

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

In the matter of the petition of

Israel Aircraft Industries, Ltd.

for an exemption from §§ 25.785(j),
25.807(g)(1), 25.810.(a)(1), 25.813(b)(3),
25.857(e) and 25.1447(c)(1) of Title 14, Code
of Federal Regulations

Regulatory Docket No. FAA-2007-0330

GRANT OF EXEMPTION

By letter dated December 9, 2007, Mr. A. Rogev, Director of Certification, Aircraft Division, Bedek Group, Israel Aircraft Industries, Ltd., LOD 70100, Israel, petitioned for an exemption from: §§ 25.785(j), 25.807(g)(1), 25.810(a)(1), 25.813(b), 25.857(e), and 25.1447(c)(1) of Title 14, Code of Federal Regulations (14 CFR). The proposed exemption, if granted would allow the carriage of up to 4 additional non-crewmembers (commonly referred to as supernumeraries) in the flight deck on Boeing Model 767-300 airplanes converted from passenger to freighter, and to allow them access into the Class E main deck cargo compartment during flight for the purpose of attending to cargo types requiring care or inspection, or both (e.g., live animals and/or hazardous materials).

In a letter dated December 24, 2008, the petitioner modified their request and asked for an exemption to 14 CFR 25.813(b)(2) stating that the request for an exemption to (b)(3) was erroneous. They also stated in their letter that they intend to exercise the privileges of the exemption outside the United States.

The petitioner requests relief from the following regulations:

Section 25.785(j), at Amendment 25-88, states, “If the seat backs do not provide a firm hand hold, there must be a hand grip or rail along each aisle to enable occupants to steady themselves while using the aisles in moderately rough air.”

Section 25.807(g)(1), at Amendment 25-114, states, “For a passenger seating configuration of 1 to 9 seats, there must be at least one Type IV or larger overwing exit in each side of the fuselage

or, if overwing exits are not provided, at least one exit in each side that meets the minimum dimensions of a Type III exit.”

Section 25.810(a)(1), at Amendment 25-114, requires, in pertinent part, that each non-overwing emergency exit more than 6 feet from the ground have an approved means to assist occupants in descending to the ground. For passenger exits, this must be a self-supporting, automatically deployed and erected slide at each applicable exit.

Section 25.813(b)(2), at Amendment 25-116, requires that for each Type A or B exit installed, an assist space must be provided at each side of the exit regardless of whether an assist means is required by Sec. 25.810(a).

Section 25.857(e), at Amendment 25-93, requires, in pertinent part, that when a Class E cargo compartment is installed on the airplane, the airplane is used for the carriage of cargo only.

Section 25.1447(c)(1), at Amendment 25-116 requires, in pertinent part, that oxygen dispensing units must be automatically presented to the occupants before the cabin altitude exceeds 15,000 feet. The total number of dispensing units and outlets in the cabin must exceed the number of seats by at least 10 percent.

Related regulations:

Section 25.807(i)(1), at Amendment 25-114, requires that for airplanes that have a passenger seating configuration of nine or fewer seats there must be at least one ditching emergency exit above the waterline in each side of the airplane, meeting at least the dimensions of a Type IV exit.

Sections 25.813(b) and 25.813(b)(1), at Amendment 25-116, require, in pertinent part, that adequate space to allow crewmember(s) to assist in the evacuation of passengers be provided. Each assist space must be a rectangle on the floor, of sufficient size to enable a crewmember, standing erect, to effectively assist evacuees. The assist space must not reduce the unobstructed width of the passageway below that required for the exit.

Section 25.813(b)(6), at Amendment 25-116, requires that there be a handle, or handles, at each assist space, located to enable the crewmember to steady himself or herself:

- (i) While manually activating the assist means (where applicable) and,
- (ii) While assisting passengers during an evacuation.

Section 121.583(a) contains, in pertinent part, a listing of categories of persons who may be carried aboard an airplane in part 121 service without complying with all the requirements of part 121 pertaining to carriage of passengers.

The petitioner's supportive information is as follows: This information is quoted from the petitioner.

Introduction

IAI has requested a supplemental type certificate (STC) to certify a major modification of a B767-300 aircraft from passenger to a special freighter (SF) configuration. The program is being certified by the CAAI, then by the FAA via a validation process. The project has been assigned the FAA project number STI0123SE-T.

IAI is requesting to be granted an exemption from meeting certain requirements, pertaining to the following:

- Carriage of four non-crewmembers (supernumeraries) in the flight deck compartment in addition to the two flight crewmembers.
- Access of supernumeraries into the Class E compartment in flight for the purpose of attending to the cargo.
- Use of quick donning oxygen mask in the flight deck and use of portable oxygen bottle by persons entering the Class E cargo compartment in lieu of self presenting oxygen masks.
- Relief from the requirement for hand holds for persons entering Class E cargo compartment.
- Use of flight deck emergency exit window R2 by non-crewmembers as an emergency egress exit on the right hand side in lieu of a type III door.
- Use by non-crewmembers of inertia reel descent devices in lieu of slides as emergency egress assist means at the left hand entry door.
- Relief from requirement for assist space at floor level exit.

The exemption is requested for B767-300 aircraft modified to special freighter under the IAI STC.

a. CFR 25 Affected Sections

Section 25.785(j), at Amendment 25-88 Seats, berths, safety belts, and harnesses, requires in pertinent part, that there be a firm handhold, handgrip, or rail along each aisle to enable persons to steady themselves while using the aisles in moderately rough air.

