CORRECTED COPY

This is a correction to Grant of Exemption No. 10339, dated August 29, 2011. Limitation No. 6 is corrected to specify that, for Category 5 doors, a placard must be installed in a conspicuous position on both sides of the door requiring that the door be in the "closed" position during taxi, takeoff, and landing. This must be corrected in the Limitations Section of the Airplane Flight Manual.

Exemption No. 10339

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

In the matter of the petition of **Gore Design Completions, Ltd.** for an exemption from §§ 25.562(a), 25.785(b), 25.785(h)(2), 25.785(j), 25.813(e), and 25.853(d) of Title 14, Code of Federal Regulations	**Regulatory Docket No. FAA-2011-0584**

GRANT OF EXEMPTION

By letter dated May 30, 2011, Mr. Steve Kincaid, ODA Administrator, Gore Design Completions, Ltd., 607 N. Frank Luke Drive, San Antonio, Texas, 78226, petitioned the Federal Aviation Administration (FAA) for an exemption from the following sections of Title 14, Code of Federal Regulations (14 CFR): 25.562(a), 25.785(b), 25.785(h)(2), 25.785(j), 25.813(e), and 25.853(d). The proposed exemption, if granted, would permit relief from the requirements of general occupant protection for multiple-place side-facing seats, flight-attendant direct view, firm handholds in the passenger compartment, interior doors between passenger compartments, and maximum heat-release and smoke-emissions flammability requirements for large interior panels. The proposed exemption is specifically for the installation of an executive interior on Airbus Model A340-500 airplanes, which would be designated as private use, not for hire, not for common carriage.

The petitioner requests relief from the following regulations:

Section 25.562(a), Amendment 25-64, which establishes human injury criteria for emergency landing dynamic conditions as applicable to side facing divans.

Section 25.785(b), Amendment 25-88, which establishes general occupant protection for occupants of seats that are occupied during takeoff and landing.

Section 25.785(h)(2), Amendment 25-88, which requires that flight attendant seats must be located to provide direct view of the cabin area.

Section 25.785(j), Amendment 25-88, which requires a firm handhold along each aisle.

Section 25.813(e), Amendment 25-88, which prohibits installation of a door in any partition between passenger compartments.

Section 25.853(d), Amendment 25-83, which limits maximum heat-release rates and smoke emissions for large-panel cabin interior materials.

The petitioner supports the request with the following information: 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-2011-0584.

Gore Design Completion, ltd. (GDC) has been contracted for the completion of an executive business interior in Airbus Model A340-500 airplane. The FAA Organization Management Team (OMT) has reviewed and accepted our ODA Project Number GOCP538-STC for this project.

The certification basis for the Airbus A340-500 is part 25, Amendment 25-1 through 25-95 inclusive plus Amendments 25-97, 25-98, and 25-104. There are good technical arguments to support special consideration for private use airplanes: the airplanes are not for public hire and they are configured to carry a fraction of the passengers carried in airline service. For these reasons, GDC has prepared a petition for exemption from the following regulations:

14 CFR 25.785(h)(2), Amendment 25-88—Flight attendant seats must be located to provide direct view of the cabin area.

14 CFR 25.813(e), Amendment 25-88—No door may be installed in any partition between passenger compartments.

14 CFR 25.7850), Amendment 25-88—Requires a "firm handhold" along each aisle.

14 CFR 25.853(d), Amendment 25-83—Limits maximum heat release rates for large panel cabin interior materials.

14 CFR 25.562(a), Amendment 25-64—Establishes human injury criteria for emergency landing dynamic conditions as applicable to side facing divans.

14 CFR 25.785(b), Amendment 25-88—Establishes general occupant protection for occupants of seats that are occupied during takeoff and landing.

DISCUSSION:

14 CFR part 25 governs design certification of transport category airplanes. The primary intent of these regulations, as written, are to be certain that airplane manufacturers provide the appropriate design features to meet the standards necessary to protect the traveling public. Clearly, there is a requirement "in the public interest" and in the interest of safety to provide regulatory guidelines for certification. However, it is also very clear these regulations are intended to regulate the certification of "commercial" airplanes, which are "for hire" to the general public.

While the greatest majority of these regulations represent a common sense inclusion for any aircraft regardless of it's intended use, a few are obviously intended to regulate situations that are specific to an airline, or for hire operation. When a transport category airplane is operated under 14 CFR part 91 or part 125, some of the part 25 rules have acceptance criteria that are inappropriate, or are not compatible with the type of operation and the intended use of this airplane.

