

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

In the matter of the petition of

Atlas Air

for an exemption from §§ 25.785(j),
25.857(e), and 25.1447(c)(1) of Title 14,
Code of Federal Regulations

Regulatory Docket No. FAA-2015-1410

PARTIAL GRANT OF EXEMPTION

By letter dated April 20, 2015, Mr. Todd Berkey, Senior Director of Engineering and Maintenance Programs, Atlas Air, 2000 Westchester Avenue, Second Floor, Purchase, New York, 10577-2543, petitioned the Federal Aviation Administration (FAA) for an exemption from the requirements of §§ 25.785(j), 25.857(e), and 25.1447(c)(1) of Title 14, Code of Federal Regulations (14 CFR). This exemption, if granted, would permit the carriage of up to four non-crewmembers (commonly referred to as supernumeraries) aft of the flight deck on Boeing Model 747-400F airplanes and would allow up to three supernumeraries 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 or hazardous materials).

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

Section 25.785(j), at Amendment 25-88, requires, in pertinent part, that there be a firm handhold to enable occupants to steady themselves when moving through the aisles in moderately rough air.

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 to carry cargo only.

Section 25.1447(c)(1), at Amendment 25-87, requires 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 must exceed the number of seats by at least 10 percent. The extra units must be uniformly distributed throughout the cabin as

practicable. There must be at least two oxygen dispensing units connected to oxygen terminals in each lavatory.

Related sections of 14 CFR

Section 121.583(a), contains, in part, a list 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 supports its request with the following information:

This section summarizes the petitioner's request. The complete petition is available at the Department of Transportation's Federal Docket Management System, on the Internet at <http://regulations.gov>, in Docket No. FAA-2015-1410.

Background

Atlas Air intends to operate Boeing 747-400F production freighter airplanes to transport types of cargo that require care, or inspection, or both, during flight (e.g., live animals), in addition to continuing the original mission of carrying cargo freight. To support this usage of the aircraft, Atlas Air proposes to permit a maximum of three supernumeraries access to the Class E cargo compartment during flight on all 747-400F airplanes, and once trained and during specific flight operations as listed below, be permitted access to the Class E cargo compartment in flight under limitations proposed below. Atlas Air will implement procedures developed for both the 747-400BCF (Exemption 8590B) and 747-8F (Exemption 9793C) that determine how each supernumerary is physically able and trained to accomplish the necessary emergency procedures. The designation and purpose of supernumeraries is discussed in 14 CFR 121.583(a)(1) through (7). These purposes and the necessary configuration of the aircraft are not in accordance with 14 CFR part 25 regulations; therefore, this petition is submitted to request specific exemptions.

Exemptions Requested

- a. An exemption is requested from § 25.857(e) to permit a maximum of three supernumeraries access to the Class E cargo compartment during cruise on Boeing 747-400F airplanes.
- b. An exemption is requested from § 25.1447(c)(1) to permit persons entering the Class E cargo compartment the use of a portable oxygen bottle with full-face mask and initiate the flow of oxygen at all times instead of a self-presenting mask.
- c. An exemption is requested from § 25.785(j) to obtain relief from the requirement for handholds for persons walking in the Class E cargo compartment.

Discussion

Description of 747-400F Production Freighter Configuration

Flightdeck

The original flight deck is certified for maximum occupancy of two crewmembers and two observers. Flight deck layout remains in current delivered configuration.

The Boeing Model 747-400F flight deck is originally fitted and certified with an overhead emergency exit hatch for the flightcrew, using inertia descent devices. Flight deck emergency exit is retained unchanged from the original type certificate (TC) configuration.

Upper Deck Supernumeraries Compartment

The Boeing Model 747-400F upper deck is originally fitted and certified with one right side upper deck crew service door, equipped with one escape slide. This upper deck emergency exit is retained unchanged from the original TC configuration.