Section 25.807(g)(1), at Amendment 25-114 Emergency Exits requires, in pertinent part, that for a passenger seating configuration of 1 to 9 seats, there must be at least one Type

IV or larger overwing exit in each side of the fuselage or, if overwing exits are not provided, at least one exit in each side that meets the minimum dimensions of a Type III exit.

Section 25.810(a)(1), at Amendment 25-114 Emergency Egress Assist Means, requires, in pertinent part, that each non over wing emergency exit more than 6 feet from the ground have an approved means to assist occupants in descending to the ground. For passenger exits, this must be a self-supporting, automatically deployed and erect slide at each applicable exit.

Section 25.813(b)(2), at Amendment 25-116 Emergency Exit Access, requires, in pertinent part that an assist space be provided at each side of a Type A or B exit regardless of whether an assist means is required by Section 25.810(a).

Section 25.857(e), at Amendment 25-93 requires Cargo Compartment classification. In pertinent part, that when a Class E cargo compartment is installed on the airplane. The airplane be used for carriage of cargo only.

Section 25.1447(e)(1), at Amendment 25-116 Equipment Standards for Oxygen Dispensing Units, requires, in pertinent part, that oxygen-dispensing units must be automatically presented to the occupants before the cabin altitude exceeds 15000 feet. The total number of dispensing units and outlets must exceed the number of seats by at least 10 percent. The extra units must be uniformly distributed throughout the cabin as practicable, and there must be two oxygen masks in each lavatory.

b. Related Sections of the FAR

Section 121.583(a) Carriage of persons without compliance with the passenger-carrying requirements of this part contains, in pertinent part, a listing of categories of the people who may be carried aboard an airplane in part 121 services without complying with the requirements of part 121 to carriage of passengers.

Description of the converted airplane configuration.

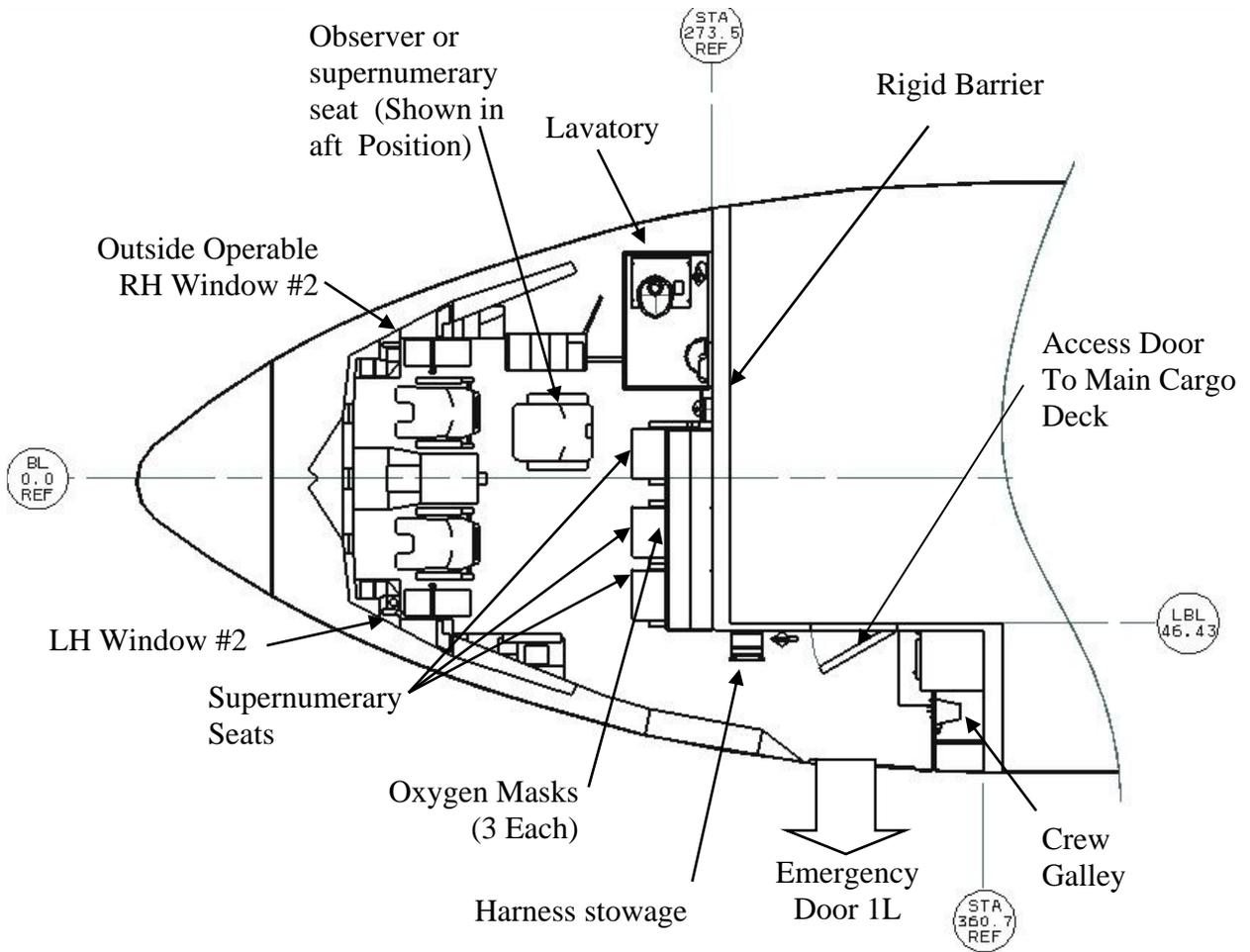


Figure 1

General

The Boeing B767-300 is a transport category airplane. The converted B767-300BDSF will have an all-cargo main deck configuration. A new 9g rigid cargo/smoke barrier replaces the aft partition of the flight deck, separating the Class E main deck cargo compartment from the flight deck. (See Fig.1). Total occupancy of the flight deck shall be increased from four persons to six (6) persons: Two (2) flight crewmembers and Four (4) non-crewmembers (supernumeraries and observer). The existing pilot, co-pilot and forward observer seats are retained from the type certified aircraft and three (3) additional supernumerary seats are installed on the aft [9G rigid barrier] wall of the compartment. The fourth supernumerary will be in the observer seat.

