

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-2015-2330**

**PARTIAL GRANT OF EXEMPTION**

By letter dated June 11, 2015, Mr. Emery P. (Kip) Wiltse, ODA Enterprise Program Administrator, 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 a mid-cabin interior door on Gulfstream Model GVI airplanes. The mid-cabin interior door would be in addition to the current acoustic door and forward vestibule door permitted by Exemption No. 10188 (Docket No. FAA-2010-0446). The petitioner also requests that the exemption be applicable to aircraft operated under 14 CFR part 135 and not limited to private use operation only.

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

**Section 25.813(e) at Amendment 25-116** -- 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-2015-2330.

## **Issue Statement and Petition Request**

Currently, the GVI model design incorporates two doors between the passenger seating areas and the main entry door, allowed per Exemption No. 10188 from § 25.813(e). One door is an acoustic door provided between the forward vestibule and the main entry door. Its purpose is to maintain an acceptable acoustic level in the passenger cabin and pilot compartment and is standard equipment. The second door is a forward vestibule door and is offered on certain interior configurations. Its purpose is to provide:

1. Isolation of the crew rest facilities in accordance with guidance per Advisory Circular (AC) 121-31.
2. Separation between passenger and crew areas including the galley, crew rest, and cockpit.

A proposed change to the GVI interior design incorporates mid-cabin pocket doors with a design identical to the forward vestibule door currently certified for the GVI aircraft. This door is offered as an option on certain interior configurations. Its purpose is to provide:

1. Private cabin sections for conducting business meetings in flight.
2. Isolation of additional crew rest facilities in accordance with guidance per AC 121-31, providing improved quality of the sound levels and light levels.

Gulfstream requests an exemption to § 25.813(e) for installation of the mid-cabin interior door. This would allow the GVI aircraft to improve the quality of the sound levels and light levels in an aft crew sleeping facility in accordance with guidance per AC 121-31 as well as providing private areas for business. Gulfstream proposes that specific design features, combined with the unique configuration of the GVI, will provide an overall level of safety beyond that intended when the FAA promulgated Amendment 25-116. Based on these features, Gulfstream proposes that this exemption be applicable to both private use aircraft (14 CFR part 91) and those used for hire (14 CFR part 135). The information provided herein will outline this rationale.

## **Supportive Information**

At Amendment 25-1, 14 CFR 25.813(e) was revised to restrict installation of doors between passenger compartments. This did not restrict the installation of doors forward or aft of passenger compartments. As such, it continued to be common practice for business class aircraft to install doors which isolate the passenger seating areas from crew work areas. These doors lower noise levels in the passenger cabin and create effective work environments. On October 27, 2004, Amendments 25-116 and 121-306 titled, "Miscellaneous Cabin Safety Changes," were published in the Federal Register. This revised § 25.813(e) to restrict the installation of any interior door between a passenger seat and an emergency exit, effectively restricting the use of all interior doors. In addition, the FAA revised § 121.310(f)(6) to prohibit these doors in airplanes manufactured after November 27, 2006, and operated under part 121. However, at that time the FAA chose not to amend part 135 or part 91. As a result, aircraft certified prior

to Amendment 25-116, and operating under other than part 121, are permitted to incorporate these types of door installations.

When Amendment 25-116 was issued, the FAA noted that this change was incorporated due to concerns over passengers' ability to 1) recognize that an exit exists beyond an interior door forward or aft of the passenger compartment; and 2) reach the exit beyond the door in the event of failure of the interior door to open.

On June 8, 2009, the FAA released Special Federal Aviation Regulation (SFAR) No. 109 allowing the installation of interior doors and listing restrictions as well as criteria needed to be met in order to present an acceptable level of safety for part 91 operations. Mid-cabin pocket doors are currently installed on some interior configurations of the GVI aircraft for part 91 operations based on the criteria and restrictions listed in SFAR 109.

Exemptions, as well as Equivalent Level of Safety (ELOS) have been granted by the FAA to numerous business jet models allowing the installation of mid-cabin doors. Gulfstream recognizes that most of these exemptions and ELOS were limited to part 91 operations. However, there are examples in which such operational limitation was not required, such as the ELOS for aft lavatory door in the Cessna Citation 680 (ELOS TC2548WI-T-AG-2) which also creates two passenger compartments separated by a door within the passenger cabin as the lavatory/vanity is occupied during taxi, takeoff, and landing.

For the GVI aircraft, Gulfstream believes that it is possible to provide a level of safety consistent with the intent of the part 25 regulations while allowing for installation of certain interior doors. This will be accomplished by incorporating specific design features that provide an acceptable level of safety. These features will ensure the design will not diminish a passenger's ability to 1) effectively identify the exit, and 2) egress the aircraft.