The original upper deck of the Boeing Model 747-400F is certified for occupancy of eight. The aircraft will retain seating for four non-crew (supernumerary) persons only. Total seating in the aircraft (including flight compartment) shall be eight persons.

Main Deck Cargo Compartment

The Class E compartment is separated from the upper deck compartment by a smoke barrier and ladder enclosure. Access to the Class E cargo compartment is gained through a door leading to the folding ladder. Limitations and instructions will be printed on a placard and placed on the supernumerary seating area side of the access door into the compartment.

Emergency Equipment

- a. Six portable 'walk around' oxygen bottles with a full-face mask will be installed on the upper deck.
 - 1) Three portable oxygen bottles with full-face mask will be located on the back side of the flight deck wall just above the frigid area survival kit.
 - 2) One portable oxygen bottle with full-face mask will be located inside the right side closet (in front of the supernumerary seats).

- 3) Two portable oxygen bottles with full-face mask will be located inside the left side closet (in front of the galley).
- b. Three portable breathing equipment units are installed in addition to the existing equipment in the flight deck for a total of one in the flight deck, two on the upper deck, and one in the main deck cargo compartment. The equipment shall meet the requirements defined in § 25.1439.
- c. One halon fire extinguisher and one water fire extinguisher are installed on the Class E cargo compartment, meeting the requirements of § 25.851.

Visual Alerting System - Main Deck Signaling System (MDSS)

One alert means will be provided in order for the flightcrew to communicate to persons located in the Class E cargo compartment that conditions exist requiring immediate return to their seats. The alert shall be provided as follows:

Return to Seat - A visual alert signal, flashing of all main deck cargo compartment ceiling lights for 30 seconds at 0.5 second cycles, concurrent with activation of the SEATBELTS selector switch where 'FASTEN SEAT BELTS' and 'RETURN TO SEAT' signs will illuminate indicating to a person in the main deck cargo compartment to immediately return to their seat on the upper deck. The flightcrew will manually activate the signal in case of imminent turbulence, cargo compartment smoke/fire warning, or decompression.

Don Oxygen Mask - The procedures below will be incorporated into the flight crew operating manual (FCOM) and quick reference handbook (QRH) and be included as part of the pre-flight briefing:

1. Any 747-400F equipped with the MDSS will require any supernumerary that accesses the Class E cargo compartment to carry an oxygen bottle and don a full-face oxygen mask and initiate the flow of oxygen at all times while in the Class E cargo compartment.
2. The requirement for the supernumeraries to carry an oxygen bottle and don oxygen masks and initiate the flow of oxygen at all times while in the Class E cargo compartment meets or exceeds the exemption because no aural or visual cue is required to don the oxygen mask and initiate the flow of oxygen.
3. The QRH will include a step to activate the MAIN DECK ALERT which will alert the supernumeraries to return to their seats.

4. The limitations and instructions will be printed in a placard and placed in the supernumerary seating area side of the access door into the compartment.

Modification

Interim Modification

Atlas Air intends to modify its B747-400F aircraft to allow up to three supernumeraries access to the Class E cargo compartment per the modifications listed below. This is an interim modification until a permanent modification per Boeing Master Change Service Bulletin can be installed. This master change and the Master Change Service Bulletin Kit will be FAA approved and manufactured respectively in approximately 12 to 18 months.