Emergency exits arrangement and emergency evacuation

The aircraft is configured with three emergency escape exits: Door 1L which is a Type A floor level exit, and the two flight deck windows 2R and 2L. Door 1L is the primary emergency exit means for the flight deck occupants. The construction of the 9g rigid barrier as dictated by the cargo envelope interferes with the space required for the current door mounted slide during door opening. Therefore the door 1L slide is replaced by an emergency descent device consisting of 6 inertia reels and 6 escape harnesses which are installed adjacent to the door. An additional demo harness is provided for supernumerary briefing. A placard containing instructions for the use of the device is installed adjacent to the harnesses stowage.

Both flight deck side windows open from the inside of the airplane. The RH window will be modified for opening from the outside of the airplane as well. Flight deck side windows are in compliance with the requirements of §§ 25.807(j) and 25.809 for crew exits and are equipped with escape ropes assist means which are retained from the type certified airplane.

Two (2) life rafts of suitable capacity are stowed near door 1L exit for use in extended overwater operations instead of the removed slide/raft.

Door 1R is no longer used as an emergency exit since it is located behind the forward pallet position aft of the 9g barrier and is not accessible.

Oxygen system

The existing flight deck oxygen system supplies oxygen to the flight crew and the forward observer or supernumerary. A separate oxygen bottle supplies oxygen to the three supernumeraries. The oxygen bottle has been sized for the maximum required duration. The oxygen masks are the quick donning type and are stored in a PSU located within reach of the seated supernumeraries. The removal of the mask from its housing initiates the flow of oxygen. The instruction for the supernumeraries to don oxygen masks is provided directly by the flight crew. The requirement for a 10 percent excess of oxygen masks is not considered applicable to this configuration.

The lavatory compartment is equipped with a separate, fixed bottle with two masks. The signal to don oxygen mask is indicated in the lavatory by an illuminated "Use oxygen / Return to seat" sign located in view of lavatory occupant and operated automatically on loss of cabin pressure or manually by the pilot.

Due to the close proximity of the galley area to the supernumerary seat PSU there is no need for an additional oxygen source at the galley. A lighted "Return to seat" sign shall be installed at the galley area, activated automatically and manually.

Oxygen supply to any person entering Class E cargo compartment is provided by an 11 ft³ portable oxygen bottle with full face mask. A bottle and mask must be carried by each person entering compartment at all times. An aural and visual alert system consisting of

horns and flashing of alternate compartment lights will be automatically activated in case of loss of cabin pressure or manually by the flight crew to alert any person in the class E compartment to don oxygen mask and return to seat.

Smoking is not permitted in the compartment. Appropriate instruction placards are installed on the cargo compartment and lavatory entry doors.

Cargo compartment alert system

A flight deck operated switch shall activate a visual alert system, similar to the B767-200SF, flashing alternate compartment lights for a duration of 20 seconds to indicate to any person within the compartment that immediate return to seat is required. The system shall be activated by the flight crew to warn persons in the cargo compartment of a need to return to seat due to a smoke alert or an imminent turbulence.

An aural alert system combined with flashing lights, similar to the B767-200SF, shall enable flight crew to warn persons in the cargo compartment of a need to use oxygen. The alert system shall also be operated automatically in case of cabin pressure loss and in case of activation of the decompression mode.

Appropriate instruction placards are installed on the cargo compartment entry door.

Supernumerary seats

The three new supernumerary seats are TSO C 127 approved, wall mounted cabin attendant type. Seats are equipped with upper torso [shoulder harness] restraint system. The seats are mounted on the forward face of the 9g barrier partition. Stowage provisions for life vests are located in the seat base and are accessible to seated occupant.

Lavatory Compartment

A flushing toilet with external servicing is installed on the RH side of the extended flight deck. Lavatory compartment is fully enclosed and have bi-folding door.

An illuminated "Use oxygen / Return to seat" sign is located inside the lavatory in view of lavatory occupant.

Crew Galley

The dry crew galley unit is installed aft of door 1L. The galley shall be equipped with oven and hot cup, an enclosed waste bin and miscellaneous stowage compartments. All inserts and doors shall be equipped with dual latching.

An illuminated "Return to seat" sign is installed on the galley for any person not in view of the flight deck. The galley is located in close proximity to the portable oxygen bottle and the supernumerary seats.

Cargo Compartment Access Door

An entry door provides access to the main deck Class E cargo compartment from the [extended] flight deck compartment. The door and barrier shall be designed to prevent

smoke penetration into occupied area in the flight deck. The door must be closed at all times except for entry and exit. A placard on the door provides the operating instructions and limitations accordingly.

Requested exemption

Exemption from the aforesaid Sections is sought to the following extent:

Section 25.785(j): An exemption is requested from the requirement for a firm hand hold, hand grip or hand rail for persons entering the cargo compartment in flight. As the compartment is a large open space it is impractical to provide hand hold for a person entering the compartment. Instead, an alert system is provided for the flight deck crew to warn persons in the cargo compartment of imminent turbulence and of the need to return to their seats.