The FAA clearly recognizes these differences as evidenced by the issuance of Exemption Nos. 6820A, 6822, 7120A, 7489, and numerous others, which eliminate many of the more onerous regulations when applied to "private use, not-for-hire" operations under part 91 and part 125.

BASIS FOR EXEMPTION:

The airplane that is the subject of this petition is an Airbus Model A340-500. It is privately owned and will be operated under part 125 regulations or other equivalent non-US foreign national operational standard. In accordance with 14 CFR 11.81(h), we request to exercise the privilege of this exemption outside the United States since the operator of the first airplane is located in Kuwait.

The interior configuration being installed in this airplane will provide seating for 100 passengers (see attached floor plan drawing)—10 pax in the majlis, 9 pax in the conference/dining room, 32 pax in the fwd/aft executive seating area, 47 pax in the staff seating, 1 pax (medical assistance personnel) in the medical center, and 1 pax in the medical stretcher. There are two seats in the bedroom and one ottoman seat in the dressing area, but they will not be usable for taxi, takeoff, and landing. The remaining seats in the cabin are to be occupied by crew only—2 Cabin Attendants in door 1 area, 2 Cabin Attendants between door 2 and 3, 2 Cabin Attendants in door 3 area, and 7 Cabin Attendants in door 4 area. The

maximum certified passenger count for this airplane is 375 seats (245 when the exits at Door 1 and 2 are de-rated from Type A to Type I). The passenger count of the subject airplane represents just 41% of the capacity allowed for this airplane.

Regulation 14 CFR 25.785(h)(2)

Customers are buying these large airplanes as an extension of the office and are requiring privacy areas within the airplane sometimes spanning the whole cabin, such as board rooms, bedrooms, lavatories, and lounges rather than traditional airline type seating. An exemption to the flight attendant direct view requirement is therefore needed to allow full use of the airplane capabilities. In addition, this requirement was incorporated into the FAA rules through Amendment 25-51. Out of the comments submitted to the FAA during the NPRM comment period, two said that, if galley doors were used as emergency exits, the placement of an attendant seat near the exit precludes compliance with the requirement that the attendant be provided with direct view of the cabin area. To cover this situation, it was suggested that the requirement be conditioned to apply in so far as practicable and without compromising the proximity to required floor level exits. The FAA concurred and further stated in the preamble to the final rules that "location of the flight attendant seats near the floor level exits in this case is more important than the requirement to have a direct view of the cabin." The final rule was revised from the NPRM proposal to address this relative importance.

Regulation 14 CFR 25.813(e)

There will be four mechanical "pocket" type doors (located between the hallway and entry area, majlis and conference/dining, LH VIP Lavatory and fwd executive seating area, and RH VIP galley and fwd executive seating area), one swing door (located between the bedroom and hallway), and dual swing doors that are located between conference/dining room and dressing area/VIP Lavatory. The door between passenger compartments (except for the bedroom door) will have the following design features: dual latches (each of which are able to withstand the forces defined by § 25.561) to secure them in the open position, cockpit annunciation of the door position for taxi, takeoff, and landing; and the doors will be frangible in the event that they should become stuck in the closed position. Logic will be provided in the door annunciation system such that if passenger(s) are located in the conference/dining the door to the hallway should be open for taxi, takeoff, and landing, and when there are no passengers in the conference/dining this door should be closed. The executive bedroom door will be placarded to be closed for taxi, takeoff, and landing, and this door will be shown to be frangible.

Regulation 14 CFR 25.785(j)

Customers are buying airplanes because they wish to create a spacious and impressive atmosphere they are used to. The very wide body of the A340 satisfies these requirements. On the other hand, the requirement for firm handhold along the aisles cannot be met for certain areas in the passenger cabin due to the wide open spaces, specifically, the majlis and the conference/dining room. On a typical "commercial" flight, this requirement is met by the

individual seat backs, which typically provide an adequate handhold for a passenger to stabilize themselves in the aisle during turbulence. In fact, due to the spaciousness of the interior, there is no readily identifiable "aisle" in the majlis and conference room. Any construction hanging from the ceiling would ruin the appearance of the high quality interior, is not acceptable to the customer, and may add additional safety concerns.