- a. Boeing Service Bulletin 747-33-2290 as per Atlas Air Engineering Order (EO) 4433A042 - Main Deck Signaling System (MDSS) Installation. This change allows the flightcrew to signal to the personnel on the main cargo deck to return to their seats.
- b. Atlas EO 4435A034, Rev. 1 - Portable Oxygen Bottle with Full Face Mask - Provisional Installation and Activation.
- c. Pre-flight procedures: Brief supernumeraries on the location and use of all emergency equipment, including the portable oxygen bottles.
- d. After each flight operation:
 - 1) Ensure that serviceable oxygen bottles are added before any flights where main deck (MD) access is required.
 - 2) Replace any used oxygen bottles after each flight where MD access was required.
 - 3) Inspect and verify that the portable oxygen bottles indicate full capacity (within the green band). If less than full, bottle is considered unserviceable and must be replaced or deferred and restriction applied.
 - Restriction is no MD access permitted on aircraft where portable oxygen bottles indicate less than full capacity.
 - In the event that the unserviceable/used portable device cannot be replaced prior to the next flight after use, contact maintenance control center (MCC) to defer, and main deck access will be restricted during flight until units are replaced.
- e. The following manuals and pre-flight revisions will be made:

- 1) FOM - Outlines requirements to access the main deck and activation of the main deck signaling system.
- 2) Briefing cards - Will provide guidance for main deck access.
- 3) QRH - The 747-400 QRH will be revised to match the 747-8 main deck alerting system requirements where applicable. This will also include steps for activating the alert system anytime “SUPRNMRY OXY” or passenger signs are turned on.
- 4) FCOM volume 1 - Addition of preflight of the main deck alerting system.
- 5) FCOM volume 2 - Addition of a main deck alerting description.
- 6) DDG 33-35-01 - Revise to include main deck alerting system, indicating entry is prohibited in-flight with an inoperative main deck alerting system and/or where portable oxygen bottle(s) indicate less than full capacity.

Permanent Modification

Atlas Air intends to modify its B747-400F aircraft to allow up to three supernumeraries access to the Class E cargo compartment per Boeing Master Change Service Bulletin as described herein. This Master Change and the Master Change Service Bulletin Kit will be FAA approved and manufactured respectively in approximately 12 to 18 months. The 747-400F will incorporate system changes to provide:

- a. Automatic aural and visual alerting in the main deck compartment for cabin loss-of-pressure and smoke/fire events.
- b. Visual only alerting for turbulence events.
- c. Portable oxygen bottle with integral full-face mask will be required for each person that can be on the main deck at the same time.
- d. Procedures will require that each supernumerary take a portable oxygen unit with them when accessing the main deck cargo compartment.

Basis for Exemption

- Presence of supernumeraries enhances safety.
- Mixed cargo flights are the norm in the industry.
- Not allowing access for mixed cargo on the 747-400F will create a hardship.
- The granting of the requested exemptions will not degrade the level of safety provided by the regulations. The granting of the requested exemptions will be in the public interest for the following reasons.
 - The supernumeraries will be trained in the use of emergency equipment and will receive a pre-flight briefing from the flightcrew.
 - The FCOM will instruct the flightcrew to brief the supernumeraries before each flight about the limitations and procedures in case of entry into the Class E cargo compartment during flight.
 - Any supernumerary accessing the Class E cargo compartment will be required to carry an oxygen bottle, don a full-face oxygen mask, and initiate the flow of oxygen at all times.
 - The visual alert system (MDSS) via flashing main deck ceiling lights, which will indicate at the onset of turbulence, smoke/fire, or decompression that the main deck compartment occupants should immediately return to their seats.
 - Activation of the SEATBELTS selector switch where 'FASTEN SEATBELTS' and 'RETURN TO SEAT' signs will illuminate indicating that occupants of the main deck cargo compartment should immediately return to their seats on the upper deck.
 - An acceptable level of safety will be provided by the crew-operated visual alert system's MDSS via flashing main deck ceiling lights that indicate, at the onset of turbulence, smoke/fire, or decompression, persons in the cargo compartment should return to their seats.

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 Atlas Air.

The FAA's analysis

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

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

The petitioner has requested relief primarily from the requirements of § 25.857(e), which permits only the carriage of cargo when a Class E cargo compartment is installed on the airplane. Class E cargo compartments are usually remote from the flight deck 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 shutting off ventilating airflow and may be enhanced 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 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. Since 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 has determined that, due to the way that fire in the cargo compartment is to be controlled, supernumeraries (persons) on the airplane must have been 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 requirement for handholds in § 25.785(j), at Amendment 25-88, 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 persons

must return to their seats and secure the smoke barrier (i.e., the door or curtain must be closed). The pre-flight briefing would need to explain this alert to the supernumeraries.