Section 25.807(g)(1): An exemption is requested to allow non-crew persons seated in the flight deck the usage of door 1L (Type A) plus the flight deck crew type emergency exits (Windows 2R and 2L) as emergency exits in lieu of the required two Type III or Type IV exits (one on each side).

Section 25.810(a)(1): An exemption is requested to allow for supernumeraries usage of inertia reel descent devices at door 1L and escape ropes at flight deck windows in compliance with 25.810(a)(2) instead of the slides required by 25.810(a)(1). Interference of the slide envelope with the 9g barrier prevents installation of slide at door 1L.

Section 25 .813(b): An exemption is requested from requirement for assist space adjacent to exit door. Assist space is not needed since supernumerary persons are capable of performing autonomous evacuation of the aircraft and there is no cabin crew on board to provide assistance.

Section 25.857(e): Relief is sought to permit carriage of four (4) supernumerary persons, in addition to the two flight crewmembers, on an all-freighter airplane, which has a Class E cargo compartment.

Section 25.1447(c)(I): An exemption is requested to allow usage of non self presenting oxygen dispensing units. Quick donning type masks shall be installed in the flight deck within reach of the seated supernumeraries. The requirement for a 10 percent excess of oxygen masks is not considered applicable to this configuration.

A portable oxygen bottle with two non self presenting masks connected to it shall be installed within reach of the seated occupant of the lavatory compartment. An automatic and manual alert system shall illuminate an ordinance sign to instruct the person to don the oxygen mask in case of drop of cabin pressure.

A portable oxygen bottle with full face mask must be carried by each person entering the Class E cargo compartment at all times. An automatic and manual alert system is provided to instruct the person to don the oxygen mask in case of drop of cabin pressure.

Supporting Arguments

Exemption from cargo only provisions of Section 25.857(e) has been previously granted to IAI for cargo conversions of B767-200SF, B747-200/-300SF and B737-300SF/RB/QC aircraft.

1. The cargo operators need for their missions a number of support personnel, necessary for the safe handling of the cargo in the process of loading/offloading and for in-flight attendance of the cargo. Such personnel are obviously needed both at departure and destination of a cargo flight. It is important that the cargo handlers are present upon airplane arrival, particularly if perishable goods or live animals are carried. The most efficient way to assure their attendance at destination airport is to transport them aboard the cargo flight.
2. Among their various missions, the cargo operator may have to carry particular kinds of goods, such as live animals, hazardous materials, valuable or perishable cargo. Such types of cargo cannot be left unattended, even for the duration of a flight, and the presence of personnel qualified in their handling is necessary on the airplane on which they are carried. Safety and efficiency of the operation will therefore be enhanced.
3. Cargo operators also need to have qualified personnel necessary for operation and maintenance purposes at various locations. They will optimize their missions if they are permitted to carry their personnel aboard their cargo flights, thus saving travel by regular passenger flights.
4. The categories of the supernumerary persons for which this exemption is requested are as defined on FAR Section 121.583(a), they are trained as to the autonomous use oxygen masks, emergency equipment and emergency exit operation. It will also be required that the operator allows access to the supernumerary seats only to persons found able to perform these tasks on their own.

Supporting arguments for the additional sections affected

A freighter airplane utilization capability is limited by the maximum payload weight and the maximum volume that the cargo compartment can accommodate. An optimum combination would be such that the volume and weight would be used to the maximum at the same time. Based on average cargo density in the freighter market, in order to use the maximum weight capability of the 767-300 aircraft, it is necessary to enable loading 24 containers in the main deck. This is possible only by elimination of door 1R. In order to keep door 1R active at least one container would have to be eliminated. In the

competitive economic market this reduction is very significant and may negate the economic value of using the airplanes for cargo freighting.

The exemption from Section 25.807(g)(1) is justified by the existence of 3 escape routes, all capable of safe egress. The entry door on the left hand side is a Type A floor level door which exceeds the requirement for a Type III exit. The LH and RH flight deck windows are type IV exits certified as flight crew emergency exits. The existing flight deck exits are already approved for flight deck occupancy of four people, of which two are non crew. The total number of supernumeraries and crew after conversion is limited to 6 which is an increase of two persons.

When considering the small number of persons on the airplane and the fact that the supernumerary persons are selected professional and trained people, the level of safety offered to them by the proposed exits arrangement would be equivalent or better than that provided to standard passengers on a full passenger airplane.

A similar emergency exit configuration was granted exemption by the FAA (Ref. B767-300F airplane Exemption NO.5993 and 5993A and 757-200 Exemption No 8258).

The exemption from Section 25.810(a)(1) is justified by providing emergency evacuation assist means, inertia reel and harness, which provide equivalent safety based on demonstrations performed by other applicants (ref. FAA exemption 5993A). The occupants will be physically capable of using this device, trained in its usage and will also be briefed by the flight crew in the pre-flight briefing on the operation of escape ropes and inertia reel descent devices. The usage of inertia reels was approved for IAI 767-200 conversion in exemption No 8350. The usage of ropes at flight deck windows was also approved for 767-300F and for 757-200 special freighters (Ref. B767-300F airplane Exemption NO. 5993 and 5993A and 757-200 Exemption No 8258).

The airplane reconfiguration for carriage of cargo does not enable providing assist space adjacent to the exits as required by Section 25.813(b). The use of assist space adjacent to the emergency exits is not necessary, however, as the considered categories of personnel will be trained for operation of door IL and flight deck side windows and for autonomous evacuation.

