class airplanes.

Section 25.813(e), at Amendment 25-128, states 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, cross-aisles and passageways).

In accordance with the provisions of 14 CFR 11.81, Gulfstream requests an exemption to § 25.813(e) for installations of these mid-cabin pocket doors. Gulfstream proposes that specific design features of the GVII-G500, and its derivatives, and limiting this exemption to those aircraft that are operated as private-use only (aircraft may not be offered for common carriage or operated for hire) will provide an appropriate level of safety. The information provided herein outlines this rationale.

Supporting Information

Section 25.813(e) restricts the installation of any interior door between a passenger seat and any emergency exit, effectively restricting the use of all interior doors.

Exemptions, as well as equivalent level of safety (ELOS) findings, have been granted by the FAA to the part 25 requirements allowing installation of mid-cabin doors when the aircraft is limited to private-use only (aircraft may not be offered for common carriage or operated for hire).

On June 8, 2009, the FAA released Special Federal Aviation Regulation (SFAR) 109, allowing the installation of interior doors when the aircraft is prohibited from operations involving the carriage of persons or property for compensation or hire beyond the remuneration afforded by 14 CFR part 91, subpart F.

Because Gulfstream operators transition between private-use only and on-demand operations (part 135), Gulfstream is requesting an exemption based on the requirements of the applicable sections of SFAR 109 to allow the installation of mid-cabin pocket doors when the aircraft is limited to private-use only (prohibited from operations involving the carriage of persons or property for compensation or hire beyond the remuneration afforded by part 91) and locking out the door for common carriage or on-demand operations (part 135 operations).

For the GVII-G500 airplane and its derivatives, Gulfstream believes that it is possible to provide a level of safety consistent with the intent of the part 25 regulations while allowing installation of certain interior doors. This will be accomplished by incorporating specific design features that provide an acceptable level of safety.

Factors Supporting the Petition

Under private-use only, passengers become exceptionally familiar with the operation of interior features and the locations of the exits on their Gulfstream product. Unlike common carriage or on-demand operations, the crew of a private-use Gulfstream aircraft has daily contact with their passengers. This has a positive influence on communicating safety issues. In addition, dedicated crews normally operate private-use aircraft. The combination of these factors and the design features listed below provide a level of safety envisioned by Amendment 25-128.

The design features of the mid-cabin pocket doors installed on the GVII-G500 and its derivatives will ensure that the passengers' ability to effectively egress the airplane is not diminished per the following criteria:

- The airplane flight manual supplement (AFMS) will include appropriate limitations to require a preflight passenger briefing describing the appropriate functions to be performed by the passengers and the relevant features of the airplane to ensure the safety of the passengers and crew.
- The airplane will not be offered for common carriage or operated for hire, or hire beyond the remuneration afforded by part 91. The operating limitations section of the AFMS will be revised to prohibit any operations involving the carriage of persons or property for compensation or hire.
- A placard stating that, "Operations involving the carriage of persons or property for compensation or hire are prohibited, unless the mid-cabin door is locked in an open position," will be located in the area of the airworthiness certificate holder at the entrance to the flight deck.
- Each door between any passenger seat, occupiable for taxi, takeoff and landing, and any emergency exit will have a means to signal to the flight crew, at the flight deck, that the door is in the open position for taxi, takeoff and landing.
- Appropriate procedures/limitations will be established to ensure that any such door is in the open configuration for taxi, takeoff and landing.
- Each door between any passenger seat and any exit will have dual means to retain it in the open position, each of which is capable of reacting the inertia loads specified in § 25.561.
- Doors installed across a longitudinal aisle will translate laterally to open and close, e.g., pocket doors.
- Each door between any passenger seat and any exit will be frangible in either direction.

- Each door between any passenger seat and any exit will be operable from either side, and if a locking mechanism is installed, it will be capable of being unlocked from either side without the use of special tools.

The mid-cabin pocket door will be equipped with a locking device to retain the door in the stowed position to be used should the aircraft be offered for hire operations (such as on-demand operations under part 135). This locking device will physically secure the door in a stowed condition using a fastener which requires the use of a special tool, preventing passengers from removing the lockout feature and deploying the door.

Effect of the Exemption on Safety

The exemption requested will not adversely affect the level of safety provided for the GVII-G500 and any subsequent derivative models. The design of the proposed mid-cabin pocket door will ensure the same level of safety for cabin egress as is required for any emergency exit and clear egress path.