To comply with §§ 25.855(h)(2) and 25.857(e)(4), there must be suitable means of preventing smoke penetration into areas that are occupied. 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 indicated that configurations may be approved that will allow supernumeraries to enter the Class E cargo compartment. To gain access, the supernumeraries would open the smoke barrier between the cargo compartment and the supernumerary compartment. To provide an appropriate level of safety, the petitioner must install a placard indicating that the smoke barrier is to be secured (i.e., the door or curtain 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.

The FAA has a concern associated with the quantity of smoke that may enter the occupied areas in the event of a fire on the main deck. The amount of smoke that would enter the supernumerary compartment and flight deck when the smoke barrier is open during evacuation of the cargo compartment by the supernumeraries must not create a hazard to the occupants. This smoke source must be considered when demonstrating compliance with § 25.855(h)(2).

On previous certification programs, if access into the Class E cargo compartment was going to be allowed, we required that an alert (aural, visual, or both) be installed, operated by a flightcrew member and recognized in the Class E cargo compartment. The alert immediately notified the supernumeraries that there was smoke or fire in the compartment. The alert indicated that persons must return to their seats and secure the smoke barrier (i.e., close the door or curtain) if there was a fire. The pre-flight briefing included an explanation of this alert to the supernumeraries.

On this certification program, the petitioner has proposed that smoke/fire, turbulence, and decompression events would have an identical visual alert requiring manual activation of the alert by the flightcrew. The alert only has a visual element which consists of flashing the cabin lights on and off for 30 seconds and the intended response to the alert would be the same for all three events. That is, the supernumeraries inside the Class E cargo compartment would immediately return to their seats. Although this procedure differs from previous programs, in an effort to accommodate the lead time needed for the incorporation of the service bulletin for the full alerting system, we find this action acceptable for the near term until the final installation of the service bulletin is accomplished. The use of the same proposed alert and procedures for decompression, turbulence, and smoke/fire events are acceptable for a limited time. The use of this procedure is limited to 3 years from the date of issuance of this exemption. This allows the petitioner to complete the permanent modification described above that includes an automated alert system. As a backup to the automated alert system, the flightcrew must be able to manually initiate the alerts.

The petitioner has also proposed that the supernumeraries will, as a mitigating factor, don their full-face oxygen masks and initiate oxygen flow upon entering the cargo compartment to meet

the pertinent requirement in § 25.1447(c)(1). While this is not an optimal solution operationally, it does provide an acceptable level of safety for those entering the cargo compartment; on condition that the portable oxygen equipment provided to the supernumeraries, in addition to meeting the requirements of § 25.1443(a) or (b), also meets the appropriate requirements of protective breathing equipment (PBE) in § 25.1439.

Due to the way that fire in the cargo compartment is to be controlled, it is necessary to limit persons on the airplane to supernumeraries who have been found physically fit by the operator and have been briefed on the use of the emergency equipment. This limitation on the occupants is consistent with previous approvals and is included in this approval.

The petitioner indicated that configurations may be approved that will allow the supernumeraries to enter the Class E cargo compartment in flight to attend to animals or hazardous cargo. When operating above 25,000 feet, § 25.1447(c)(1) requires an “immediately available” supply of oxygen for each supernumerary. To provide an acceptable level of safety while they are in the Class E cargo compartment, each supernumerary must don their full-face oxygen masks and initiate oxygen flow upon entering the cargo compartment as proposed by the petitioner.

