

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

In the matter of the petition of

**L-3 Communications Integrated
Systems, L.P.**

for an exemption from §§ 25.785(h)(2),
25.785(j), 25.791(a), 25.795, 25.813(e),
25.815, and 25.853(d) of Title 14, Code of
Federal Regulations

Regulatory Docket No. FAA-2014-0982

PARTIAL GRANT OF EXEMPTION

By letter dated November 19, 2014, Mr. Phillip T. Crawford, P.E., ODA Administrator, L-3 Communications Integrated Systems, L.P., 7601 Maehr Road, P.O. Box 154580, Waco, Texas, 76715-4580, petitioned the Federal Aviation Administration (FAA) for an exemption from the requirements of §§ 25.785(h)(2), 25.785(j), 25.791(a), 25.795, 25.813(e), 25.815, and 25.853(d) of Title 14, Code of Federal Regulations (14 CFR). This exemption, if granted would permit relief from the requirements of flight attendant direct view, firm handholds in the passenger compartment, no-smoking sign visibility from each seat in the passenger compartment, flight deck security considerations, interior doors between passenger compartments, and aisle widths. Although the petitioner did not specifically request relief from *Special Conditions: Boeing Model 787 Series Airplanes; Seats With Non-Traditional, Large, Non-Metallic Panels (25-370-SC)*, the certification plan for the project indicates the need for an exemption from the special conditions. Therefore, these special conditions will be included in this partial grant. The proposed exemption is specifically for the installation of an executive interior on Boeing Model 787-8 airplanes designated as “private use, not for hire, not for common carriage.”

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

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

Section 25.785(j), Amendment 25-88, requires, in pertinent part, that there must be a firm handhold along each aisle.

Section 25.791(a), Amendment 25-72, requires, in pertinent part, that a no-smoking sign be visible from each seat in the passenger compartment.

Section 25.795, Amendment 25-106, requires security protection of the flightcrew compartment.

Section 25.813(e), Amendment 25-128, requires that no door may be installed in any partition between passenger compartments.

Section 25.815, Amendment 25-38, requires minimum aisle widths in the passenger compartment.

Section 25.853(d), Amendment 25-116, limits maximum heat-release rates and smoke emissions for large-panel cabin interior materials.

Special Conditions 25-370-SC, “Boeing Model 787 Series Airplanes; Seats With Non-Traditional, Large, Non-Metallic Panels,” which specifies heat-release and smoke-emission requirements for certain passenger-seating materials.

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-2014-0982.

Basis for Exemption

The aircraft that are the subject of this petition are Boeing 787-series airplanes modified for non-commercial/non-common-carriage, VVIP/Government use/Head-of-State service. They are typically in the service of foreign Heads-of-State friendly to US interests and will be operated under 14 CFR 91/14 CFR 125 regulations or equivalent foreign standard. For this reason, the privileges of this proposed exemption will be exercised outside the United States.

The interior configurations typically installed result in a very small passenger population vis-à-vis for-hire or common-carriage standards. These passengers are typically very experienced travelers. For this reason the crews and passengers who fly on this aircraft have a substantially higher familiarity with the aircraft and its systems than those envisioned by the writers of the original CFR.

The exemptions proposed herein are justified based upon the following facts:

- These aircraft are intended for VVIP/Government/Head-of-State use and are not appropriately configured for or intended for use for hire or common carriage.
- Depending on the interior layout, these aircraft typically carry a low fraction of the originally Type-Approved passenger load.

- SFAR 109 Special Requirements for Private Use Transport Category Aircraft was issued in 2009 to address these issues among others. This SFAR is limited to aircraft with passenger counts of 60 or less. This exemption will apply similar requirements to the larger aircraft.
- Similar exemptions have been routinely granted for VIP transport category aircraft for many years. For example: Exemptions 10686, 10339, 6820/6820A, 6881, 7317/7317A, 7609, and 8765 as well as others have been either fully or partially granted by the FAA.
- These exemptions have been granted to both domestic and foreign applicants and applied equally to both domestically-produced aircraft and foreign-produced aircraft.
- The petitioner proposes mitigating requirements and conditions that establish acceptable safety levels for the occupants consistent with previous grants.