Issue of Public Interest

Gulfstream Aerospace Corporation designs, develops, manufactures, markets, and services the world's most technologically advanced executive class airplane to an international market. Gulfstream's leadership position in the global executive class airplane is due to the efforts of its nearly ten thousand employees in the manufacturing plants, completion centers, and services across North America. The corporation utilizes numerous products, such as avionics and environmental control systems, from scores of suppliers located throughout the United States. Gulfstream competes for new business all over the world. This exemption will have a direct impact on sales of the GVII-G500 and its derivatives. The placement of a mid-cabin pocket door is significant to the owner/operator of the airplane. The flexibility to partition the airplane into individual rooms, such as private rooms, is paramount to an acceptable interior and is being requested by prospective airplane operators who compare the GVII-G500 and its derivatives with products of foreign airplane manufacturers. The inability to provide such features will ultimately cause a reduction in prospective sales. The manufacture, completion, and support of Gulfstream airplanes aids in the stabilization of the job market as well as the growth of the American economy, which is in the interest of the public.

Since customers desire to have these mid-cabin pocket doors, they may opt for an airplane designed to an earlier certification basis, in lieu of the GVII-G500 or its derivatives. This will restrict advancements in safety introduced by Gulfstream with the GVII-G500 and its derivatives, not only in the areas of the cabin safety, but throughout the airplane. This is counterproductive to both Gulfstream and the FAA's goal of continuous improvement in overall safety. The advancement of airplane safety is in the interest of the public.

Operation Outside the United States

In accordance with 14 CFR 11.81(h), Gulfstream requests that consideration be given to extending this exemption for operation outside the United States. Gulfstream aircraft are routinely registered and operated outside of the United States and projections are the same for the GVII-G500 and its derivatives. Gulfstream believes that limiting this exemption to use within the United States would put unfair restrictions on the marketability of this aircraft.

Waiver of Notice and Public Procedure

In accordance with 14 CFR 11.29 and 14 CFR 11.87, Gulfstream requests that the period for public comment and publication be waived. This exemption is identical to the applicable sections of SFAR 109 except that it adds a lock-out feature to be utilized should the aircraft be offered for hire operations (such as on-demand operations under part 135). Similar exemptions of this nature have been granted numerous times for similar installations.

Previously granted exemptions:

- Exemption No. 10338A, Embraer S.A
- Exemption No. 10274, Gulfstream Aerospace
- Exemption No. 10396, Dassault Aviation

Federal Register publication

The FAA has determined that good cause exists for waiving the requirement for *Federal Register* publication for public comment because the request is identical in all material respects to previously granted exemptions; the exemption, if granted, would not set a precedent; and any delay in acting on this petition would be detrimental to Gulfstream Aerospace Corporation.

The FAA's Analysis

Gulfstream Aerospace Corporation has requested an exemption from 14 CFR 25.813(e) at Amendment 25-128. Paragraph (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).

Cabin interior doors have been the subject of numerous exemption requests. The FAA has already granted an exemption from § 25.813(e) for installation of the forward vestibule and acoustic doors in the Model GVII-G500 airplane via Exemption No. 11610 (Docket No. FAA-2015-0230). With the exception of that exemption and the forward vestibule and acoustic doors

in the Gulfstream Model GVI permitted by Exemption No. 10188 (Docket No. FAA-2010-0446), all exemptions from § 25.813(e) at Amendment 25-116 or later have been limited to “private-use, not for hire, not for common carriage.”

Following accident experience in the 1960’s, the FAA amended part 25 to prohibit the installation of doors “between passenger compartments” at Amendment 25-15. At the time of the amendment, dividing the first class and tourist class cabins with a solid door was common practice. We determined, in the course of accident investigations, that this door could be detrimental in evacuation of passengers, who tended not to recognize that there was an exit beyond the door, even if it were the closest available. We intended the resulting regulatory change to prevent this occurrence. However, the regulation was worded such that doors could be installed between passengers and exits, provided that passengers are not on both sides of the door. For example, a door could be installed across the main passenger aisle at the end of a cabin. The regulations required that the door be open for takeoff and landing. Either through omission or mechanical failure, such a door could become jammed prior to the need for an emergency evacuation, preventing or delaying persons from evacuating, and resulting in fatalities or injuries that would not have occurred if the door were not present. The hazards associated with a jammed door are still present whether or not passengers are on both sides of the door, and the recognition factor has not been mitigated. Either scenario could result in the same consequences – failure of some passengers to evacuate the airplane.