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, the supernumeraries in the Class E cargo compartment would not have this indication. The petitioner proposed to provide supernumeraries with portable walk around oxygen bottles equipped with a full-face mask. The supernumeraries will be required to don the oxygen mask and initiate the flow of oxygen when accessing the main deck Class E cargo compartment. We find that the proposal provides an acceptable level of safety.

To ensure adequate hypoxia protection during non-sedentary use, the portable oxygen device(s) must meet the requirements for flightcrew oxygen equipment in § 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. Since the portable oxygen equipment may also be used for protection from smoke in the event of a fire in the cargo compartment, the portable oxygen equipment must also meet the PBE requirements in § 25.1439.

The portable 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. We find 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.

Section 25.1447(c)(1) also requires 10% extra oxygen masks. The intent is that these masks will be used by flight attendants and children sitting on passengers' laps. Since neither will be on-board the airplane, installing 10% extra oxygen masks is not required.

Supernumeraries must be trained regarding the location and use of oxygen equipment and the alerts that indicate the need to don oxygen equipment. The oxygen units must be sized adequately for continuous and uninterrupted use during worst-case flight duration following decompression.

Configurations may be approved for carrying cargo, which would not require supernumeraries to access the Class E cargo compartment. For these configurations, an aural and visual decompression alert is not required to be recognizable in the Class E compartment if an airplane flight manual (AFM) limitation is established to prohibit supernumeraries from being in the Class E cargo compartment during flight. Placards and procedures must also be changed to be consistent with the AFM limitation.

The FAA has previously granted exemptions for in-flight access of the Class E cargo compartment by supernumeraries, provided that certain other conditions are met. These conditions have varied, depending on the airplane design, the number of persons involved, and the type of cargo permitted to be transported in the main deck Class E cargo compartment. We have been reviewing the operational need to access the Class E cargo compartment in flight and the number of persons needed in the cargo compartment for the type of operations. We have divided the access of the cargo compartment into three different types of operations.

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

All large animals shipped by air need supernumeraries on board for their care and attention during flight because the carriage of large animals implies a potential risk due to the brute force they are capable of, which can endanger safety of flight. Horses are routinely shipped by air and are one of the large animals that require care and attention during flight because of the brute force issue. Also, these horses that are shipped by air are high value animals and the owners and insurance policies require in-flight care and attention. We understand that there is an industry standard for the air transport of horses that recommends one supernumerary (groom/handler) for every three or four horses. We agree that this recommendation is appropriate to ensure safety of flight.

In the first type of operation (live animals only), we understand that the industry standard for carriage of horses is one supernumerary for every three or four horses. Considering the size of the 747-400F airplane, there could be several horses in the main deck cargo compartment. As a result of the large number of horses or other large animals, an appropriate number of supernumeraries (grooms/handlers) would be required. We have granted exemptions in the past for larger number of supernumeraries with access into the main deck cargo compartment under certain conditions. These conditions have included limiting the permitted cargo to the large live animals and associated cargo only. We have considered that live animals are less flammable

cargo than other cargo; therefore, we have allowed more access to the cargo compartment. The petitioner has requested a maximum of three supernumeraries to be allowed to access the main deck Class E cargo compartment in flight for the care and attention of live animals. We accept the proposal.

With regard to the second type of operation (cargo only), we have limited the access into the cargo compartment to one to three supernumeraries only. This number of supernumeraries should be capable of addressing the access needs for the hazardous materials and valuable or perishable goods during flight. Therefore, the maximum number of supernumeraries allowed into the Class E cargo compartment to care/attend to hazardous cargo is three.

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 that a maximum of three supernumeraries be allowed to access the Class E cargo compartment in flight for the care/attention of live animals and for inspection of cargo. 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. Several factors are considered when making a determination for the acceptable level of safety in this case. Past industry practice, the number of supernumeraries with access, the airplane configuration, cargo compartment size, limited egress paths, potential cargo present, and the duration of exposure are all relevant factors. We accept the proposal for allowing a maximum of three supernumeraries into the main deck Class E cargo compartment during flight for the care and attention of live animals and to inspect the cargo. A portable full-face oxygen mask system with the oxygen flow initiated must be worn by each supernumerary upon entering the cargo compartment to protect against decompression and smoke inhalation.