With these justifications in mind, L-3 Communications Integrated Systems requests relief from and proposes a petition for exemption from the listed regulations.

14 CFR 25.785(h)(2): Direct View

Discussion

This aircraft interior is designed to accommodate VVIP/Government Use/Head-of-State personnel and staff members. These types of passengers require amenities such as meeting rooms, offices, bedrooms, lavatories, and lounges rather than traditional airline type seating. Furthermore, they require a high level of privacy and security that is normally not available in airline-style interiors. An exemption to the flight attendant direct view requirement is therefore needed to allow the interior to meet these needs.

As discussed in FAA Exemption 6820, the direct-view requirement was incorporated into the FAA rules at amendment 25-51. During the rulemaking process FAA concluded that the "... location of the flight attendant seats near the floor level exits ... is more important than the requirement to have a direct view of the cabin." The final rule was revised from the NPRM proposal to state this. Further, SFAR 109 set more flexible standards for this type of intended usage.

Occupant Safety Considerations

Considering the smaller number of occupants in the VVIP/Government use/Head-of State aircraft, 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.

Requested Relief

L-3 proposes to meet the requirements as stated similarly in SFAR 109 and various exemptions as:

In lieu of the requirements of Sec. 25.785(h)(2), to the extent practical without compromising proximity to a required floor level emergency exit, the majority of installed flight attendant seats must be located to face the cabin area for which the attendant is responsible.

14 CFR 25.785(j): Firm Handholds

Discussion

The current layout for the proposed VVIP/Government use/Head-of-State interior in some areas is quite different from the airliner-type interior envisioned by the original rule. The proposed interior includes some large rooms or meeting areas where the originally envisioned requirement for firm hand hold along the aisles cannot be met. A typical airliner interior meets this requirement by relying on the individual seat backs along the main aisle(s). Any ceiling mounted handhold would ruin the appearance of the high quality interior and has the potential to create additional safety concerns.

Occupant Safety Considerations

The risk for occupants due to the reduced number of direct hand holds in certain areas of the airplane should be considered acceptable for the following reasons:

- In the various compartments, seat backs, divan arms, tables, and furniture are readily within reach with one or two steps;
- All furniture in the passenger cabin will not have sharp corners and edges in order to avoid serious injury in case of contact during turbulence;
- The installed seat(s) and divans are heavily upholstered and will not cause injuries when contacted;

- The airplane supplemental flight manual will contain a recommendation that passengers remain seated with their seat belts fastened in case of announced turbulence during flight;
- Occupants are experienced travelers and are generally familiar with this aircraft's interior.

Requested Relief

L-3 proposes to meet the requirements as stated similarly in SFAR 109 and various Exemptions as:

In lieu of the requirements of Sec. 25.785(j), there must be means provided to enable persons to steady themselves in moderately rough air while occupying aisles that are along the cabin sidewall, or where practicable, bordered by seats (seat backs providing a 25-pound minimum breakaway force are an acceptable means of compliance).

14 CFR 25.791(a): No Smoking Placards

Discussion

The proposed VVIP/Government use/Head-of-State aircraft is intended as a NO SMOKING aircraft. The aircraft are declared to be "No Smoking" aircraft and are placarded as such in accordance with applicable regulations and exemptions. The passenger pre-flight briefing will include an announcement that the aircraft is a "... No Smoking ..." aircraft.

Occupant Safety Considerations

There is no safety risk for occupants due to the special placement requirements of NO SMOKING placards.