Amendment 25-116 increased the level of safety over that of the previous version of the rule by prohibiting doors between any passenger and any exit. Since raising the level of safety with Amendment 25-116, we have not made any ELOS findings for interior doors between passenger compartments on airplanes with a certification basis at that amendment level or later because the presence of doors, even with risk-mitigating features, is not equivalently safe to a rule that prohibits the presence of doors. We explained this in the preamble to the final rule of Amendment 25-116 which also considered the adverse effects such doors could have on safety during an emergency evacuation.

Title 49 of the United States Code (49 U.S.C. 44701(d)) directs the FAA to consider differences between air transportation and other air commerce. This provision establishes the principle that our regulations should set a higher level of safety for air carriers compared to other types of operations whenever appropriate. We followed this principle when we made allowances for interior doors in private-use operations, along with several limitations, to ensure the interior doors do not adversely affect safety. The public demands greater certainty in safe outcomes for fare-paying passengers, so we have not made similar allowances for interior doors in operations other than private-use.

The placement of interior doors is quite significant to owners and operators of private-use airplanes. The flexibility to partition the airplane into individual compartments, such as private meeting rooms or bedrooms, is paramount to an acceptable interior. The FAA acknowledges the desirability of these features from the private-use operator’s point of view. Airplanes configured for private-use, not-for-hire, and not-for-common-carriage typically use any of five different door

categories in the passenger cabins. This exemption is applicable to any of the following categories of door:

Category 1: A door in a room and the room is less than the full width of the airplane. An aisle is outside the room. This type of room may be occupied during takeoff and landing, and only the occupants of the room must use the door to reach an exit.

Category 2: A door in a room that is the same as Category 1, except a single emergency exit or pair of emergency exits is within the room.

Category 3: A door, or doors, in a room and the room is the full width of the airplane. Passengers are seated on both sides (fore and aft) of the door(s), and the main aisle leads out of, or passes through, the room. The room does not have emergency exits. This type of room may be occupied during takeoff and landing.

Category 4: A door in a room and the room is the full width of the airplane. Passengers are seated on both sides (fore and aft) of the door, and a pair of emergency exits is at one end of the room. This type of room may be occupied during takeoff and landing.

Category 5: A door in a room that may be the full width of the airplane. This type of room is not occupied during takeoff and landing. This room is only occupied during flight. Passengers are not seated on both sides of the door during taxi, takeoff, and landing. Passengers seated in taxi, takeoff, and landing seats must not need to pass through this door to get to any emergency exits.

Because not all interior doors between passenger compartments are equivalent, the FAA imposes different limitations on the different categories appropriate to produce an adequate level of safety for private-use operations.

To ensure the appropriate level of safety, doors in Category 2, 3, or 4, installed across the main cabin aisle, must open and close in a transverse direction. That is, the direction of motion of the door must be at a right angle to the longitudinal axis of the airplane. A “pocket door” is one example of such a design. This minimizes the chance that the inertia forces of an accident could force the door closed.

Each interior door must have an emergency passage feature (EPF) to allow passage of the occupants or rescue personnel if the door becomes jammed in the closed position in flight or during taxi, takeoff, or landing. This EPF may be through frangibility or a removable emergency panel or equivalent. The EPF is intended to ensure that if a door is jammed closed, occupants can escape in either direction and emergency equipment can be moved. The EPF may be demonstrated in either of the following ways:

- A 5th-percentile female can break through the door, creating a large enough opening that a 95th-percentile (or larger) male can pass through. See Advisory

Circular 25-17A, Transport Airplane Cabin Interiors Crashworthiness Handbook, paragraph 43b(2).

- A 5th-percentile female can break a hinge on the door or a hinge on a smaller door within the door such that the door can swing, so as to allow a 95th-percentile (or larger) male to pass through the opening with the door swung open. This evaluation must be made with any cabin furnishing or equipment installed that could limit the swing arc of the door and placed in the most adverse position. In using this approach, one must consider the possibility that the door is physically jammed in the closed position by distortion of the fuselage or furnishings. This possibility must be considered even if the door normally translates into the open and closed positions.