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 Atlas Air an exemption from 14 CFR 25.785(j) and 25.857(e), and a partial exemption from § 25.1447(c)(1). The petitioner is still required to meet the requirements of § 25.1447(c)(1), except the requirement for 10 percent extra oxygen dispensing units in the lavatory, supernumerary seating area and cargo area. This exemption is granted to the extent necessary to allow type certification of Boeing Model 747-400F airplanes with provisions for the carriage of supernumeraries.

This exemption is subject to the following conditions and limitations:

1. The Airworthiness Limitations section of the Instructions for Continued Airworthiness must include a limitation that the airplanes subject to this exemption cannot be operated after 3 years from the issuance of this exemption unless an FAA-approved automatic aural and visual alerting system is installed to inform the supernumeraries when to return

to their seats in the event of decompression or smoke/fire, and a crew-activated visual alerting system for turbulence events is installed.

2. The following limitations must be documented in the AFM:
 - a. A maximum of four supernumeraries, limited to the categories specified in § 121.583(a)(1) through (7), may occupy the area just aft of the flight deck.
 - b. The operator must determine that each supernumerary:
 - i. Is physically able and trained to accomplish the necessary emergency procedures.
 - ii. Has been trained in the use of the oxygen units, including making the determination whether oxygen is being delivered to the dispensing units.
 - c. Prior to each flight, a flight crewmember must brief each supernumerary on the following:
 - i. The use of the exits, including instructions to inspect the ground to determine whether a safe landing can be achieved before using an assist means and emergency equipment.
 - ii. The meaning of all alerts required by this exemption.
 - iii. That access to the cargo area below the smoke barrier is prohibited during taxi, take-off, and landing.
 - d. During flight, each supernumerary must carry a portable oxygen unit whenever he or she is in the Class E cargo compartment.
 - e. Until an automatic aural and visual alerting system is installed per limitation 1 above, the supernumerary must also don the full-face mask and initiate the oxygen flow whenever he or she is in the Class E cargo compartment during flight.
3. The total maximum occupancy of the airplane is limited to eight persons, including the flightcrew (two on-duty flight crewmembers and two observers on the flight deck).
4. Supernumerary Oxygen:
 - a. There must be at least one portable oxygen unit, with a full-face oxygen mask connected to it, provided for each supernumerary allowed to enter the main deck

Class E cargo compartment during flight. The unit must provide an indication to the user when oxygen is flowing.

- b. The portable oxygen unit must meet the performance requirements of either § 25.1443(a) or § 25.1443(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.
 - c. The portable oxygen units must be located outside the cargo compartment (e.g., in the common area) except when in use per limitation 2d or e.
 - d. The portable 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 supernumerary to return to his or her seat where additional oxygen is readily accessible for the remainder of the decompression.
 - e. Additionally, since the petitioner has decided to provide the same alert for decompression, turbulence, and smoke/fire, the oxygen unit must meet the protective breathing equipment (PBE) requirements in § 25.1439(b)(1), (2), and (4), and the equipment and system must be designed to prevent any inward leakage to the inside of the device and prevent any outward leakage causing significant increase in the oxygen content of the local ambient atmosphere (i.e., full-face mask type).
 - f. Based on the petitioner's proposal, the lavatory and the area with the supernumerary seats must still meet § 25.1447(c)(1), except for the requirement for 10 percent extra oxygen dispensing units.
5. For the exits designated for supernumerary use, emergency lighting must provide adequate illumination at the ground end of the assist means where an evacuee would normally make first contact with the ground, with the airplane in each of the attitudes corresponding to the collapse of one or more legs of the landing gear.
6. For the exits designated for supernumerary use, eight descent devices (commonly known as inertia reels) and eight harnesses for use with the descent devices must be provided. This condition does not apply to airplanes that retain the passenger evacuation slide on the upper deck.
7. Alerting Requirements:
- a. Visual alerts must be visible and recognized in the accessible areas of the Class E cargo compartment at all occupant locations and orientations, during all expected

operational conditions, including a rapid decompression where moisture in the air may condense.

