

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

Regulatory Docket No. FAA-2016-0328

GRANT OF EXEMPTION

By letter dated January 28, 2016, Mr. Loyd R. Hamilton, ODA-750154-SW 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 section 25.813(e) of Title 14, Code of Federal Regulations (14 CFR). The proposed exemption, if granted, would permit relief from § 25.813(e) to permit the installation of interior doors between passenger compartments. Specifically, the petition requests removing the requirement in exemption no. 10686 that doors installed across the main aisle must open and close in a transverse direction. The proposed exemption is specifically for the installation of executive interiors on Boeing Model 747-8 airplanes designated as “private use, not for hire, not for common carriage.”

The petitioner requests relief from the following regulation:

Section 25.813(e) at Amendment 25-46 – Requires that no door may be installed in any partition between passenger compartments.

The petitioner supports their request with the following information.

This section quotes, in pertinent part, the relevant information from the petitioner’s request, with minor edits for clarity. The complete petition is available at the Department of Transportation’s Federal Docket Management System, on the Internet at <http://regulations.gov>, in Docket No. FAA-2016-0328.

Discussion

L-3 Communications Integrated Systems has been contracted by customers for interior completions of VVIP/Government/Head-of-State business interiors in more than one

Boeing Model 747-8 airplane. The FAA has accepted L-3's STC application on one program and has authorized L-3 ODA-750154-SW to conduct the program under Project Number P-12-001. The certification basis for the Boeing 747-8 is 14 CFR 25, Amendment 25-1 through 25-120 with reversions, later amendments, Exemptions, and Special Conditions as shown in FAA Type Certificate Data Sheet A20WE.

14 CFR 25 governs Type Design certification requirements for transport category airplanes. The primary intent of the CFR, as applied to Transport Aircraft, is intended for US commercial or common-carriage applications. These regulations are to ensure that aircraft manufacturers provide the appropriate design features to meet the standards necessary to protect the traveling US public. These requirements define the normal public interest and safety level and provide regulatory guidelines to meet them. When the individual aircraft is to be used in private service (e.g., not for US hire or common carriage), it is appropriate to take into consideration the specific needs of a different population of more experienced users and the operations specific to those users.

Historically, the FAA has made adjustments to specific requirements based upon specific design and operational factors. As stated above, numerous exemptions and other regulatory changes have been granted to meet specific aircraft designs and applications. In like manner, L-3 proposes to use mitigating design requirements and operational limitations to justify similar exemptions to 747-8 aircraft modified for VVIP/Government/Head-of-State, not-for-hire, not-for-common-carriage service.

Basis for Exemption

The aircraft that are the subjects of this petition are Boeing Model 747-8s 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-a-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 exemption proposed herein is justified based upon the following facts:

- This aircraft is intended for VVIP/Government/Head-of-State use and is 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.
- 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 25.813(e): Doors Between Passenger Compartments

Discussion

This discussion covers curved pocketing doors that separate passenger compartments throughout the aircraft and do not operate transversely to the longitudinal axis of the airplane. This discussion does not include doors or folding partitions that separate non-passenger compartments and, therefore, these doors do not apply to this exemption request. Curved pocketing doors between passenger compartments will have the following design features:

- independent means to couple (mechanically fasten) the wall panels to the door to account for crash loads specified in 14 CFR 25.561 or gust loads, whichever is more critical, using static pull test as the means of compliance and account for deformation of local structure to secure them in the open position
- the door-coupling means must have positive retention in the locked position
- the doors will be frangible to allow egress in the event that they should become stuck in the closed position
- cockpit annunciation of the doors' positive engagement of the door-coupling means for taxi, take-off and landing

The design provides a single point of coupling for each section of the door. The coupling mechanism can be released by pulling on the mechanism key and does not require a tool. The mechanism key is spring loaded with a plate that ensures the key remains in a locked position and prevents the pin from disengaging and the door closing. With the pin engaged in the door, the switch is activated to signal to the Flight Deck that the door is locked in an open position. To disengage the lock, the key must be pulled to allow the pin to drop out of the locked position. The locking mechanism allows for the doors to be pinned in an open position for takeoff and landing. The door sections also contain dual latching mechanisms to retain them in the open position for takeoff and landing, each of which will be capable of withstanding the inertia loads specified in 14 CFR 25.561.

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 curved pocketing door between passenger compartments will have an independent means to couple (mechanically fasten) the wall panels to the door to account for crash loads specified in 14 CFR 25.561 or gust loads, whichever is more critical, using static pull test as the means of compliance and account for deformation of local structure to secure them in the open position,
- The means to couple (mechanically fasten) the wall panels to the door will have positive retention in the locked position,
- 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 and cockpit annunciation

will be given of the positive engagement of the curved pocket door coupling means for taxi, 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 airplane flight manual (AFM) will provide procedures and limitations to ensure that the doors are in the proper position for takeoff and landing.