Requested Relief

L-3 proposes to meet the requirements as stated similarly in SFAR 109 and various exemptions as:

Compliance with Sec. 25.791 is required except that for Sec. 25.791(a), when smoking is to be prohibited, notification to the passengers may be provided by a single placard so stating, to be conspicuously located inside the passenger compartment, easily visible to all persons entering the cabin in the immediate vicinity of each passenger entry door. A statement that the aircraft is a "... No Smoking Aircraft ..." will be added to the pre-takeoff passenger briefing.

14 CFR 25.795: Security Considerations

Discussion and Occupant Safety Considerations

The current usage of the proposed VVIP/Government use/Head-of-State aircraft is not-for-hire and not-for-common-carriage. The requirements of 25.795 are intended for the safety of the airline public and not for users whose security levels are maintained at much higher than airline levels. SFAR 109 exempts private use aircraft from this paragraph entirely. For these reasons, the requirements of this paragraph are unnecessary and non-applicable.

Requested Relief

L-3 proposes to meet the requirements as stated similarly in SFAR 109 and various exemptions as:

The requirements of Sec. 25.795 are not applicable to airplanes limited to VVIP/Government use/Head-of-State usage.

14 CFR 25.813(e): Doors Between Passenger Compartments

Discussion

This discussion covers doors that separate passenger compartments throughout the aircraft. This discussion does not include doors or folding partitions that separate non-passenger compartments and these doors do not apply to this exemption request. Door(s) between passenger compartments will have the following design features: Dual latches (each of which are able to withstand the forces defined by 14 CFR 25.561) to secure them in the open position, cockpit annunciation of the door position for taxi, take-off and landing, and the doors will be frangible to allow egress in the event that they should become stuck in the closed position. This exemption request is different from existing Boeing 787 Exemption 10879 which permits doors on mini-suites in the passenger compartment but has many of the same mitigating features.

Occupant Safety Considerations

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

- Any door between passenger compartments will have dual means to retain them in the open position for take-off and landing, each of which will be capable of withstanding the inertia loads specified in 14 CFR 25.561;
- Doors to compartments that are unoccupied during Taxi/Takeoff/Landing operations will be closed. Door position will be indicated in the cockpit when the door is in the wrong position for take-off and landing;

- All doors between passenger compartments will be frangible;
- The airplane will be operated under 14 CFR 91/14 CFR 125 or foreign equivalent and will 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.

Requested Relief

L-3 proposes to meet the requirements as stated similarly in SFAR 109 and various exemptions as:

- In lieu of the requirements of Sec. 25.813(e), interior doors may be installed between passenger seats and exits, provided the following requirements are met:
 - Each door between any passenger seat, occupiable for taxi, takeoff, and landing, and any emergency exit must have a means to signal the flightcrew, at the flight deck, that the door is in the open position for taxi, takeoff, and landing.
 - Appropriate procedures/limitations must be established in the AFM to ensure that any such door is in the open configuration for takeoff and landing.
 - Each door between any passenger seat and any exit must have a dual means to retain it in the open position, each of which is capable of reacting the inertia loads specified in Sec. 25.561.
 - Doors installed across a longitudinal aisle must translate laterally to open and close, e.g., pocket doors.
 - Each door between any passenger seat and any exit must be frangible in either direction. A frangibility test will be performed on each type of inter-compartment door installation in the aircraft using a 5th percentile female subject.
 - Each door between any passenger seat and any exit must be operable from either side, and if a locking mechanism is installed, it must be capable of being unlocked from either side without the use of special tools.
- When the aircraft is equipped with interior doors under this exemption:

- The airplane flight manual (AFM) must include an appropriate limitation that the airplane must be staffed with at least the number of flight attendants required by 14 CFR 91.533(a) who meet the requirements of 14 CFR 91.533(b).
- The AFM must include appropriate limitation(s) 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.

14 CFR 25.815: Width of Aisle

Discussion and Occupant Safety Considerations

This discussion covers the requirements for maintaining appropriate width of aisle during operation.