- b. As the alert is identical for all cases (i.e., decompression, turbulence, and smoke/fire) in the Class E cargo compartment, appropriate procedures and limitations must be established to ensure that, at the onset of an event, the flight crewmember alerts the supernumeraries to return to their seats and secure the smoke barrier. This requirement expires when an automatic aural and visual alerting system is installed per item 1 above; at which time limitations 7(d) through 7(f) become effective.
 - c. The pre-flight briefing must explain the alert to the supernumeraries. The briefing, alert, and associated procedures and limitations to signal the supernumeraries, are not required if an AFM limitation is established to prohibit supernumeraries in the Class E cargo compartment during flight.
 - d. An automatically activated aural and visual decompression alerting system must be present and immediately recognizable in accessible areas of the Class E cargo compartment to notify supernumeraries when to don oxygen masks. If there are two or more alerts that a supernumerary may hear, or is expected to respond to, there must be an automatic visual alert in addition to the automatic aural alert.
 - e. Turbulence Alert:

A flightcrew operated visual alerting system, which is recognized in accessible areas in the Class E cargo compartment, must be installed to indicate, during turbulence, that persons must return to their seats. Appropriate procedures and limitations must be established to ensure that the flightcrew alerting systems notify the supernumeraries to return to their seats at the onset of turbulence and prior to landing.
 - f. Smoke/Fire Alert:

A flightcrew activated aural and visual alerting system, which is recognized in the Class E cargo compartment, must be installed. This aural or visual alerting system is to indicate that, in the event of fire or smoke in the Class E cargo compartment, persons must return to their seats and ensure that the smoke barrier is secured (i.e., the door or curtain is closed). Appropriate procedures and limitations must be established to ensure that, at the onset of a fire or smoke event, the flightcrew alerting system notifies the supernumeraries to return to their seats and secure the smoke barrier.
8. Placards must indicate the following:
- a. Occupancy of the Class E cargo compartment is prohibited during taxi, take-off, and landing.

- b. Access is limited to the care and handling of animals and hazardous/perishable cargo only.
 - c. Access is limited to a maximum of three persons during flight.
 - d. The smoke barrier must be secured (i.e., the door or curtain must be closed) except when entering or leaving the cargo compartment.
 - e. Smoking is not allowed in the cargo compartment.
 - f. The compartment must not be entered when smoke/fire is detected inside the Class E cargo compartment.
 - g. Until an automatic aural and visual alerting system is installed per limitation 1 above, the placard must indicate: A portable oxygen bottle with a full-face mask with oxygen flow initiated must be worn at all times when in the cargo compartment.
 - h. After an automatic aural and visual alerting system is installed per limitation 1 above, the placard must indicate: A portable oxygen unit must be carried at all times when in the Class E cargo compartment.
9. The placards required by limitation 8 must be installed in a conspicuous location in the supernumerary area on or adjacent to the access door to the cargo compartment.

10. Main Deck Class E Cargo Compartment Access Limitations:

- a. Access into the main deck Class E cargo compartment in flight is allowed for the following three types of operation:
 - i. Carriage of live animals requiring care and attention during flight, and associated material only. No other cargo.
 - ii. Cargo only. No live animals requiring care and attention during flight.
 - iii. Carriage of live animals requiring care and attention during flight and other cargo.
- b. The maximum number of supernumeraries allowed in the main deck Class E cargo compartment is three.

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/s/

Michael Kaszycki
Acting Manager, Transport Airplane Directorate
Aircraft Certification Service