The exemption from Section 25.785(j) requirement to provide a handhold is justified by providing means that enable flight deck crew to warn persons in the main deck of imminent turbulence, signaling them of the need to return to their seats and fasten seat belts. Appropriate instruction placards will be installed at the entrance to the main deck cargo compartment and the requirement for pre-flight briefing of the supernumeraries in this respect will be added to the AFM.

The requirements of Section 25.1447(c)(1) to have automatic presentation of oxygen dispensing units before the cabin pressure altitude exceeds 15,000ft are compensated by the fact that the supernumeraries will have knowledge of equipment location and use and by their seating in close proximity to the crew where they are directly alerted to the need

to use oxygen by the crew actions of donning oxygen masks. The masks provided for the seated supernumeraries are quick-donning masks with regulator and are immediately available to seated occupants providing same level of safety as for the flight crew-members and observer positions. Masks shall be accessible to seated occupants of 5'2" to 6'3" stature. The flow of oxygen is initiated upon removal of the mask from its container and is sufficient for the maximum duration of the flight including an intended decompression for suppression of cargo fire.

For a person using the lavatory, a portable bottle with two masks connected to it is provided in lieu of the self dropping mask. The need for use of oxygen will be indicated in the lavatory by a visual signal activated automatically, with a manual backup. This signal, combined with the training and briefing provided to the supernumeraries is considered equivalent to the self dropping masks of a passenger airplane.

A portable oxygen bottle with full face mask must be carried by each person entering the Class E cargo compartment at all times. An automatic and manual aural and visual alert system is provided to instruct the person to don the oxygen mask in case of drop of cabin pressure.

Public interest:

Granting the requested exemption will be in the public interest, as by allowing the carriage of the supernumerary persons aboard the cargo nights the operators will be able to optimize the safety conditions of the cargo operation and to make the operation more efficient.

Granting the requested exemptions for the deletion of exit 1R and the usage of descent devices in lieu of a slide on door 1L is in the public interest as it would allow maximizing the usage of the airplane volume for carriage of cargo. Without this exemption the number of airplanes required to carry the same volume of cargo would increase and the cost of cargo freighting by the converted 767-300 airplane would also increase proportionally.

Improving the utility of the airplanes reduces the total number of airplanes and affects the environment and the airport's congestion.

Federal Register Publication

The FAA determined that good causes exists for waiving the requirement for *Federal Register* publication because the exemption, if granted, would not set a precedent and any delay in acting on this petition would be detrimental to Israel Aircraft Industries.

The FAA's analysis is as follows:

By allowing the carriage of the supernumerary persons aboard cargo flights, operators will be able to optimize the use of airplanes and airports. The FAA considers the petitioner's proposal to be in the public interest for the following reasons:

1. The FAA has granted several exemptions for the carriage of supernumeraries on freighter airplanes;
2. These supernumeraries are seen as a benefit to airplane safety and the efficient operation of air cargo;
3. A significant disruption of air commerce could occur if the petition were not granted.

The petitioner has requested relief primarily from the requirements of § 25.857(e), which permits carriage of only cargo when a Class E cargo compartment is installed on the airplane. Class E cargo compartments are usually remote from the flightdeck and encompass the entire interior of the airplane. The means of controlling fires that might occur in the cargo compartment is to starve the fire of oxygen. This is accomplished by depressurizing the airplane and maintaining an altitude that will not support combustion. For this reason, only crewmembers are permitted on board such airplanes. The supernumeraries will be located in the aft portion of the flightdeck.

The certification regulations for transport category airplanes address airplane occupants as being either "crew" or "passengers." Due to differences in training, physical capabilities, and other factors (such as familiarity with the airplane), the means required by part 25 to address emergency evacuation and emergency equipment for passengers and crewmembers differ.

Because supernumeraries are not crewmembers, they must be considered "passengers" by default with respect to part 25. However, supernumeraries do hold a special status because of their training and other factors. The FAA, therefore, has granted certain exemptions to allow the carriage of supernumeraries on cargo airplanes without compliance with all of the part 25 standards for passengers, provided that certain other conditions are met. Those conditions have varied depending on the airplane design, the nature of the proposals under consideration, and the number and location of persons to be carried.

The requirement of § 25.785(j), Amendment 25-88, for handholds is to ensure that occupants have a means to steady themselves in moderately rough air while traversing the main aisles of typical passenger airplanes. On the proposed airplane, we concur with the petitioner that an acceptable level of safety will be provided by the crew operated visual alert system. This visual alert system enables the crew to indicate, at the onset of turbulence, that supernumeraries in the cargo compartment must return to their seats. The visual alert must be recognized in the accessible areas of the Class E cargo compartment, and indicate, during turbulence, that supernumeraries must return to their seats and secure the smoke barrier (i.e., the door or curtain

must be closed). The pre-flight briefing must include an explanation of this alert to the supernumeraries.

The emergency exit provided on the right side of the airplane—the right flight deck window—does not meet the minimum size for a Type III exit as required by § 25.807(g)(1). Boeing has tested the usability of such a right flight deck window on the Boeing Model 757-200PF. Results indicate that the window can be used for an exit—with the evacuation means provided—for a maximum of seven people in the flight deck.