L-3 is installing seats that translate laterally and longitudinally and also recline. Translating and/or reclining seats will occur in flight only but can encroach on the aisle width required by Section 25.815.

The risk for occupants in the passenger cabin due to reduced width of aisle in-flight should be considered acceptable for the following reasons:

- The number of passengers is substantially less than the aircraft was originally certified for.
- The passengers who use these aircraft are a small population with higher-than-usual familiarity with the aircraft interior and systems.
- The number of flight attendants and staff is high relative to typical airline operations.
- Aisle width is only to be reduced during in-flight operation.
- Reduced aisle width does not restrict access to any cabin area because each area is accessible from multiple directions.
- Procedures will be established to ensure that the cabin can be restored to proper configuration for taxi, takeoff, and landing.
- The aircraft will not be operated for hire or common carriage.

Requested Relief

L-3 proposes to meet the requirements as stated similarly in SFAR 109 and various exemptions as:

Compliance is required with Sec. 25.815, except that the aisle width may be reduced to zero (0.00) inches between passenger seats during in-flight operations only, provided that the applicant demonstrates that,

- 1) All areas of the cabin are easily accessible by a crew member in the event of an emergency (e.g., in-flight fire, decompression);
- 2) Instructions are provided at each passenger seat for restoring the aisle width required by Sec. 25.815;
- 3) The operation to return the cabin furnishings to their proper taxi, takeoff, and landing positions has been demonstrated as being easily accomplished by naïve test subjects;
- 4) Procedures must be established and documented in the AFM to ensure that the required aisle widths are provided during taxi, takeoff, and landing.

14 CFR 25.853(d): Heat Release and Smoke Emission

Completion centers have been able to simultaneously satisfy both the styling requirements of customers and the interior material flammability requirements of § 25.853(a) and (c); however, many of the materials required in these aircraft interiors do not comply with the heat release and smoke emission requirements of § 25.853(d).

Occupant Safety Considerations

The vast majority of the heat release and smoke portion 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 our 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.

Requested Relief

L-3 proposes to meet the requirements as stated similarly in SFAR 109 and various exemptions as:

Compliance is required with the applicable provisions of Sec. 25.853, except that compliance with appendix F, parts IV and V, need not be demonstrated if it can be shown by analysis that the maximum time for evacuation of all occupants does not exceed 45 seconds under the conditions specified in appendix J to part 25.

Public Interest

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

1. Given the proliferation of VVIP/Government use/Head-of-State Configured Transport Category Airplanes, and anticipated in the near future, approval of these exemptions will enable the United States manufacturers of transport category airplanes to effectively compete in this expanding market.
2. Additional sales of United States VVIP/Government use/Head-of-State configured interiors outside of the traditional airline market will serve to increase manufacturer's profitability and that of their supplying/supporting companies.
3. Stability and improved financial performance of these United States companies gives greater job stability to the workers employed by the companies, causing a stabilizing influence to the greater United States economy, due to the consumer spending activities associated with stable workers.
4. Improved financial performance of United States owned and operated corporations, and increased workforce stability translates into continued and improved local, state, and federal tax revenues which in turn add to the stability of the total United States economy.
5. Improved financial performance allows United States corporations to continue to invest in research and development, allowing the United States to maintain or improve its competitive position in the world economy.
6. A large number of these types of airplanes will probably be sold to foreign clients, improving the United States balance of trade.
7. This grant supports positive relations with the Heads-of-State of foreign countries operating US-built aircraft.

8. Foreign Heads-of-State operating US-manufactured aircraft strengthens the preeminent global position of the United States aircraft manufacturing, completion, and regulatory industry.
9. These aircraft will be operated under 14 CFR 91 or 14 CFR 125 or its foreign equivalent. These aircraft will not be operated for hire or offered for common carriage, therefore there is no safety impact on the US flying public.
10. The exemption request, if granted, allows the FAA to expend resources on this subject only this one time, not for each interior arrangement, and thereafter to concentrate resources on the FAA's highest priorities, including continued operational safety.