It has been acknowledged by the FAA, that the passengers on this type of airplane are typically the same people on most of the trips. Familiarity with the airplane layout and operation provides an addition benefit towards the level of safety.

Regulation 14 CFR 25.853(d)

With the sudden growth in the VIP or executive transport airplane market together with the simultaneous introduction of more stringent interior material flammability standards, aircraft interior modifiers have been faced with a serious dilemma in resolving the styling requirements of the private aircraft owner/operator of these executive aircraft and the flammability requirements imposed by § 25.853. For the most part, modifiers have been able to simultaneously satisfy both the styling and interior material flammability requirements of § 25.853(a) and (c) with great effort and diligence; however, many of the materials required in these aircraft interiors simply cannot pass the 65/65 heat release requirement of § 25.853(d) no matter how diligent the designer is. It is not within release requirement of § 25.853(d) no matter how diligent the designer is. It is not within the grasp of current technology to make certain natural materials conform to these standards and the owners of these airplanes define, in fact demand, the use of these materials. It should be understood that these aircraft must be outfitted in a style not unlike fine executive board rooms or luxurious residences to satisfy their private users.

Regulation 14 CFR 25.562(a) and 25.785(b)

Side-facing seats are considered a novel design for transport category airplanes that include Amendment 25-64 in their certification bases, and were not considered when those airworthiness standards were promulgated. Hence, the existing regulations do not provide adequate or appropriate safety standards for occupants of multiple-place side-facing seats because they do not consider the differences in the dynamic forces that would apply to a side-facing occupant. GDC will demonstrate compliance with the proposed injury criteria, which are stated in FAA Policy Statement No. ANM-03-115-30, dated May 6, 2005.

OCCUPANT SAFETY CONSIDERATIONS:

14 CFR 25.785(h)(2)

Considering the smaller number of occupants in the business, private airplane, in this case 41% of that of a traditional commercial configuration, and the familiarity of the flight and cabin crews with the specific airplane, its passengers and its interior arrangement, and the wording of the existing rule that places the emphasis for safety on the proximity of the exit to

the attendant over the ability of the attendant to view the cabin area, there should be no degradation in the passenger safety as a result of this requested exemption.

14 CFR 25.813(e)

The risk for occupants due to the use of doors between passenger compartments should be considered acceptable for the following reasons:

- All doors between passenger compartments will be frangible.
- The swing doors to the conference/dining will be closed when unoccupied and open when occupied and be indicated in the cockpit when the door is in wrong position for takeoff and landing.
- The swing door installed in the bedroom will be placarded to be closed for takeoff and landing.
- The doors (pocket doors; between front entry and hallway, between majlis and conference/dining, between LH VIP Lavatory/RH VIP Galley and fwd executive seating area) will be placarded to be open for takeoff and landing.
- The door between passenger compartments will have dual means to retain them in the open position for takeoff and landing, each of which will be capable of withstanding the inertia loads specified in § 25.561.
- The airplane will be operated under part 125 and will be not be operated for hire or offered for common carriage.
- The AFMS will provide procedures and limitations to ensure that the doors are in the proper position for takeoff and landing.

14 CFR 25.785(j)

The risk for occupants due to the non availability of direct handholds in certain areas of the airplane should be considered acceptable for the following reasons:

- All furniture in the passenger cabin has rounded corners and edges to avoid serious injury in case of turbulence.
- The installed seat and divans are heavily upholstered and will not cause injuries when contacted.
- In the majlis, occupants can use divan arms, seat back to steady themselves in case of turbulence during flight.
- In the conference room, seat backs, tables, and furniture are readily within reach with one or two steps.
- There will be a recommendation to passengers to remain seated with their seat belts fastened in case of turbulence during flight.
- Occupants are intimately familiar with the interior arrangement.
- The airplane will be operated under part 125 and will not be operated for hire or offered for common carriage.