The emergency exit provided on the right side of the airplane—the right flight deck window—also does not meet the minimum size for a Type IV exit as required by § 25.807(i)(1) for a ditching exit. As discussed above, the utility of the right flight deck window and its usability with the evacuation means provided has been demonstrated for a maximum occupancy of seven persons on the flight deck of the Boeing Model 757-200PF. This demonstration would also apply to evacuating the airplane for ditching. Furthermore, the four non-crewmembers of the airplane will have a higher level of training and be physically more capable of evacuating the airplane by using the reduced exit opening on the right side of the airplane than would typical passengers. It should be noted that, if life-rafts must be installed for flights over water, they must be of a design that can be launched out the right flight deck window. We concur with the applicant's proposal to utilize the right hand flight deck window as an emergency escape exit for use by the supernumeraries.

The petitioner has requested relief from the requirements of § 25.810(a)(1), which requires the passenger emergency exits to be equipped with a self-supporting slide or equivalent assist means. The petitioner has proposed to install descent devices, commonly known as inertia reels, at the door 1L emergency exit and retain the existing escape ropes installed for the flight deck window exits on the left and right side.

The issue of whether inertia reels with harnesses for trained supernumeraries provide an acceptable alternative to the escape slides required by part 25 for passengers is discussed in some length in Exemptions No. 4808 and 4808A. (The FAA granted those exemptions to the Boeing Commercial Airplane Group in 1987 and 1997, respectively.) This issue is also discussed in Exemption No. 5993A, which the FAA granted in 1995 to the Boeing Commercial Airplane Group for Boeing 767-300PF airplanes.

The FAA recognizes that supernumeraries, as opposed to passengers, may be selected and trained appropriately in the use of escape ropes and inertia reels and harnesses. The FAA considers that the petitioner's proposed installation of inertia reels and harnesses at the emergency exit door 1L and the retention of the existing escape ropes installed for the flight deck window exits on the left and right side provides an adequate level of safety to supernumeraries for the petitioner's airplane configuration.

With respect to the lack of an assist space adjacent to each exit as required by § 25.813(b), the FAA has determined that the four supernumeraries will have a higher level of training than would a typical passenger, and will, therefore, have less need for crew assistance. Additionally, the flightcrew can easily provide instructions and some physical assistance to non-crewmembers,

if needed, because the non-crewmembers would be seated in the flight deck. The petitioner has requested relief from § 25.813(b)(2), therefore, we also find it necessary to grant relief from §§ 25.813(b)(1), and (6) as well.

To comply with §§ 25.855(h)(2) and 25.857(e)(4), there must be suitable means of preventing smoke penetration into the occupied area. The petitioner's design accounts for this by providing a barrier, which must comply with the smoke penetration requirements for the flight deck and the supernumerary compartment. However, the petitioner has indicated that configurations may be approved that will allow supernumeraries to enter the Class E cargo compartment, and open a door through the smoke barrier between the cargo compartment and the supernumerary compartment. In order to provide an appropriate level of safety, the petitioner must install a placard on the flight deck side of the cargo entry door, indicating that the door through the smoke barrier is to be secured (i.e., the door must be closed) except when entering or exiting the cargo compartment. The placard must be located in a conspicuous place, either on or next to the smoke barrier door.

Another concern, associated with supernumerary access to the cargo compartment in-flight, is, in the event of smoke or fire, the amount of smoke that would enter into the flight deck as a result of the door through the smoke barrier being open during the evacuation of the cargo compartment. This smoke source must be considered when demonstrating compliance with § 25.855. Flight testing is required for compliance.

The petitioner has proposed a visual alert to indicate that persons must return to their seats and secure the smoke barrier (i.e., close the door) if there is a fire or imminent turbulence. On the proposed airplane, we concur with the petitioner that an acceptable level of safety will be provided by the crew operated visual alert system. This visual alert system enables the crew to indicate, at the onset of smoke/fire or imminent turbulence that supernumeraries must return to their seats. The visual alert must be recognized in all accessible areas of the Class E cargo compartment. Appropriate procedures and limitations must be established to ensure that the flight crew alerts the supernumeraries to return to their seats and secure the smoke barrier door at the onset of smoke/fire or imminent turbulence. The pre-flight briefing must explain this alert to the supernumeraries.

The FAA has determined that, due to the way that fire in the cargo compartment is to be controlled, supernumeraries (persons) on board the airplane must be found physically fit by the operator. Supernumeraries must also have been briefed on the use of the emergency equipment. These limitations on the occupants are consistent with previous approvals and are included in this approval. The petitioner indicates that configurations may be approved that will allow the supernumeraries to enter the Class E cargo compartment to tend to animals or hazardous cargo. In order to provide an acceptable level of safety to the "immediately available" requirement of § 25.1447(c)(1), while in the Class E cargo compartment, each supernumerary must carry on his or her person a portable oxygen bottle with a mask connected to it.

Section 25.1447(c)(1) also requires automatic presentation of the oxygen dispensing units. For seated passengers in typical passenger airplanes, the automatic presentation of masks throughout the cabin indicates the need to don an oxygen mask. However, supernumeraries in the Class E

cargo compartment will not have this indication. The petitioner has proposed an automatically activated (with manual backup) aural and visual system consisting of horns and flashing lights to notify supernumeraries in the cargo compartment to don their oxygen masks and return to their seats in the event of a cabin decompression. The petitioner has also proposed that the seated supernumeraries will receive instructions directly from the flight crew to don their oxygen masks. Illumination of the lights and activation of the horns in the cargo compartment, in the event of cabin decompression, provides an acceptable level of safety provided that the lights and horns are visible and audible throughout the accessible areas of the Class E cargo compartment.

The petitioner has proposed that the lavatory will be equipped with an automatically (with manual backup) lighted "Use Oxygen/Return to Seat" sign and the galley area will have a "Return to Seat sign." We find both of these proposals acceptable due to the fact that the galley and the lavatory are installed on the flight deck in direct view of the flight crew.