Requested Relief

L-3 Communications requests relief from § 25.813(e), and the requirements and limitations specified in exemption no. 10686, to permit the installation of curved interior doors between passenger compartments.

Public Interest

As in the cases of numerous already established Exemptions, granting this 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 pending 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 revenue which in turn adds 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 Continuing Operational Safety.

Future Use and Application of the Exemption

This Exemption is intended for use on current and future 747-8 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.

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 a foreign country.

Public Comment

In accordance with 14 CFR 11.87, L-3 requests that the period for public comment be waived.

***Federal Register* publication**

A summary of the petition was published in the *Federal Register* on May 11, 2016 (81 FR 29319). No comments were received.

The FAA's analysis

The FAA has issued numerous exemptions for installation of interior doors on airplanes that are operated for private use only. We have been consistent with the requirement that the doors installed across the main cabin aisle must open and close in a transverse direction. This is consistent also with Special Federal Aviation Regulation (SFAR) 109 paragraph 10(d), which requires, "Doors installed across a longitudinal aisle must translate laterally to open and close, e.g., pocket doors." That is, the direction of motion of the door must be at a right angle to the longitudinal axis of the airplane. This was included in the FAA analysis in exemption no. 10686.

In a forward-crash event, the major loading force is in the forward direction along the longitudinal axis of the airplane. When the direction of motion of the door is at a right angle to the longitudinal axis of the airplane, this forward-crash loading condition does not tend to close the door. For the configurations the petitioner proposes, a forward-crash loading condition would tend to close the entire door or one half of the door opening for the doors across the main-cabin aisle. The FAA considers this an important consideration due to the possibility that, during a crash event, the doors could become unlatched as the result of fuselage deformations or structural failures.

The petitioner has proposed and incorporated additional compensating features for the door design that are in addition to those required by previous exemptions and the operating regulations for the airplane. The compensating features added to the petitioner's proposed design restores the level of safety provided by the existing exemption conditions and limitations.

Curved pocket doors must have an independent means to couple (mechanically fasten) the door to the wall panel, and that coupling means must account for crash loads specified in § 25.561, or gust loads, and the doors must have positive retention in the locked position.

The FAA finds this petition to be in the public interest as it provides the level of safety the FAA requires for these "private use only" airplanes with curved interior doors installed across the main cabin.

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 L-3 Communications Integrated Systems, L.P., for an exemption from § 25.813(e) to the extent necessary to allow installation of curved interior doors on private, not-for-hire, not-for-common-carriage Boeing 747-8 airplanes.

This exemption is subject to the following conditions and limitations:

1. The airplane may not be offered for common carriage or operated for hire. The Operating Limitations section of the airplane flight manual (AFM) must be revised to prohibit any operations involving the carriage of persons or property for compensation or hire. The operators may receive remuneration to the extent consistent with 14 CFR 91 subpart F and 14 CFR 125.
2. A placard stating "Operations involving the carriage of persons or property for compensation or hire are prohibited" must be located in the area of the airworthiness certificate holder at the entrance to the flightdeck.
3. Compliance with § 25.813(e), Doors Between Passenger Compartments, will be as follows:
 - a. In lieu of the requirements of § 25.813(e), curved interior pocket doors may be installed between passenger seats and emergency exits, provided the following requirements are met:
 - i. Each curved pocket door between any passenger seat and any exit will have an independent means to couple (mechanically fasten) the wall panels to the door to account for crash loads specified in § 25.561 or gust loads, whichever is more critical, using static pull test as the means of compliance, and to account for deformation of local structure to secure them in the open position. The means to couple the wall panels to the door will have positive retention in the locked position.
 - ii. The direction of motion of any curved door installed across an aisle must be across the direction of motion of the occupant.
 - iii. Each door between any emergency exit, and any passenger seat that is occupiable for taxi, takeoff, and landing (TT&L), must have a means to

signal to the flightcrew, at the flightdeck, that the door is in the open position for TT&L. Also, cockpit annunciation will be given of the positive engagement of the curved pocket-door coupling means for TT&L.

- iv. Appropriate procedures and limitations must be established in the AFM to ensure that any such door is in the open configuration for TT&L.
 - v. 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 airplane using a 5th-percentile female subject.
 - vi. 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.
 - vii. The door sections must contain dual latching mechanisms 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.
- b. When the airplane is equipped with interior doors under this exemption:
- i. The AFM must include an appropriate limitation that the airplane must be staffed with at least the number of flight attendants required by § 91.533(a) who meet the requirements of § 91.533(b).
 - ii. The AFM must include appropriate limitations to require a preflight passenger briefing describing the appropriate functions to be performed by the passengers, and the relevant features of the airplane, to ensure the safety of the passengers and crew.

Issued in Renton, Washington, on August 11, 2016.

/s/

Paul Bernado
Acting Manager, Transport Airplane Directorate
Aircraft Certification Service