14 CFR 25.853(d)

The vast majority of the rule was driven by the post-crash fire experiences in airline operations. The 65/65 heat release regulation was specifically developed to reduce the likelihood of the flash-over phenomenon, which was proven by tests to be a prime contributor to the rapid propagation of post-crash cabin interior fires and the generation of blinding smoke. Rapid fire propagation combined with the relatively slow rate of passenger evacuation from densely packed air carrier airplanes has proven to be a deadly combination during actual airline accidents. Since it is clear that material selection is being controlled by aesthetics in this application, we cannot exercise any real control over the actual heat release but the exposure time to this heat release is still within the designer's control. Therefore, it is proposed as a first step in mitigating the fire hazard that an evacuation analysis be performed to show that all souls on board can be safely evacuated in less than 45 seconds. This would be possible because of excess emergency exits for the airplane passenger capacity, eight flight attendants, smooth evacuation routes, and the small number of seats in the cabin. In addition, GDC will install fire detectors in the conference/dining room and bedroom that would compensate for the potential for an increased in-flight fire threat.

14 CFR 25.562(a) and 25.785(b)

Existing Criteria: All injury protection criteria of § 25.562(c)(1) through (c)(6) apply to the occupants of side facing seating will be demonstrate by test. The data provided in the test reports and Installation & Instruction Limitation will justify that there are no issues with head injury criterion.

Body-to-Body Contact: Contact between the head, pelvis, torso, or shoulder area of any occupant with the adjacent seated occupant's head, pelvis, torso, or shoulder area will not be allowed and will be demonstrated by test. Incidental contact of the hands, arms, legs, and/or feet will not be deemed a test failure; however, the results will have to be evaluated by the airworthiness authority on a case-by-case basis. Any contact during rebound is allowed.

Body-to-Wall/Furnishing Contact: If the seat is installed aft of a structure, such as an interior wall or furnishing, that would contact the pelvis, upper arm, chest, or head of an occupant seated next to the structure, then the structure or a conservative representation of the structure and it stiffness will be included in the tests.

Thoracic Trauma: If the torso of an anthropomorphic test dummy at the forward most seat place impacts seat and/or adjacent structure, then Thoracic Trauma Index data must be less than 85, as defined in 49 CFR part 572, Subpart F. Torso contact during rebound is acceptable and need not be measured.

Pelvis: Lateral pelvic acceleration must be substantiated if there is pelvic contact during testing. Pelvic lateral acceleration must not exceed 130g. Pelvic acceleration data must be processed as defined in Federal Motor Vehicle Safety Standard, part 571.214, section S6.13.15.

Shoulder Strap Loads: Where upper torso straps (shoulder straps) are used for divan occupants, tension loads in individual straps will not exceed 1,750 pounds and will be demonstrated by test.

Occupant retention: The occupants will be restrained by lap belts and harnesses to prevent the occupants from translating beyond the end of the seat. This will be demonstrated by test.

PUBLIC INTEREST:

As in the cases of numerous already established exemptions, granting this petition for exemption would be clearly in the public interest for the following reasons:

- It allows efficient and safe carriage of Head of State and executives in the sought for environment that would otherwise not be possible.
- There is no degradation of safety involved with this request and, therefore, no detrimental impact to the public at large.
- Increased sales of these executive configured transport airplanes will ultimately result in some portion of those airplanes being completed at US owned or operated aircraft completion facilities, providing improved financial performance and work force stability for those organizations as well.
- Improved financial performance of US owned or operated corporations, and increased work force stability translates into continued and improved tax revenue for all governmental organization involved.
- Improved financial performance allows US corporations to continue to invest in new research and development, which will allow the US to maintain or improve its competitive position in the world economy.
- A large number of these types of sales can be predicted to be to “offshore” clients, improving the US balance of trade deficit.

PUBLIC COMMENT:

In accordance with § 11.87, Gore Design Completions, Ltd., requests that the period for public comment be waived because of numerous similar exemptions that have previously been granted.

Federal Register publication

A summary of this 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 and any delay in acting on this petition would be detrimental to Gore Design Completions, Ltd.

The FAA's analysis

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)).

As more transport category airplanes have been configured (or re-configured) for private use, the FAA has given considerable attention to the issue of appropriate regulation of such airplanes. Some of the current regulations governing design certification of transport category airplanes are not compatible with private use of such airplanes. Because of this, we have received a number of petitions for exemption from certain regulations. We have granted such exemptions when we find that to do so is in the public interest and does not adversely affect the level of safety provided by the regulations.

Our analysis of this petition considered each of the following design features proposed by the petitioner:

1. **Firm Handholds**

   We have considered the requirement for firm handholds in the context of private-use airplanes and have determined that it would be impractical for this type of operation and interior configuration.