Future Use and Application of the Exemption

This exemption is intended for use on current and future 787-series interior programs by L-3 Communications and its subsidiaries. Use and applicability of the exemption will be controlled in the project specific certification planning submitted to the applicable FAA certification office.

Exemptions to specific rules and associated mitigating requirements are to be individually applied. There is no requirement that all portions of this exemption be applied simultaneously. When the approved exemption to a specific rule or rules is not used then full compliance to that rule or rules is required.

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 airplane is located in a foreign country.

Public Comment

In accordance with 14 CFR 11.87, L-3 requests that the period for public comment be waived because numerous similar exemptions have previously been granted. Granting this petition will not set a precedent, the relief requested is identical to exemptions granted previously, and this petition has been filed in a timely manner.

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 L-3 Communications Integrated Systems.

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 reconfigured) 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. We published *Special Requirements for Private Use Transport Category Airplanes*, SFAR 109, which significantly reduces the need for case-by-case review of individual petitions for exemption for private-use airplanes within the limitation of SFAR 109. The Boeing 787-8 airplanes under consideration have a passenger seating capacity greater than the 60-passenger seating limitation in SFAR 109; therefore, the SFAR is not applicable to these airplanes.

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

1. 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 Boeing 787-8 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.

2. 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 with meeting rooms, offices, bedrooms, lavatories, and lounges rather than traditional airline-type seating. However, in those areas of the airplane where traditional seating arrangements are used, the FAA believes that firm handholds should be provided.

3. No Smoking Placards

We have considered the requirement for having no-smoking placard(s), visible from each seat in the passenger compartment, in the context of private-use airplanes where smoking is prohibited by the owner/operator of the airplane. We have determined that a single placard, indicating that smoking is prohibited, would be acceptable notification to the passengers, whereby the placard is conspicuously located inside the passenger compartment and is easily visible to all persons entering the cabin in the immediate vicinity of each passenger entry door.

4. Flight Deck Security Considerations

The petitioner has requested relief from all of § 25.795. However, the only paragraph of § 25.795 applicable to the 787-8 is paragraph (a). The FAA has considered the requirement for flight deck security in the context of private-use airplanes and agrees that much of the justification for the requirement is based on air-carrier-type operations. In fact, § 25.795(a) already addresses this, by stating, “If a flightdeck door is required by operating rules....” Since the subject airplane is for private use, then this requirement will not apply. No exemption from the requirement is necessary.

5. 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 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.

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:

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 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:

- a. 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.
- b. 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.
- c. 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.
- d. Doors that fall into Category 1 must be in the open position during taxi, takeoff, and landing, only when the room is occupied.
- e. Doors that fall into Categories 2, 3, or 4 must be in the open position during taxi, takeoff, and landing, regardless of occupancy.
- f. 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. 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.

6. In-flight Aisle Width

The FAA has considered the requirement for in-flight width of the aisle in the context of private-use airplanes and installed cabin furnishings (e.g., seat, table, or divider) that are movable during in-flight operations and would reduce the width of the aisle. This issue is clearly quite significant to the owner/operator of the airplane. Policy Statement No. PS-ANM-25.815-01, *Compliance with the Aisle Width Requirements of § 25.815*, dated December 17, 2012, addresses this issue. However, that policy is limited to airplanes with 19 or fewer passenger seats. The airplanes that are the subject of this exemption have more than 19 passenger seats. The petitioner has stated that the airplanes are intended for VVIP/Government/Head-of-State, and the operation is limited to private-use only, not-for-hire, not-for-common-carriage service. We have determined that because the airplanes are limited to this type of operation, some in-flight width-of-aisle relief would be acceptable, similar to what is described in the above-mentioned policy statement.