Supernumeraries must be trained about the location and use of the oxygen equipment and the alerts for its use. The oxygen units must be sized for continuous and uninterrupted use during worst-case flight duration following decompression. Additionally, the portable oxygen device must meet the requirements for flightcrew oxygen masks (§ 25.1443(a) or (b)) or the equipment must be shown to protect the supernumerary from hypoxia at an activity level required to return to his or her seat following a rapid decompression to 25,000 feet cabin altitude. The oxygen units must still meet the intent of § 25.1449 which states that there must be a means for the crew to determine whether oxygen is being delivered to the dispensing units. The FAA has determined that it would be an acceptable means of compliance to train the supernumeraries in making this determination and to provide oxygen flow indication in the oxygen equipment.

Configurations may be approved for carrying cargo which would not require supernumeraries to access the Class E cargo compartment during flight. For those configurations, an aural alarm for decompression in the Class E compartment is not required when an AFM limitation prohibits supernumeraries from entering it during flight. Placards and procedures must also be changed to be consistent with the AFM limitation.

We have been reviewing the operational need for access into the Class E cargo compartment in-flight and the number of persons needed in the cargo compartment for the type of operation. We have divided the access into the cargo compartment into three different types of operations and they are:

1. Carriage of live animals requiring care/attention during flight and associated material, no other cargo.
2. Cargo only, no live animals requiring care/attention during flight.
3. Carriage of live animals, requiring care/attention during flight and cargo.

In the first type of operation, we understand that the industry standard for carriage of horses is one supernumerary for every three or four horses. Considering the size of the 767-300 airplane there could be many horses in the Class E cargo compartment. In considering this type of

operation we have considered that the carriage of live animals poses a significantly smaller risk of fire than the carriage of other cargo. Therefore, we have allowed more access to the cargo compartment for that type of operation.

With regard to the second type of operation we have limited the access to the cargo compartment to a very small number of supernumeraries (one to three). This number of supernumeraries should be capable of addressing the access needs for the hazardous materials, valuable or perishable goods.

Concerning the third type of operation, live animals requiring care/attention during flight and cargo, we understand this is the most common operation used for transporting horses. The industry standard for carriage of horses is one supernumerary for every three or four horses. The petitioner has requested a maximum of four supernumeraries be allowed to access the Class E cargo compartment in-flight for the care/attention of live animals and/or inspection of cargo. We accept the proposal for a maximum of four supernumeraries to be allowed access into the main deck Class E cargo compartment in flight for the care/attention of live animals and to inspect the cargo with the following limitation:

The addition of cargo to a live animal carriage operation causes additional risk of exposure from the smoke and fumes of a fire. As the number of supernumeraries increases, and the duration of exposure increases, we must provide for a reasonable level of protection from smoke inhalation.

The following factors are considered when making a determination of the acceptable level of safety in this case:

- the number of supernumeraries with access
- cargo compartment size
- limited egress paths
- airplane configuration
- potential cargo present
- duration of exposure
- past industry practice

Considering the above factors, in the general case, if Class E cargo compartment access is approved for four or more supernumeraries for this mode of operation, a portable system (e.g., smoke hood or full face mask oxygen system) must be carried by each supernumerary.

Another concern is the removal of an incapacitated person from the cargo compartment. The petitioner should develop procedures for removing an incapacitated person from the cargo compartment and provide the procedures to the airplane operators. There is no need to combine this condition with any other failure condition (i.e., only normal flight condition needs to be considered).

Lastly, access into the cargo compartment during flight by supernumeraries has the potential to impact crew workload. Crew workload must be assessed in permitting access to the cargo compartment in flight, and appropriate compensation implemented.

The FAA's decision

In consideration of the foregoing, I find that a grant of exemption is in the public interest for the reasons given by the petitioner. Therefore, pursuant to the authority contained in 49 U.S.C. §§ 40113 and 44701, delegated to me by the Administrator, Israel Aircraft Industries is hereby granted an exemption from 14 CFR 25.785(j), 25.807(g)(1), 25.807(i)(1), 25.810(a)(1), 25.813(b)(1), (2), (6), 25.857(e), and 25.1447(c)(1). The petition is granted to the extent necessary to allow type certification of Boeing Model 767-300 series airplanes converted from passenger to freighter with provisions for the carriage of supernumeraries. The following conditions and limitations apply and numbers 1 through 5 and 7 through 8, below, must be documented in the Limitations Section of the Airplane Flight Manual:

1. A maximum of four supernumeraries may occupy the modified flight deck. The total maximum occupancy of the airplane is limited to six persons, including the flightcrew (two on-duty flight crew members, and up to four off-duty flight crew members, observers or supernumeraries).
2. The supernumeraries are limited to the categories specified in §§ 121.583(a)(1) through 121.583(a)(7).
3. Main Deck Class E Cargo Compartment Access Limitations:

Supernumeraries are prohibited from accessing the cargo area during taxi, takeoff, and landing. Access is limited to the main deck Class E cargo compartment.

Access into the main deck Class E cargo compartment in-flight is allowed for only three types of operation and they are as follows:

- Operations for the carriage of live animals requiring care/attention during flight and associated material only, no other cargo. The maximum number of supernumeraries allowed in the main deck Class E cargo compartment is 4.
- Operations for the carriage of cargo only, no live animals requiring care/attention during flight. The maximum number of supernumeraries allowed in the main deck Class E cargo compartment is 3.
- Operations for the carriage of live animals requiring care/attention during flight and other cargo. The maximum number of supernumeraries allowed in the main deck Class E cargo compartment is 4.