2. **Interior Doors**

   The placement of interior doors is clearly quite significant to the owner/operator of the airplane. The flexibility to partition the airplane into individual rooms, such as private meeting rooms or bedrooms, is paramount to an acceptable interior. The availability of private meeting rooms and bedrooms is essential. The FAA acknowledges the desirability of these features from the operator's point of view.

   When the regulations pertaining to interior doors were adopted, they did not consider "rooms." They 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. Since, Amendment 25-116 is not in the certification basis for the airplane and the airplane is not operated under part 121, the pocket door located between the forward exits and the passenger compartment is not subject to this exemption.

Airplanes configured for private-use, not-for-hire, not-for-common carriage typically use any of five different categories of door in the passenger cabins:

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 and 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 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 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 has determined that the following requirements will produce an adequate level of safety:

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 will tend to minimize 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 means 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 room 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. Due to the relative complexity of the cabin interior, we have determined that inspection by flight attendants prior to takeoff and landing is not sufficient to verify that interior doors are in a required open position. Consequently, some type of remote indication is considered necessary. The petitioner's proposal to provide remote indication to the flightcrew is considered adequate.

3. Interior Materials

With respect to the flammability of interior materials, the petitioner has accurately summarized the requirements. The petitioner correctly notes that the requirements are related to prolonging the time available for evacuation.

When the standards for heat release and smoke emissions of interior materials were developed, the FAA incorporated a discriminant based on passenger capacity. This approach was intended to address smaller airplanes where the ratio of exits to passengers is typically quite good and the evacuation times are expected to be quite low. Under these conditions, the benefits of improved materials were expected to be negligible. The airplane type discussed in the petition was not envisioned by the rulemaking, insofar as the large size with low passenger count is concerned. We have considered the issue of the evacuation capability of the airplane relative to the flammability of the materials, and find that some relief may be

possible. However, the issue of flammability is not limited to post-crash scenarios; the in-flight fire threat must also be addressed. We note that the petitioner has not proposed an alternative to the heat-release and smoke-emissions standards, but rather an exemption from the requirement to assess the heat release and smoke emissions of certain materials.

Because the main benefit of improved interior materials is to lengthen the time available for evacuation, an arrangement that effectively provides the same evacuation capability would satisfy many of the concerns addressed by the requirement, albeit indirectly. The FAA has reviewed the full-scale, fire-test data used in developing the heat-release and smoke-emissions requirements, and also considered accident data relevant to this issue. This review is not complete, but it does suggest that a quantifiable improvement in evacuation capability could warrant a relaxation of the heat-release and smoke-emissions requirements.

The petitioner has proposed that an evacuation analysis be performed to show that all occupants, including crew, can be safely evacuated in less than 45 seconds. The FAA has determined that a 45-second evacuation time would provide an acceptable level of safety over that allowed by the regulation, and would allow a relaxation of the heat-release and smoke-emissions requirements. Precedents have been set for this decision and apply to other private-use airplanes.

The remaining issue of the in-flight fire scenario needs to be addressed as well. The major issue with respect to in-flight fires is timely recognition. On some airplanes, the interior includes isolated areas that do not lend themselves to timely detection of a fire. For the purposes of this exemption, an isolated passenger compartment is defined as a room that does not contain an egress path (e.g., main cabin aisle, cross aisle, or passageway), or is isolated by a door. To address the in-flight case, the FAA believes that installing a smoke detector in such areas would compensate for the potential for an increased in-flight fire threat. Therefore, each isolated passenger compartment must incorporate a fire-detection system that meets the requirements of § 25.858. While this section is written for cargo-compartment fire-detection systems, the criteria contained therein are considered appropriate to this application.

4. Direct View

The petitioner has identified the requirement for flight-attendant seats to be located to provide a direct view of the passenger cabin as not practical for compliance with the executive-type interior to be used on the Airbus Model A340-500 airplanes. The complexity of the interior arrangement, coupled with the need to retain proximity to emergency exits, is cited as the primary reason that compliance is impractical.

The FAA has considered the requirement for direct view in the context of private-use airplanes and agrees that much of the justification for the requirement is based on air-carrier-type operations. The practicality of locating flight-attendant seats near emergency exits so that there is a direct view of occupants inside the rooms is questionable, at best. In this regard, we believe that some relief may be appropriate for airplanes intended for private

use. However, we note that the justification for the requirement for direct view is not limited to observation of passengers that are not familiar with the interior. Flight-attendant seats should be located so that a direct view is provided for the cabin area whenever practical. For example, flight-attendant seats should not face away from the cabin. In those areas of the airplane where traditional seating arrangements are used, the FAA believes that a direct view should be provided.