7. Interior Materials

With respect to the flammability of interior materials, the petitioner has accurately summarized the purpose of the requirements. The petitioner correctly notes that the requirements are related to prolonging the time available for evacuation from the airplane. This also includes the requirements of Special Conditions 25-370-SC, which addresses seats with non-traditional, large, non-metallic panels on the airplane. The panels on the subject airplane seats would need to meet the maximum heat-release and smoke-emissions flammability requirements for large interior panels.

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-emission 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. This also includes the requirements of Special Conditions 25-370-SC, which addresses seats with non-traditional, large, non-metallic panels on the airplane. The panels on the subject airplane seats would not need to meet the maximum heat-release and smoke-emissions flammability requirements for large interior panels as part of this exemption.

The in-flight fire scenario also needs to be addressed. 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 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.

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 L-3 Communications Integrated Systems an exemption from 14 CFR §§ 25.785(h)(2), 25.785(j), 25.791(a), 25.813(e), 25.815, 25.853(d), and Special Conditions 25-370-SC. The petitioner is not granted an exemption from § 25.795 because it is not applicable to private-use operation, as explained above. The exemption is granted to the extent necessary to allow L-3 Communications Integrated Systems to install executive interiors on private, not-for-hire, not-for-common-carriage, Boeing Model 787-8 airplanes. Specifically, the exemption allows relief from the requirements for:

- Flight attendant direct view in the passenger compartment in areas such as meeting rooms, offices, bedrooms, lavatories, lounges, etc.; except that, in areas of the airplane where traditional seating arrangements are used, direct view should be provided.
- Firm handholds in the passenger compartment in areas such as meeting rooms, offices, bedrooms, lavatories, lounges, etc.; except that firm handholds are required in hallways and areas of the airplane where traditional airline seating is installed.
- Installation of no-smoking placards, visible to each seat in the passenger cabin.

- Interior doors between passenger compartments.
- In-flight minimum aisle width.
- Maximum heat-release and smoke-emissions flammability requirements for large interior panels. This also includes the requirements of Special Conditions 25-370-SC, which addresses seats with non-traditional, large, non-metallic panels on the airplane.

The following conditions apply, and limitations numbers 1, 4, 5, 6, and 12 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.
4. Doors that fall into Category 1 must be in the open position during taxi, takeoff, and landing 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 of the room.
6. Doors that fall into Category 5 must be in the closed position during taxi, takeoff, and landing.
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, and landing. 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 for taxi, 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 taxi, 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. This also includes the requirements of Special Conditions 25-370-SC, which addresses seats with non-traditional, large, non-metallic panels on the airplane. The panels on the subject

airplane seats are not required to meet the maximum heat-release and smoke-emissions flammability requirements for large interior panels.

10. A means to signal the flightcrew must be in place in the event of a fire in an isolated passenger compartment, and the detection system must meet the requirements of § 25.858(a) through (d).
11. Compliance is required with § 25.815, except that aisle width may be reduced to zero inches between any cabin furnishing (e.g., seat, table, or divider) during in-flight operations only, provided that all areas of the cabin remain easily accessible in the event of an emergency (e.g., in-flight fire or decompression) with interior furnishings in the most adverse positions. Accessibility must be demonstrated to the FAA by test, analysis supported by test data, or, in circumstances agreed to by the FAA, by inspection.
12. Aisle-width requirements of § 25.815 must be maintained during taxi, takeoff, and landing.
13. Any cabin furnishing (e.g., seat, table, or divider) that can be positioned to intrude into the aisle must be clearly placarded to be in the proper location (i.e., not intruding into the minimum required aisle width) during taxi, takeoff, and landing. The effectiveness and meaning of the placard must be demonstrated to be easily viewed and understood by naïve test subjects.
14. Smoking is prohibited on this airplane, and notification to the passengers must be provided by a placard so stating, to be conspicuously located inside the passenger compartment. The placard must be located in the immediate vicinity of each passenger entry door and easily visible to all persons entering the cabin.

Issued in Renton, Washington, on February 19, 2015.

/s/

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