### **Factors Supporting the Petition**

The mid-cabin pocket door will be designed with features identical to the forward vestibule door currently certified for the GVI aircraft. The following design features of the GVI mid-cabin door will ensure that the passengers' ability to effectively identify the exit is not diminished:

- The door will be designed to automatically open (stow) based on the airplane being configured for landing and will remain open until the airplane has returned to an airborne flight configuration. The installation of the interior door will therefore not adversely affect passenger recognition of the main entry door (MED) or over-wing emergency exits.
- The MED is the only door available to enter the aircraft. Consequently, the MED location is inherently established for all passengers upon boarding.

- The over-wing emergency exits are optimally located in the passenger compartment, in clear and obvious view, and are in an area of high passenger density. These exits will also be indicated via locator signs and markers, as well as emergency escape path lighting. This heightened passenger awareness and ease of identification will increase the likelihood of passengers utilizing the over-wing exits provided in the cabin versus defaulting to the entry door.
- Emergency exit locator and marking signs and emergency lighting, in accordance with §§ 25.811 and 25.812, will be provided. An exit locator sign will be installed on the mid-cabin door bulkhead. This exit locator sign will be visible when the pocket door is closed and when the pocket door is open, eliminating any confusion as to where the emergency exit is located.

The following design features of the GVI interior door and passenger cabin will ensure that the passenger's ability to effectively egress the aircraft is not diminished by ensuring that the door will be open and latched for taxi, takeoff, and landing without requiring passenger or crew action. These features are currently present on the forward vestibule door certified for the GVI aircraft.

- The door will be designed to automatically open (stow) and latch when the airplane has been configured for landing (gear down or flaps down) and will remain open and latched until the airplane has returned to an airborne flight configuration (landing gear and flaps both fully retracted).
- The door will have dual means of restraint in the open position, each of which is capable of reacting all emergency landing loads specified under § 25.561(b). This dual hold-open feature is automatically activated when the airplane has been configured for landing (gear down or flaps down) and will remain activated until the airplane has returned to an airborne flight configuration (landing gear and flaps both fully retracted).
- With the door in the open (stowed) position, the critical forward emergency landing loads will not cause the door to deploy and block access to the main entry door or over-wing emergency exits.
- The operation of the door to the closed (deployed) position will require manual activation. The door will be designed so that it can only be closed (deployed) when the gear and flaps are fully retracted (airborne configuration), or for ground maintenance activity.
- The door will be designed so that for any failure of the closing/latching mechanism, the door will default to the open (stowed) position.
- The door will be placarded to be open for taxi, takeoff, and landing (TT&L). Normal door operation by passenger is manual, including opening the door for

taxi, takeoff, and landing. However, the automatic opening and latching feature will ensure a clear egress path should the door not have been stowed manually.

- An amber calibrated airspeed (CAS) message will alert the pilots if any of the internal doors (acoustic door, forward vestibule, or mid-cabin pocket door) is not in the properly open (stowed) position for TT&L.
- In accordance with the Gulfstream approach to compliance with § 25.1309, the failure to egress through any individual emergency exit is classified as major. Gulfstream will demonstrate that the probability of failure to egress through the MED, including the probability of failure of the interior doors, will meet the criteria for a failure scenario classified as major. This will be accomplished by design review of the mid-cabin door installation as compared to the currently certified forward vestibule door which included conducting a quantitative analysis that showed the probability of this scenario to be less than  $10^{-5}$  per flight hour. This hazard criticality is based on § 25.783(b)(2).
- This door will be designed to be frangible from either side of the door. In case of an emergency, this design will allow a 5<sup>th</sup> percentile female to create an aperture large enough to allow for a 95<sup>th</sup> percentile male to escape. Compliance to this requirement will be accomplished by design review of the new mid-cabin pocket door compared to the currently certified mid-cabin pocket door.
- The over-wing emergency exits have been designed so that they can all be deployed at the same time to provide multiple redundant egress paths for escape from the passenger compartment. Each of the four over-wing emergency exits require single file egress and have been sized to provide substantial egress area. This reduces the problems caused by passenger panic and congestion typical in single, larger exits. Smooth, effective egress of passengers through the existing over-wing exits will also increase the likelihood of passengers utilizing the over-wing exits as opposed to seeking alternate escape routes further away (MED).

### **Additional GVI Design Considerations**

Gulfstream demonstrated the over-wing exit pair to be equivalent to the size and number of exits required by § 25.807(g) through an ELOS finding to § 25.807 documented in issue paper C-1.

Gulfstream demonstrated that the GVI exit pair provides equivalent egress capability to that of a required Type III exit through an ELOS finding to § 25.813(c)(2) and addressed FAA Policy ANM-115-08-02. This was documented in issue papers C-7 and C-8. Interior doors are opened automatically on landing configuration, in a manner that crew procedures or placards are not relied upon to ensure awareness of, as well as access to the over-wing emergency exits in accordance with §§ 25.809(b) and 25.813(c)(2)(ii).