In considering the need for direct view, the FAA agrees that the restricted nature of the operation of a private-use airplane mitigates much of the need. That is, the operator has control of, and can restrict the population of, passengers, unlike an air carrier. The risk of passengers engaging in hazardous or malicious activity is essentially eliminated, and the need for direct view is limited to those cases where a passenger might need assistance. We consider that this objective is met by requiring that a majority of flight-attendant seats face the cabin.

5. Fire Extinguishers

The intent of the regulation as defined by § 25.851(a) is to ensure that there are a sufficient number and type of fire extinguishers available to address the kinds of fires likely to occur. Section 25.851 requires that the number of handheld fire extinguishers be proportionate to the number of passengers. As with SFAR 109 "Special Requirements for Private Use Transport Category Airplanes," this exemption would require the installation of a fire extinguisher for every pair of exits certified on the original type certificate, regardless of whether the exits are deactivated in the proposed configuration. This requirement is intended to maintain the currently established level of safety for large private-use airplanes by considering the size of the airplane as a factor in determining the number of handheld fire extinguishers rather than being only proportionate to the number of passengers. Since the assumption that the size of the airplane is proportional to the number of passengers onboard is inaccurate for an Airbus Model A340 airplane in private use, as such the standard method for determining the number of fire extinguishers is not adequate.

6. General Occupant Protection Requirements for Multiple-Place Side-Facing Seats

Side-facing seats are considered a novel design for transport category airplanes that include Amendment 25-64 in their certification bases and were not anticipated when those airworthiness standards were issued. Therefore, the existing regulations do not provide adequate or appropriate safety standards for occupants of multiple-place side-facing seats. The FAA has been conducting research to develop an acceptable method of compliance with § 25.785(b) for multiple-place side-facing seat installations. Without an acceptable method of compliance, the FAA finds that it is in the public interest to grant an exemption to the petitioner for this Airbus Model A340-500 airplane.

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 the petition of Gore Design Completion, Ltd. for an exemption from 14 CFR 25.562(a), 25.785(b), 25.785(h)(2), 25.785(j), 25.813(e), and 25.853(d) to the extent necessary to allow installation of an executive interior on private, not-for-hire, not-for-common-carriage Airbus Model A340-500 airplane.

This exemption is subject to the following conditions, and limitation numbers 1, 3, 4, 5, 6, and 7 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. A majority of flight-attendant seats must be oriented to face the passenger cabin.

3. Each door between passenger compartments must be frangible from both sides. A placard describing the frangibility procedure must be installed in a conspicuous location on both sides of the door.

4. Doors that fall into Category 1 must be latched in the open position during taxi, takeoff, and landing when the room is occupied. A placard requiring the door to be in the open position must be installed in a conspicuous position on both sides of the door.

5. Doors that fall into Categories 2, 3, or 4 must be latched in the open position during taxi, takeoff, and landing, regardless of occupancy of the room. A placard requiring the door to be in the open position must be installed in a conspicuous position on both sides of the door.

6. Doors that fall into Category 5 must be latched in the closed position during taxi, takeoff, and landing. A placard requiring the door to be in the closed position must be installed in a conspicuous position on both sides of the door.

7. Appropriate procedures must be established to both signal the flightcrew in the event a door between passenger compartments is not in the proper position, and prohibit taxi, takeoff, or landing. Doors in Category 5 do not need to comply with this requirement. For Category 5 doors, placards located on or near the door, and indicating that the door must be closed for takeoff and landing, is acceptable.

8. Doors between passenger compartments must have 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 takeoff and landing.

9. When materials are installed that do not comply with the requirements of appendix F, parts IV and V, it must be shown that the passengers and crewmembers can be evacuated in 45 seconds or less, under the conditions described in part 25, appendix J.

10. A means to signal the flightcrew must be in place in the event of a fire in an isolated passenger compartment, and which meets the requirements of § 25.858(a) through (d).

11. The number of hand-held fire extinguishers installed in the passenger cabin must be the greater of (1) that provided in accordance with the requirements of § 25.851, or (2) a number equal to the number of originally type certificated exit pairs, regardless of whether the exits are deactivated for the proposed configuration. Extinguishers must be evenly distributed throughout the cabin.