With either method, the 5th-percentile female test subject should be subjected to a typical preflight briefing and then may only use the information on the placard for determining how to operate the EPF. The demonstration should be conducted with representative cabin furnishings and equipment that could limit the door opening. The applicant must then show that a 95th-percentile male subject can exit through the EPF opening created by the 5th-percentile female test subject.

Any door in a room that is occupiable for takeoff and landing must have redundant means to latch doors open for takeoff and landing. Each latching device must have the capability of retaining the door in the takeoff and landing position under the inertia forces of § 25.561. Any door in a room that contains one or more emergency exits or that crosses the main aisle (Category 2, 3 or 4) must be in the open position during taxi, takeoff and landing, regardless of whether occupants are in the room. Other doors (Category 1) must be open during taxi, takeoff and landing only if occupants are in the room. Doors in rooms not occupiable for takeoff and landing (Category 5) should be closed during takeoff and landing to minimize the possibility that passengers will become disoriented and enter the room looking for an exit during an emergency.

With respect to the possibility that a door remains closed when it should not, we determined that a higher level of awareness is required to address this issue. Inspection by flight attendants prior to takeoff and landing is not sufficient to verify that interior doors are in a required open position. Therefore, some type of remote indication is necessary. We accept the petitioner's proposal to provide a means to signal the flightcrew that these doors are in the open position during taxi, takeoff, and landing for doors that fall into Categories 1, 2, 3, and 4. Doors in Category 5 do not need to comply with this requirement. For Category 5 doors, placards located on or near the door that indicate that the door must be closed for taxi, takeoff, and landing are acceptable.

Gulfstream requested the exemption also be applicable to "derivatives" of the Model GVII-G500 airplane. This exemption applies to Gulfstream Model GVII-G500 airplanes. Should Gulfstream apply later for a change to the type certificate to include another model incorporating the same or similar design feature, this exemption would apply to that model as well.

The FAA considers that granting this petition is in the public interest for the reasons stated by the petitioner and because the FAA is directed to take into account the type of operation when establishing standards under Title 49 of the United States Code (49 U.S.C. 44701(d)).

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, I grant Gulfstream Aerospace Corporation an exemption from 14 CFR 25.813(e). The exemption is granted to the extent necessary to allow the installation of mid-cabin interior doors on Gulfstream Model GVII-G500 airplanes operated for private-use (not for hire, not for common carriage).

This exemption is subject to the following conditions and limitations. Items 1, 2, 5, 6, and 7 below must be documented as operating limitations in the limitations section of the AFM.

1. Except as noted in item 2, 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. In order for the airplane to be operated in part 135 service, the mid-cabin door must be secured in an open (stowed) condition using a fastener which requires the use of a tool and a maintenance action to release it.
3. Doors between passenger compartments must have a dual means to retain them in the open position. Each means must be capable of withstanding the inertia loads specified in § 25.561. Doors in Category 5 do not need to comply with this requirement because they are required to be closed for taxi, takeoff, and landing.
4. The doors must be placarded to be open and latched for taxi, takeoff, and landing.
5. Doors that fall into Category 1 must be in the open position during taxi, takeoff, and landing, if occupied.
6. Doors that fall into Categories 2, 3, or 4 must be in the open position during taxi, takeoff, and landing, regardless of occupancy of the room.
7. Doors that fall into Category 5 must be in the closed position during taxi, takeoff, and landing.
8. A means to alert the flightcrew that an interior door is not in the properly open (stowed) position for taxi, takeoff, and landing must be installed.

9. Appropriate procedures must be established to prohibit taxi, takeoff, and landing in the event a door between any passenger seat, which is occupiable for takeoff and landing, and any passenger emergency exit is not in the proper position. Doors in Category 5 do not need to comply with this requirement. For Category 5 doors, placards located on or near the door that indicate the door must be closed (deployed) for taxi, takeoff, and landing is acceptable.
10. The doors must have an emergency passage feature (EPF) to allow passage of the occupants or rescue personnel if the door becomes jammed. The EPF must be easily broken or removed by the occupant when the door is jammed and a placard must be installed on each side of the door providing instruction on the operation of the EPF. The applicant must demonstrate a 5th-percentile female can break through or remove the EPF from both sides of the door and that a 95th-percentile male subject can exit through the EPF opening.
11. Doors in Categories 2, 3, or 4 installed across the main aisle must translate laterally to open and close.

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