Compliance with § 25.807(i) for ditching is shown through the use of the over-wing emergency exits as required by § 25.807(g). The forward entry door is not utilized under

this scenario for emergency evacuation and applicable placards are provided. The airplane flight manual defines proper procedures for exiting the aircraft in these conditions.

Many of the passengers typically utilizing executive class aircraft are frequent passengers who are familiar with the operation of the interior features and locations of emergency exits.

### **Effect of the Exemption on Safety**

Acceptance of the proposed GVI design will ensure that a level of safety consistent with the intent of the regulation has been provided. The design of the proposed interior doors will ensure the same level of safety for cabin egress as is required for any emergency exit and will provide a clear egress path. This combined with other characteristics of the GVI such as redundancy of emergency exits, large area over-wing exits, and optimal location of emergency exits, will provide a level of safety exceeding that currently prescribed under Amendment 25-116 to part 25.

Although the current operational requirements under parts 91 and 135 for this type of aircraft have not been amended to correspond to the part 25 restriction, Gulfstream acknowledges that the part 25 change is an important enhancement to the level of safety offered by newly manufactured aircraft. The design criteria proposed by Gulfstream for the GVI raises the current level of safety to that envisioned by Amendment 25-116 to part 25.

### **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 in the global business jet market is due to the efforts of its nearly 11,000 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 throughout the United States. Gulfstream competes for new business all over the world. This exemption will directly impact the options to be offered to prospective customers who prefer a cabin configuration that provides private areas for business as well as additional crew rest areas for long-haul part 135 operations, thereby having a direct effect on GVI sales. The ability to provide additional cabin separations is being requested by prospective aircraft operators who compare the GVI with products of European and other foreign aircraft manufacturers. The inability to provide such features will ultimately cause a reduction in prospective sales. The manufacture, completion, and support of Gulfstream aircraft would aid 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 interior doors, they may opt for aircraft designed to an earlier certification basis, in lieu of the GVI. This will restrict advancements in safety introduced by Gulfstream with the GVI, not only in the areas of cabin safety, but

throughout the airplane. This is counterproductive to both Gulfstream and the FAA's goal of continuous improvement in overall aircraft safety. The advancement of aircraft safety is in the interest of the public.

### **Operation Outside of the United States**

Per 14 CFR 11.81(h), Gulfstream requests that consideration be given to extending this exemption for operation outside of the United States. Gulfstream aircraft are routinely registered and operated outside of the United States. Granting this extension of privileges will allow for operations based within foreign countries, including EU member countries, having bilateral agreements with the United States accepting part 25 as their airworthiness standards for transport category aircraft. Gulfstream believes that limiting this exemption to use within the U.S. would put unfair restrictions on the marketability of this aircraft.

### **Federal Register publication**

The FAA has determined that good cause exists for waiving the requirement for *Federal Register* publication for public comment because the granting of this partial exemption is identical in all material respects to previously granted exemptions, does 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 25-116. 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. As noted by the petitioner, with the exception of the forward vestibule and acoustic doors installed on 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." The FAA policy and the intent of § 25.813(e) at Amendment 25-116, as stated in the preamble to the final rule, is:

#### Interior Doors

Following accident experience in the 1960's, the FAA amended part 25 in Amendment 25-15 to prohibit the installation of doors "between passenger compartments." At the time of the amendment, it was common practice to divide the first class and tourist class cabins with a solid door. It was 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. The resulting regulatory change was geared specifically at preventing

this occurrence. However, the regulation was worded such that doors may be installed between passengers and exits provided there are not passengers 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 only required that the door be open for takeoff and landing. It is now considered undesirable to permit the installation of a door between any passenger and an exit. Should such a door (either through omission or mechanical failure) become jammed in the event of an emergency evacuation, persons could be prevented or delayed in evacuating which could result in fatalities or injuries that would not otherwise have occurred. 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 could result in the same consequences - failure of some passengers to evacuate the airplane. This amendment prohibits the installation of any door between any passenger and any passenger emergency exit. This would include prohibiting doors that close off galley areas that serve as passageways or crossaisles, doors across emergency exits (frequently used on "VIP" airplanes), and doors into compartments that are occupiable for takeoff and landing. This would also include prohibiting a door across one of the aisles on a multi-aisle airplane, since this closes off the most direct route to an exit for some of the passengers.

Amendment 25-116 increased the level of safety over that of the previous version of the rule. Gulfstream refers to the equivalent level of safety (ELOS) finding made for § 25.813(e) for the Cessna Citation 680. However, the amendment level of § 25.813(e) for that airplane was Amendment 25-88. 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.

We do not agree with Gulfstream's assessment that their proposed door configuration maintains or raises the level of safety compared to that of § 25.813(e) at Amendment 25-116. Gulfstream proposes several mitigating factors to lessen the risk of a door becoming jammed, either through omission or mechanical failure. However, the presence of the door is not as safe as the absence of the door.