4. Prior to each flight, a flightcrew member must brief the supernumeraries on the following:

- the use of exits, including instructions to inspect the ground to determine whether a safe landing can be achieved before using an assist means.
- location and use of emergency equipment.
- the prohibition from being in the cargo area during taxi, take-off, and landing.
- the cargo compartment aural and visual decompression alerting system and what actions they are required to take.
- the lavatory visual decompression alerting system and what actions they are required to take.
- the visual turbulence and alerting system and the requirement that persons must return to their seats.
- the visual fire or smoke alerting system and what actions they are required to take.
- that access is limited to the care and handling of animals and cargo only.
- that access is limited to a maximum of three unless live animals requiring care/attention in-flight and associated material are being carried.
- that access is limited to a maximum of four when live animals requiring care/attention in-flight are being carried.
- that the smoke barrier must be secured (i.e., the door or curtain must be closed) except when entering or leaving the cargo compartment.
- that a portable oxygen bottle (with full face mask attached) must be carried at all times when accessing the cargo compartment by each person entering the cargo compartment.
- that smoking is not allowed within the cargo compartment.
- that the compartment must not be entered in case of fire/smoke being detected inside the Class E cargo compartment.

5. The operator must determine that each supernumerary is physically able and trained to accomplish the necessary emergency procedures. The determination must be reported to the flight crew.

6. Supernumeraries Emergency Oxygen:

A supplemental oxygen bottle must be provided for the three supernumeraries seated immediately forward of the rigid barrier. Each of these supernumeraries must be provided with a quick donning type oxygen mask connected to the supplemental oxygen bottle. The oxygen masks must be located so each occupant can put on the mask and activate oxygen flow while seated.

A supplemental oxygen bottle with two masks connected to it must also be available in the lavatory.

Each supernumerary must also be provided with a portable oxygen unit with a mask attached to it that he or she must carry whenever he or she is in the Class E cargo compartment. The portable units must be located outside the cargo compartment. The supernumeraries must be trained in the use of the oxygen units.

The supernumeraries must also be trained to determine if oxygen is being delivered to the dispensing units. The units must indicate oxygen flow. The oxygen units must be sized adequately for continuous and uninterrupted use during worst-case flight duration following decompression or must be of sufficient duration to allow the supernumeraries to return to their seats where oxygen for the remainder of the decompression is readily accessible.

Additionally, the portable oxygen device must meet the requirements for flightcrew oxygen masks (§ 25.1443(a) or (b)) or the equipment must be shown to protect the supernumerary from hypoxia at an activity level required to return to his or her seat following a rapid decompression to 25,000 feet cabin altitude.

7. Decompression Alert:

An automatically activated aural and visual decompression alert must be present and immediately recognizable in accessible areas of the Class E cargo compartment to notify supernumeraries when to don oxygen masks and return to their seats.

An automatically activated visual decompression alert must be present and immediately recognizable in the lavatory and the galley area to notify supernumeraries when to don oxygen masks and/or return to their seats.

8. Turbulence, Smoke and/or Fire Alert:

A flightcrew activated visual alert, which is recognized in the lavatory, galley area and the main deck Class E cargo compartment, must be installed to indicate that, in the event of turbulence, fire or smoke, persons must return to their seats and ensure that the smoke barrier is secured (i.e., the door is closed). Appropriate procedures and limitations must

be established to ensure that, at the onset of turbulence, fire or smoke event, the flightcrew alerts the supernumeraries to return to their seats and secure the smoke barrier.

9. Placards:

Placard(s) located in the supernumerary area, in a conspicuous location either on or adjacent to the smoke barrier door must indicate the following for access to the main deck Class E cargo compartment:

- Access is limited to the care and handling of animals and hazardous/perishable cargo only.
- Occupancy of the Class E cargo compartment is prohibited during taxi, take-off and landing.
- Access is limited to a maximum of three persons unless transporting live animals and associated material. Access is limited to 4 persons when transporting live animals. Access is limited to 4 supernumeraries when transporting live animals and other cargo.
- The smoke barrier must be secured (i.e., the door must be closed) except when entering or leaving the cargo compartment.
- A portable oxygen bottle (with mask attached) must be carried at all times when accessing the cargo compartment.
- Smoking is not allowed within the cargo compartment.
- The compartment must not be entered in case of fire/smoke being detected inside a Class E cargo compartment.

10. Alerting requirements:

- Alerts must be distinctive and effective. Alerts shall distinguish between decompression and turbulence/smoke/fire.
- Visual alerts must be visible from all occupant locations and orientations, during all expected operational conditions including a rapid decompression where moisture in the air may condense.
- Aural alerts must be loud enough to be heard during all expected operational conditions including a rapid decompression where the ambient noise level will increase.

11. Flight tests must be conducted to show compliance with the provisions of § 25.857 concerning the entry of hazardous quantities of smoke into compartments occupied by the crew or passengers. The amount of time that the smoke barrier is open, as a result of the supernumeraries evacuating the main deck cargo compartment, must be accounted for in the testing.

Note: The alerts and procedures in limitations 7 and 8 and the associated briefings in limitation 4 are not required if an airplane flight manual limitation is established to prohibit supernumeraries in the Class E cargo compartment during flight. If access is prohibited, placards must be revised to indicate this limitation.

Issued in Renton Washington, on April 10, 2009.

| _____/s/

Stephen P. Boyd
Acting Manager
Transport Airplane Directorate
Aircraft Certification Service