12. General Occupant Protection Requirements For Multiple-Place Side-Facing Seats

    a. Existing Criteria: All injury protection criteria of § 25.562(c)(1) through (c)(6) apply to the occupants of side-facing seating. The Head Injury Criterion (HIC) assessments are only required for head contact with the seat and/or adjacent structures.

    b. Body-to-Body Contact: Contact between the head, pelvis, torso, or shoulder area of one Anthropomorphic Test Dummy (ATD) with the head, pelvis, torso, or shoulder area of the ATD in the adjacent seat is not allowed during the tests conducted in accordance with § 25.562(b)(1) and (b)(2). Contact during rebound is allowed.

    c. Thoracic Trauma: If the torso of an ATD at the forward-most seat place impacts the seat and/or adjacent structure during testing, compliance with Thoracic Trauma Index (TTI) injury criterion must be substantiated by dynamic test or by rational analysis based on previous test(s) of a similar seat installation. TTI data must be acquired with a Side Impact Dummy (SID), as defined by 49 CFR part 572, Subpart F, or an equivalent ATD or a more appropriate ATD and must be processed as defined in Federal Motor Vehicle Safety Standard (FMVSS) § 571.214, S6.13.5. The TTI must be less than 85, as defined in 49 CFR 572, subpart F. Torso contact during rebound is acceptable and need not be measured.

    d. Pelvis: If the pelvis of an ATD at any seat place impacts seat and/or adjacent structure during testing, pelvic lateral acceleration injury criteria must be substantiated by dynamic test or by rational analysis based on previous test(s) of a similar seat installation. Pelvic lateral acceleration must not exceed 130g. Pelvic acceleration data must be processed as defined in FMVSS § 571.214, S6.13.5.

    e. Body-to-Wall/Furnishing Contact: If the seat is installed aft of a structure—such as an interior wall or furnishing that may contact the pelvis, upper arm, chest, or head of an occupant seated next to the structure—the structure or a conservative representation of the structure and its stiffness must be included in the tests. It is recommended, but not required, that the contact surface of the actual structure be

covered with at least two inches of energy absorbing protective padding (foam or equivalent) such as Ensolite.

f. Shoulder Strap Loads: Where upper torso straps (shoulder straps) are used for sofa occupants, the tension loads in individual straps must not exceed 1,750 pounds. If dual straps are used for restraining the upper torso, the total strap tension loads must not exceed 2,000 pounds.

g. Occupant Retention: All side-facing seats require end closures or other means to prevent the ATD's pelvis from translating beyond the end of the seat at any time during testing.

h. Test Parameters:

(1) All seat positions need to be occupied by ATDs for the longitudinal tests.

(2) A minimum of one longitudinal test, conducted in accordance with the conditions specified in § 25.562(b)(2), is required to assess the injury criteria as follows. Note that if a seat is installed aft of structure (such as an interior wall or furnishing) that does not have a homogeneous surface, an additional test or tests may be required to demonstrate that the injury criteria are met for the area, which an occupant could contact. For example, different yaw angles could result in different injury considerations and may require separate tests to evaluate.

- For configurations without structure (such as a wall or bulkhead) installed directly forward of the forward seat place, Hybrid II ATDs or equivalent must be in all seat places.

- For configurations with structure (such as a wall or bulkhead) installed directly forward of the forward seat place, a SID or equivalent ATD or more appropriate ATD must be in the forward seat place and a Hybrid II ATD or equivalent must be in all other seat places.

- The test may be conducted with or without a deformed floor.

- The test must be conducted with either no yaw or 10 degrees yaw for evaluating occupant injury. Deviating from the no yaw condition must not result in the critical area of contact not being evaluated. Allowing the test to be conducted at 10 degrees yaw will permit many occupant injury tests to be considered in conjunction with the structural test. This test is considered acceptable since an exemption is sought in lieu of compliance with part 25. Note that this condition does not provide relief from the requirement that torso restraint straps, where installed, must remain on the occupant's shoulder during the impact condition of § 25.562(b)(2).

(3) For the vertical test, conducted in accordance with the conditions specified in § 25.562(b)(1), Hybrid II ATDs or equivalent must be used in all seat positions.

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/s/

Ali Bahrami
Manager, Transport Airplane Directorate
Aircraft Certification Service