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 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 for private use operations. 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 clearly 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.

When the FAA adopted the regulations pertaining to interior doors, we did not consider "rooms." The FAA considered two possible types of interior doors in a passenger compartment. The first type is an interior door between passenger compartments. The second type is an interior door between an exit and the passenger compartment. Until recently, only the first type of door was prohibited by § 25.813(e). However, part 25, as amended by Amendment 25-116, prohibits interior doors between the exit and the passenger compartment. In addition, Amendment 121-306 prohibits these doors in airplanes manufactured after November 27, 2006, operated under 14 CFR part 121. Amendments 25-116 and 121-306 titled, "Miscellaneous Cabin Safety Changes," were published in the Federal Register on October 27, 2004.

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 compartment and the compartment is less than the full width of the airplane. An aisle is outside the compartment. This type of compartment may be occupied during takeoff and landing, and only the occupants of the compartment must use the door to reach an exit.

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

**Category 3:** A door, or doors, in a compartment and the compartment 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 compartment. The compartment does not have emergency exits. This type of compartment may be occupied during takeoff and landing.

**Category 4:** A door in a compartment and the compartment 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 compartment. This type of compartment may be occupied during takeoff and landing.

**Category 5:** A door in a compartment that may be the full width of the airplane. This type of compartment is not occupied during takeoff and landing. This compartment 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 has determined that the following requirements will produce an adequate level of safety for private use operations:

1. To maximize the 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.
2. Redundant means are necessary 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.
3. Each interior door must be frangible, in the event that it is jammed in the closed position in flight or during taxi, takeoff, or landing. Frangibility is intended to ensure that if a door is jammed closed, occupants can escape in either direction and emergency equipment can be moved. Frangibility 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.
4. Doors that fall into Category 1 must be in the open position during taxi, takeoff, and landing, only when the compartment is occupied.
5. Doors that fall into Categories 2, 3, or 4 must be in the open position during taxi, takeoff, and landing, regardless of occupancy.
6. Doors that fall into Category 5 must be in the closed position during taxi, takeoff, and landing.

With respect to the possibility that a door remains closed when it should not be, we have determined that a higher level of awareness is required to address this issue. We have determined that inspection 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. The petitioner's proposal to provide remote indication to the flightcrew that these doors are in the open position during taxi, takeoff, and landing is considered adequate 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.

The FAA considers that granting this petition, for private-use operations only, 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 49 U.S.C. 44701(d).

### **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 Corporation an exemption from § 25.813(e) to the extent necessary to allow the installation of mid-cabin interior doors on Gulfstream Model GVI airplanes operated for private use. This exemption is subject to the following conditions:

The following conditions apply, and operating limitation number 1 must be documented 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. The doors must be designed to automatically open (stow) when the landing gear is down or the flaps are not fully retracted and must remain open until the landing gear and flaps are both fully retracted.
3. An exit sign meeting the requirements of § 25.812(b)(1)(i) must be provided near the door inside all compartments that do not enclose an exit and are occupiable during taxi, takeoff, and landing (TT&L).
4. The doors must be designed so that they can only be closed (deployed) when the gear and flaps are fully retracted (airborne configuration), or for ground maintenance activity.
5. The doors must be designed so that for any failure of the closing/latching mechanism, the doors will default to the open (stowed) position.

6. Gulfstream must substantiate that the probability of failure to egress through the main entry door, including the probability of failure of both interior doors, to be less than  $10^{-5}$  per flight hour. This hazard criticality is based on § 25.783(b)(2).
7. The doors must have a hold-open feature that will be shown to react all emergency landing loads specified under § 25.561(b).
8. The doors must be placarded to be open and latched for TT&L.
9. An amber CAS message, that will alert the pilots if an interior door is not in the properly open (stowed) position for TT&L, must be installed.
10. With the doors in the open (stowed) position, the critical forward emergency landing loads must not cause either door to deploy and block access to the main entry door.
11. The doors must have an emergency passage feature (EPF) to allow passage of the occupants or rescue personnel if the door(s) become jammed. This EPF may be through frangibility or a removable emergency panel or equivalent. The EPF must be easily broken or removed by the occupant when the door(s) is jammed and a placard must be installed on each side of the door(s) providing instruction on the operation of the EPF. A demonstration is required to show that a 5th percentile female can break through or remove the EPF from both sides of the door(s). 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 must be conducted with representative cabin furnishings and equipment that could limit the door opening. Additionally, the applicant must show that a 95th percentile male subject can exit through the EPF opening.

Issued in Renton, Washington, on October 21, 2015.

/s/

Jeffrey E. Duven  
Manager, Transport Airplane Directorate  
Aircraft Certification Service